HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

CONSTRUCTION DOCUMENTS

JULY 30, 2026

DIRECTORY

CLIENT:
HOWELL PUBLIC SCHOOLS
411 N HIGHLANDER WAY
HOWELL, MI 48843
P. (517) 548-6200

ARCHITECT & MECHANICAL ENGINEER:
KINGSCOTT ASSOCIATES INC.
450 TRADE CENTRE WAY, SUITE 130
PORTAGE, MI 49002
P. (800) 632-7815

CONSTRUCTION MANAGER:
AUCH CONSTRUCTION
65 UNIVERSITY DR
PONTIAC, MI 48342
P. (248) 334-2000

STRUCTURAL ENGINEER:
ROBERT DARVAS ASSOCIATES
440 SOUTH MAIN ST
ANN ARBOR, MI 48104
P. (734) 761-8713

ELECTRICAL ENGINEER:
MATRIX CONSULTING ENGINEERS
544 CHERBOURG DR
LANSING, MI 48917
P. (517) 487-2511

TECHNOLOGY & SECURITY DESIGNER:
WRIGHT & HUNTER, LLC.
1303 N. SEVEN MILE ROAD
DETROIT, MI 48221
P. (248) 594-5550

CIVIL ENGINEER:
SPALDING DEDECKER
525 OTTAWA AVE NW
GRAND RAPIDS, MI 49503
P. (616) 885-5802

ATHLETICS:
FORESITE DESIGN, INC.
26777 CENTRAL PARK BLVD, SUITE 1256
SOUTHFIELD, MI 48076
P. (248) 547-7757

AV DESIGN:
HAV DESIGN
428 CENTURY LANE, SUITE 200
HOLLAND, MICHIGAN 49423
P. (224) 381-8754

ALTERNATES

(ADD) ALTERNATE - 1 : REPLACE ALL LOCKERS AT MEN LOCKER ROOMS

(ADD) ALTERNATE - 2 : REPLACE ALL LOCKERS AT WOMEN LOCKER ROOMS

(DEDUCT) ALTERNATE - 3 : REUSE DOOR HW FOR DOORS 1008 AND 1013 IF APPLICABLE, V.I.F.

(ADD) ALTERNATE - 4 : PROVIDE WHITE OAK FOR TIMBER CURTAIN WALL (BASE BID IS DOUGLAS FIR)

DEFERRED SUBMITTAL

NOTE: THESE CONSTRUCTION DOCUMENTS WERE PREPARED FOR COMPLIANCE WITH THE LOCAL CONSTRUCTION CODES IN EFFECT AT TIME OF PERMIT SUBMITTAL. ALL ENGINEERS, CONTRACTORS AND SUPPLIERS INVOLVED WITH THIS PROJECT SHALL COMPLY WITH THE SAME CODES, ISSUED AND APPROVED CODE MODIFICATIONS AND/OR LOCAL CONSTRUCTION BOARDS OF APPEALS RULINGS AND WHENEVER REQUIRED SHALL PROVIDE SHOP DRAWINGS AND SUBMITTALS CLEARLY DESCRIBING COMPLIANCE TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE FOR REVIEW AND APPROVAL.

THE FOLLOWING SUBMITTALS SHALL BE PREPARED BY OTHERS AND INCLUDED AS PART OF THE CONSTRUCTION DOCUMENTS AS THEY BECOME AVAILABLE: (PER SECTION 107.3.4.1)

1. FIRE ALARM SYSTEMS
2. FIRE STOPPING SYSTEMS
3. FIRE SUPPRESSION SYSTEMS

DELEGATED DESIGN

1. SKYLIGHT
2. H WINDOW
3. GLULAM STRUCTURE
4. CLT DECK
5. GEOPIERS
6. PRECAST CONCRETE
7. COLD FORMED METAL FRAMING
8. PRE-ENGINEERED METAL BUILDING STRUCTURE
9. NETTING SYSTEMS
10. EXTERIOR FURNISHING
11. IRRIGATION SYSTEMS

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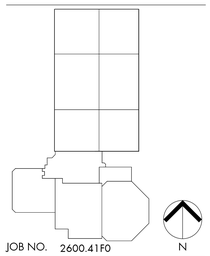
HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE
TITLE SHEET

SHEET NO.
G000

SHEET INDEX:

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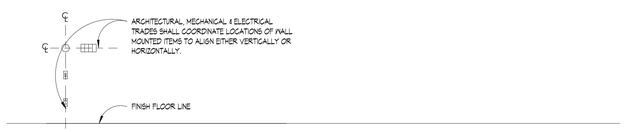
P212.a	SECOND FLOOR PLUMBING PLAN - UNIT 2000
P212.b	SECOND FLOOR PLUMBING PLAN - UNIT 2100
P212.c	SECOND FLOOR PLUMBING PLAN - UNIT 2200
P212.d	SECOND FLOOR PLUMBING PLAN - UNIT 2300A
P212.f	SECOND FLOOR PLUMBING PLAN - UNIT 2400A
P212.g	SECOND FLOOR PLUMBING PLAN - UNIT 2400B
P212.h	SECOND FLOOR PLUMBING PLAN - UNIT 2400C
P212.j	SECOND FLOOR PLUMBING PLAN - UNIT 2400D
P212.k	SECOND FLOOR PLUMBING PLAN - UNIT 2400E
P212.m	SECOND FLOOR PLUMBING PLAN - UNIT 2400F
P214.d	PLUMBING ROOF PLAN - UNIT 1300A
P400	PLUMBING ENLARGED PLANS
P401	PLUMBING ENLARGED PLANS
P402	PLUMBING ENLARGED PLANS
P500	PLUMBING DETAILS
P600	PLUMBING SCHEDULES
FIRE PROTECTION	
F001	FIRE PROTECTION DATA SHEET
F211.a	FIRST FLOOR FP PLAN - UNIT 1000
F211.b	FIRST FLOOR FP PLAN - UNIT 1100
F211.d	FIRST FLOOR FP PLAN - UNIT 1300A
F211.e	FIRST FLOOR FP PLAN - UNIT 1300B
F211.f	FIRST FLOOR FP PLAN - UNIT 1400A
F211.h	FIRST FLOOR FP PLAN - UNIT 1400C
F211.k	FIRST FLOOR FP PLAN - UNIT 1400E
F211.m	FIRST FLOOR FP PLAN - UNIT 1400F
F212.a	SECOND FLOOR FP PLAN - UNIT 2000
F212.d	SECOND FLOOR FP PLAN - UNIT 2300A
F212.f	SECOND FLOOR FP PLAN - UNIT 2400A
F212.g	SECOND FLOOR FP PLAN - UNIT 2400B
F212.h	SECOND FLOOR FP PLAN - UNIT 2400C
F212.j	SECOND FLOOR FP PLAN - UNIT 2400D
F212.k	SECOND FLOOR FP PLAN - UNIT 2400E
F212.m	SECOND FLOOR FP PLAN - UNIT 2400F
F501	FIRE PROTECTION DETAILS & SCHEDULES
ELECTRICAL	
E001	ELECTRICAL COVER SHEET
E111	SITE PLAN - ELECTRICAL DEMOLITION
E112	SITE PLAN - ELECTRICAL
E113	SITE PLAN - LIGHTING NEW COMMUNITY CENTER
E114	PARTIAL ENLARGED SITE PLAN - ELECTRICAL NEW
E211.a	FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1000
E211.b	FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1100
E211.c	FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1200
E211.d	FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1300A
E211.e	FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1300B
E221.a	SECOND FLOOR ELECTRICAL DEMO PLAN - UNIT 2000
E221.b	SECOND FLOOR ELECTRICAL DEMO PLAN - UNIT 2100
E221.c	SECOND FLOOR ELECTRICAL DEMO PLAN - UNIT 2200
E251.a	ROOF ELECTRICAL DEMO PLAN - UNIT 3000
E311.a	FIRST FLOOR ELECTRICAL PLAN - UNIT 1000
E311.b	FIRST FLOOR ELECTRICAL PLAN - UNIT 1100
E311.c	FIRST FLOOR ELECTRICAL PLAN - UNIT 1200
E311.d	FIRST FLOOR ELECTRICAL PLAN - UNIT 1300A
E311.e	FIRST FLOOR ELECTRICAL PLAN - UNIT 1300B
E311.f	FIRST FLOOR ELECTRICAL PLAN - UNIT 1400A
E311.g	FIRST FLOOR ELECTRICAL PLAN - UNIT 1400B
E311.h	FIRST FLOOR ELECTRICAL PLAN - UNIT 1400C
E311.j	FIRST FLOOR ELECTRICAL PLAN - UNIT 1400D
E311.k	FIRST FLOOR ELECTRICAL PLAN - UNIT 1400E
E311.m	FIRST FLOOR ELECTRICAL PLAN - UNIT 1400F
E321.a	SECOND FLOOR ELECTRICAL PLAN - UNIT 2000
E321.b	SECOND FLOOR ELECTRICAL PLAN - UNIT 2100
E321.c	SECOND FLOOR ELECTRICAL PLAN - UNIT 2200
E321.d	SECOND FLOOR ELECTRICAL PLAN - UNIT 2300A
E321.f	SECOND FLOOR ELECTRICAL PLAN - UNIT 2400A
E321.g	SECOND FLOOR ELECTRICAL PLAN - UNIT 2400B
E321.h	SECOND FLOOR ELECTRICAL PLAN - UNIT 2400C
E321.j	SECOND FLOOR ELECTRICAL PLAN - UNIT 2400D
E321.k	SECOND FLOOR ELECTRICAL PLAN - UNIT 2400E
E321.m	SECOND FLOOR ELECTRICAL PLAN - UNIT 2400F
E511.a	FIRST FLOOR FIRE ALARM PLAN - UNIT 1000
E511.b	FIRST FLOOR FIRE ALARM PLAN - UNIT 1100
E511.c	FIRST FLOOR FIRE ALARM PLAN - UNIT 1200
E511.d	FIRST FLOOR FIRE ALARM PLAN - UNIT 1300A
E511.f	FIRST FLOOR FIRE ALARM PLAN - UNIT 1400A
E511.g	FIRST FLOOR FIRE ALARM PLAN - UNIT 1400B
E511.h	FIRST FLOOR FIRE ALARM PLAN - UNIT 1400C
E511.j	FIRST FLOOR FIRE ALARM PLAN - UNIT 1400D
E511.k	FIRST FLOOR FIRE ALARM PLAN - UNIT 1400E
E511.m	FIRST FLOOR FIRE ALARM PLAN - UNIT 1400F
E521.a	SECOND FLOOR FIRE ALARM PLAN - UNIT 2000
E521.b	SECOND FLOOR FIRE ALARM PLAN - UNIT 2100
E521.c	SECOND FLOOR FIRE ALARM PLAN - UNIT 2200
E521.d	SECOND FLOOR FIRE ALARM PLAN - UNIT 2300A
E521.f	SECOND FLOOR FIRE ALARM PLAN - UNIT 2400A
E521.g	SECOND FLOOR FIRE ALARM PLAN - UNIT 2400B
E521.h	SECOND FLOOR FIRE ALARM PLAN - UNIT 2400C
E521.j	SECOND FLOOR FIRE ALARM PLAN - UNIT 2400D
E521.k	SECOND FLOOR FIRE ALARM PLAN - UNIT 2400E
E521.m	SECOND FLOOR FIRE ALARM PLAN - UNIT 2400F
E551.d	ROOF FIRE ALARM PLAN - UNIT 3300A
E610	EXISTING ELECTRICAL ONE LINE DIAGRAMS
E611	EXISTING PRIMARY ELECTRICAL ONE LINE DIAGRAMS
E612	ELECTRICAL ONE LINE DIAGRAM COMMUNITY CENTER
E613	ELECTRICAL ONE LINE DIAGRAM FIELD HOUSE
E811	ELECTRICAL DETAILS
E911	ELECTRICAL FIXTURE SCHEDULE
E912	ELECTRICAL SCHEDULE
E913	ELECTRICAL SCHEDULE
E914	ELECTRICAL SCHEDULE
E915	ELECTRICAL SCHEDULE
E916	ELECTRICAL SCHEDULE
TECHNOLOGY	
TC210.a	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1000
TC210.b	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1100
TC210.c	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1200
TC210.d	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1300A
TC210.e	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1300B
TC210.f	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400A
TC210.g	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400B
TC210.h	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400C
TC210.i	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400D
TC210.k	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400E
TC210.m	FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400F
TC220.a	SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2000
TC220.b	SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2100
TC220.c	SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2200
TC220.d	SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2300A
TC220.f	SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400A
TC220.g	SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400B
TC220.h	SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400C
TC220.i	SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400D
TC220.k	SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400E
TC220.m	SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400F
TP210.a	FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1000
TP210.b	FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1100
TP210.c	FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1200
TP210.d	FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1300A
TP210.e	FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1300B
TP210.f	FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400A
TP210.g	FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400B
TP210.h	FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT

MOUNTING HEIGHTS (U.N.O.)



MOUNTING HEIGHT COORDINATION



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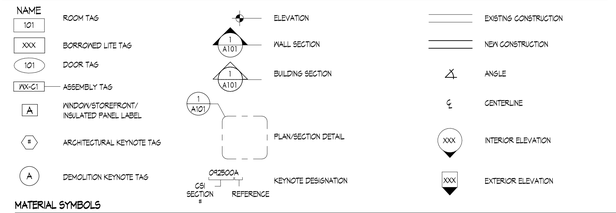
ABBREVIATIONS

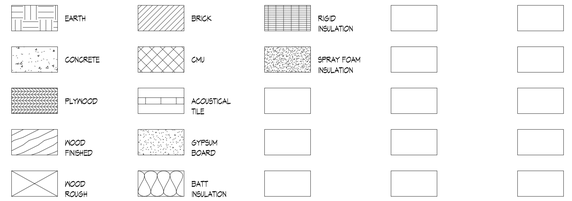
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AL / ALUM	ALUMINUM
ALT	ALTERNATE
APC	ACOUSTICAL PANEL CEILING
APPROX	APPROXIMATE
ARCH	ARCHITECT / ARCHITECTURAL
AVG	AVERAGE
AWP	ACOUSTICAL WALL PANEL
BD	BOARD
BF	BARRIER FREE
BFF	BELOW FINISHED FLOOR
BFST	BARRIER FREE STONE THRESHOLD
BL	BORROWED LIGHT
BLDG	BUILDING
BLK	BLOCK
BM	BEAM
BN	BULLNOSE
B.O.	BY OWNER
BOD	BOTTOM OF DECK
BOX	BOTTOM OF STEEL
BOT	BOTTOM
BP	BEARING PLATE
BRG	BEARING
BSMT	BASEMENT
CAB	CABINET
CAP	CAPACITY
CB	CHALKBOARD
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLO	CLOSET
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTOR CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COR	CORRUGATED
CORR	CORRIDOR
CP	CENTER POINT
CPT	CARPET
CR / CLRM	CLASSROOM
CS	COUNTER SINK
CTF	CERAMIC TILE FLOOR
CTR	CENTER
CTW	CERAMIC TILE WALL
CUST	CUSTODIAN
CU YD	CUBIC YARDS
CYL	CYLINDER
DBL	DOUBLE
DEPT	DEPARTMENT
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIR	DIRECTORY
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DWG	DRAWING
E	EAST
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEV	ELEVATOR
EMER	EMERGENCY
ENCL	ENCLOSURE
ENT	ENTRANCE
EQ	EQUAL
EQUIP	EQUIPMENT
EST	ESTIMATE
EW	EACH WAY
EX / EXIST	EXISTING
EXP	EXPOSED
EXPN	EXPANSION
EXT	EXTERIOR
F	FAHRENHEIT
FB	FACE BRICK
FDN	FOUNDATION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FH	FULL HEIGHT
FHC	FIRE HOSE CABINET
FIG	FIGURE
FIN	FINISH
FIX	FIXTURE
FL / FLR	FLOOR
FLEX	FLEXIBLE
FR	FRAME
FRPF	FIREPROOF
F.S.	FULL SIZE
FT	FEET
FTG	FOOTING
FURN	FURNITURE
FRP	FIBERGLASS REINFORCED PANEL
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR
GC	GENERAL CONTRACTOR
GEN	GENERAL
GL	GLASS
GOVT	GOVERNMENT
GYP	GYPSUM
HD	HAND
HDWR	HARDWARE
HDWD	HARDWOOD
HM	HOLLOW METAL
HORZ	HORIZONTAL
HP	HIGH POINT
HPC	HIGH PERFORMANCE COATING SYSTEM
HR	HOUR
HT	HEIGHT
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDE
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIORS
JAN	JANITOR
JC	JANITOR CLOSET
JCT	JUNCTION
JT	JOINT
KIT	KITCHEN
KP	KICK PLATE
KS	KNEE SPACE
L	LENGTH
LAB	LABORATORY
LB	POUND
LIN	LINEAR
LKR	LOCKER
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG	LONGITUDINAL
LP	LOW POINT
LVT	LUXURY VINYL TILE
MAT / MATL	MATERIAL
MAX	MAXIMUM
MB	MARKER BOARD
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MS	METAL SHELVING
MTD	MOUNTED
MTL	METAL
MT	METAL TRANSITION
MWL	METAL WARDROBE LOCKER
N	NORTH
NC	NOT IN CONTRACT
NO	NUMBER
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
OFD	OVERFLOW DRAIN
OFF	OFFICE
OH	OVERHEAD
OP	OPERABLE PARTITION
OPNG	OPENING
OPP	OPPOSITE
P / PT	PAINT
PART	PARTITION
PC	POLISHED CONCRETE
PERF	PERFORATED
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAT	PLATFORM
PLWD	PLYWOOD
POL	POLISH
P.P.M.	PARTS PER MILLION
PR	PAIR
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PROJ	PROJECT
PSE	PROJECTION SCREEN - ELECTRIC
PSM	PROJECTION SCREEN - MANUAL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PVC	POLYVINYL-CHLORIDE
1/4 RD	QUARTER ROUND
R / RAD	RADIUS
RAF	RESILIENT ATHLETIC FLOOR
RB	RESILIENT BASE / RUBBER BASE
RD	ROOF DRAIN
REC	RECESSED
RECT	RECTANGLE / RECTANGULAR
REF	REFERENCE
REINF	REINFORCED / REINFORCEMENT
REM	REMOVABLE
RESIL	RESILIENT
REQD	REQUIRED
REV	REVISION
RFG	ROOFING
RFS	RUBBER FLOOR SHEET
RFT	RUBBER FLOOR TILE
RGH	ROUGH
RM	ROOM
RO	ROUGH OPENING
RSTA	RESILIENT STAIR TREAD ACCESSORY
RT	RESILIENT TRANSITION
S	SOUTH
SAF	SAFETY
SC	SEALED CONCRETE
SCH	SCHEDULE
SECT	SECTION
SECY	SECRETARY
SEQ	SEQUENCE
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATIONS
SPF	SOUNDPROOF
SPM	SINGLE PLY MEMBRANE
SQ	SQUARE
SS	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STR	STRUCTURAL
SUB	SUB FLOOR
SUSP	SUSPENDED
SYM	SYMMETRICAL
ST / STOR	STORAGE
SV	SHEET VINYL FLOORING
T	TOILET
T&G	TONGUE & GROOVE
TA	TOILET ACCESSORY
TB	TACK BOARD
TC	TOP CHORD
TCX	TOP CHORD EXTENSION
TEL	TELEPHONE
TEMP	TEMPERATURE
THK	THICK
TOB	TOP OF BEAM
TOF	TOP OF FOOTING
TOJ	TOP OF JOIST
TOL	TOP OF LEDGE
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TOW	TOP OF WALL
TS	TUBE STEEL
TV	TELEVISION
TYP	TYPICAL
TZ	TERRAZZO
TZT	TERRAZZO TILE
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
VBS	VOLLEYBALL STANDARD
VCT	VINYL COMPOSITION TILE
VDB	VISUAL DISPLAY BOARD
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VIN	VINYL
VOL	VOLUME
VRB	VENTED RUBBER BASE
W	WEST
W/	WITH
WAF	WOOD ATHLETIC FLOOR
WB	WOOD BASE
WC	WALL COVERING
WD	WOOD
W/O	WITHOUT
W.P.	WORKING POINT
WPF	WATERPROOF
WT	WEIGHT
YD	YARD

ARCHITECTURAL SYMBOLS



MATERIAL SYMBOLS

PLAN & SECTION INDICATIONS



KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

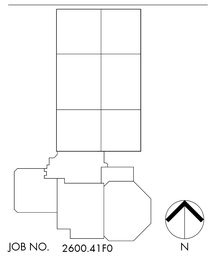
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

N

SHEET TITLE

GENERAL INFORMATION

SHEET NO.

G020

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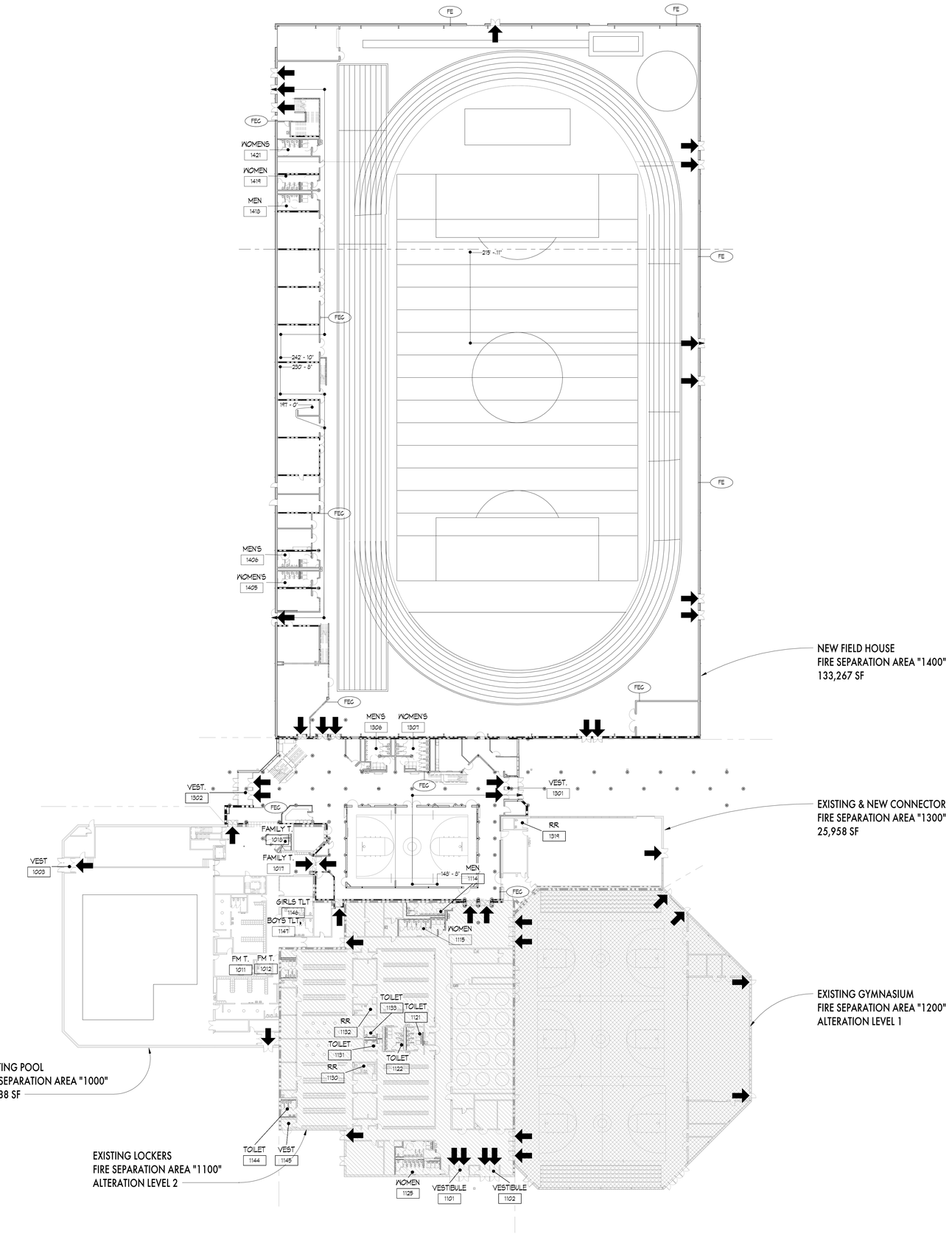


1 FIRST FLOOR CODE COMPLIANCE PLAN
1" = 30'-0"

LIFE SAFETY PLAN LEGEND

- NON-COMBUSTIBLE CONSTRUCTION
- EXISTING NON-COMBUSTIBLE CONSTRUCTION
- 1 HOUR FIRE RATED CONSTRUCTION
- EXISTING 1 HOUR FIRE RATED CONSTRUCTION
- 2 HOUR FIRE RATED CONSTRUCTION
- EXISTING 2 HOUR FIRE RATED CONSTRUCTION
- 0 HOUR - SMOKE TIGHT
- EXIT (BUILDING OR HORIZONTAL)
- EXIT (BUILDING OR HORIZONTAL) - AT LEVEL BELOW
- PATH OF EXIT TRAVEL
- X'-XX" EXIT TRAVEL DISTANCE
- PATH OF EXIT TRAVEL - CONTINUES ON LEVEL BELOW
- IMAGINARY PROPERTY LINE PER 105 - BUILDINGS ON THE SAME LOT
- 2 HOUR FIRE RATED PORTAL FRAME, REFER TO STRUCTURAL
- OVERHEAD COILING FIRE DOOR - 90 MN RATED
- FEC FIRE EXTINGUISHER CABINET
- FE FIRE EXTINGUISHER ON BRACKET

GENERAL NOTES

1. CORRIDOR WALLS SHALL EXTEND TIGHT TO UNDERSIDE OF DECK TO RESIST THE PASSAGE OF SMOKE.
2. SEAL ALL PENETRATIONS AND OPENINGS IN FIRE RATED CONSTRUCTION WITH EQUAL OR GREATER RATED SEALANT, FIRE STOPPING, OR CONSTRUCTION.
3. THIS PLAN HAS BEEN DEVELOPED BASED ON EXISTING DRAWINGS FOUND. VERIFY PRIOR TO ORDER OF ANY DOORS, FRAMES AND GLAZING FOR CORRIDOR WALLS ANY RATING MARKING ABOVE CEILING.
4. FIRE EXTINGUISHER LOCATIONS SHALL BE FINALIZED UPON FIRE MARSHAL AND LOCAL FIRE DEPT. REVIEW.

MEANS OF EGRESS REQUIREMENTS

1004 - OCCUPANT LOAD: SEE PLANS AND ROOM SCHEDULE FOR ADDITIONAL INFORMATION
- EXISTING (UNITS 1000/2000-1200/2200): 1,912
- CONNECTOR LOBBY (UNIT 1300/2300): 509
- FIELD HOUSE (UNIT 1400/2400): 9,198
- TOTAL FOR COMPLEX: **6,219**

1006 - REQUIRED NUMBER OF EXITS
- EXISTING: 4 EXITS REQUIRED
- CONNECTOR: 3 EXITS REQUIRED
- FIELD HOUSE: 4 EXITS REQUIRED

1028 - HORIZONTAL EXITS: ALLOWED UP TO 50% OF REQUIRED EXITS FROM A SPACE

1030 - MAIN ENTRANCE SHALL MEET 50% OF ASSEMBLY OCCUPANT LOAD FOR EGRESS

	ALLOWED
1006 - SINGLE EXIT SPACE:	MAX 49 OCCUPANTS
1006 - COMMON PATH:	MAX 75'
1017 - EXIT TRAVEL DISTANCE:	MAX 250'
1020 - DEAD END CORRIDOR:	MAX 20'
1022 - CORRIDOR WALLS	NO RATING REQUIRED
1030 - ASSEMBLY SEATING COMMON PATH:	30'

BUILDING ENCLOSURE

5.2 - NEW CONSTRUCTION WILL COMPLY WITH PRESCRIPTIVE BUILDING ENVELOPE COMPLIANCE PATH

5.4 - CONTINUOUS AIR BARRIER REQUIRED
DESIGN AND INSTALLATION VERIFICATION PROGRAM IN PLACE FOR COMPLIANCE
WHOLE BUILDING PRESSURIZATION TESTING TO BE CONDUCTED FOR COMMISSIONING DATA

5.5 - PRESCRIPTIVE REQUIREMENTS BY COMPONENT

ROOFS	INSULATION ENTIRELY ABOVE DECK	R-30 C.I.
WALLS	MASS	R-11.4 C.I.
	METAL	R-19 C.I.
FLOOR	SLAB-ON-GRADE	R-15 - FOR 24" (ALL R VALUES ARE MINIMUMS)
DOORS	OPAQUE SWINGING	U-0.370
	OPAQUE OVERHEAD PANEL	U-0.310
	ENTRANCE DOOR ASSEMBLY	U-0.83 & SHGC-0.33
WINDOWS	FIXED	U-0.36 & SHGC-0.33
SKYLIGHTS	ALL	U-0.50 & SHGC-0.40 (ALL U & SHGC VALUES ARE MAXIMUMS)

PLUMBING FIXTURES

403 - REQUIRED FIXTURES:	PROVIDED FIXTURES:
MENS WATER CLOSETS = 33	*MENS WATER CLOSETS = 84 (24 URINALS)*
MENS LAVATORIES = 16	*MENS LAVATORIES = 24*
WOMENS WATER CLOSETS = 64	*WOMENS WATER CLOSETS = 61 (BY VARIANCE)*
WOMENS LAVATORIES = 21	*WOMENS LAVATORIES = 32*
DRINKING FOUNTAINS = 7	*DRINKING FOUNTAINS = 11*
SERVICE SINKS = 3	*SERVICE SINKS = 6*

BUILDING CODE INFORMATION

BUILDING CODES:	MICHIGAN BUILDING CODE 2021 (IBC W/ AMENDMENTS)
BARRIER FREE DESIGN:	MICHIGAN ACCESSIBILITY CODE 2017 (A117.1 W/ AMENDMENTS)
PLUMBING CODE:	MICHIGAN PLUMBING CODE 2021 (IPC W/ AMENDMENTS)
MECHANICAL CODE:	MICHIGAN MECHANICAL CODE 2021 (IMC W/ AMENDMENTS)
ELECTRICAL CODE:	MICHIGAN ELECTRICAL CODE 2023 (NFPA 70 W/ AMENDMENTS)
ENERGY CODE:	MICHIGAN COMMERCIAL ENERGY CODE 2018 (ASHRAE 90.1-2016)
REHABILITATION CODE:	MICHIGAN REHAB CODE 2021 (EBC W/ AMENDMENTS)

'EXISTING' UNITS 1000/2000 (NO CHANGE IN USE/OCCUPANCY)

303 - OCCUPANCY:	A-4 (INDOOR SPORTING, EVENTS, AND ACTIVITIES W/ SPECTATOR SEATING)
504 - ALLOWABLE:	HEIGHT = 75' STORIES = 3
506 - ALLOWABLE:	AREA / FLOOR = 28,500 SF
601 - CONSTRUCTION TYPE: II B	
PRIMARY FRAME:	NO RATING
BEARING WALL:	NO RATING
NONBEARING WALL:	NO RATING
EXTERIOR WALL:	1 HR RATED WHERE FIRE SEPARATION DISTANCE IS LESS THAN 10'
FLOOR & ROOF:	NO RATINGS
603 - MATERIALS:	NON-COMBUSTIBLE
707 - HORIZONTAL EXIT:	2 HR RATED FIRE BARRIER
716 - OPENINGS:	DOOR IN 2 HR FIRE BARRIER: 1 1/2 HR RATED DOOR IN 1 HR EXTERIOR WALL: 3/4 HR RATED WINDOW IN 1 HR EXTERIOR WALL: 3/4 HR RATED WINDOW IN FIRE BARRIER: RATED GLAZING PER ASTM E119 OR UL 263
903 - FIRE SUPPRESSION:	AUTOMATIC SPRINKLER SYSTEM PROVIDED
907 - FIRE ALARM:	ALARM AND DETECTION WITH EMERGENCY VOICE ALARM PROVIDED

'EXISTING' UNITS 1100/2100 (NO CHANGE IN USE/OCCUPANCY, ALTERATION LEVEL 2)

303 - OCCUPANCY:	A-4 (INDOOR SPORTING, EVENTS, AND ACTIVITIES)
504 - ALLOWABLE:	HEIGHT = 55' STORIES = 2
506 - ALLOWABLE:	AREA / FLOOR = 9,500 SF
601 - CONSTRUCTION TYPE: II B	
PRIMARY FRAME:	NO RATING
BEARING WALL:	NO RATING
NONBEARING WALL:	NO RATING
EXTERIOR WALL:	1 HR RATED WHERE FIRE SEPARATION DISTANCE IS LESS THAN 10'
FLOOR & ROOF:	NO RATINGS
603 - MATERIALS:	NON-COMBUSTIBLE
707 - HORIZONTAL EXIT:	2 HR RATED FIRE BARRIER
716 - OPENINGS:	DOOR IN 2 HR FIRE BARRIER: 1 1/2 HR RATED DOOR IN 1 HR EXTERIOR WALL: 3/4 HR RATED WINDOW IN 1 HR EXTERIOR WALL: 3/4 HR RATED WINDOW IN FIRE BARRIER: RATED GLAZING PER ASTM E119 OR UL 263
903 - FIRE SUPPRESSION:	PARTIALLY SPRINKLERED, NOT REQUIRED IN NEW CONSTRUCTION PER MRC 2021- 903.2.2
907 - FIRE ALARM:	ALARM AND DETECTION WITH EMERGENCY VOICE ALARM PROVIDED

'EXISTING' UNITS 1200/2200 (NO CHANGE IN USE/OCCUPANCY, ALTERATION LEVEL 1)

303 - OCCUPANCY:	A-4 (INDOOR SPORTING, EVENTS, AND ACTIVITIES W/ SPECTATOR SEATING)
504 - ALLOWABLE:	HEIGHT = 55' STORIES = 5
506 - ALLOWABLE:	AREA / FLOOR = 9,500 SF
601 - CONSTRUCTION TYPE: II B	
PRIMARY FRAME:	NO RATING
BEARING WALL:	NO RATING
NONBEARING WALL:	NO RATING
EXTERIOR WALL:	1 HR RATED WHERE FIRE SEPARATION DISTANCE IS LESS THAN 10'
FLOOR & ROOF:	NO RATINGS
603 - MATERIALS:	NON-COMBUSTIBLE
707 - HORIZONTAL EXIT:	2 HR RATED FIRE BARRIER
716 - OPENINGS:	DOOR IN 2 HR FIRE BARRIER: 1 1/2 HR RATED DOOR IN 1 HR EXTERIOR WALL: 3/4 HR RATED WINDOW IN 1 HR EXTERIOR WALL: 3/4 HR RATED WINDOW IN FIRE BARRIER: RATED GLAZING PER ASTM E119 OR UL 263
903 - FIRE SUPPRESSION:	NOT SPRINKLERED, NOT REQUIRED IN NEW CONSTRUCTION PER MRC 2021- 903.1
907 - FIRE ALARM:	ALARM AND DETECTION WITH EMERGENCY VOICE ALARM PROVIDED

'CONNECTOR' UNIT 1300/2300

303 - OCCUPANCY:	A-3 (GYMNASIUM W/O SPECTATOR SEATING)
504 - ALLOWABLE:	HEIGHT = 75' STORIES = 3
506 - ALLOWABLE:	AREA / FLOOR = 28,500 SF
601 - CONSTRUCTION TYPE: II B	
PRIMARY FRAME:	NO RATING
EXT BEARING WALL:	2 HR
INT BEARING WALL:	NO RATING
INT NONBEARING WALL:	NO RATING
EXT NONBEARING WALL:	1 HR RATED WHERE FIRE SEPARATION DISTANCE IS LESS THAN 30'
FLOOR & ROOF:	NO RATINGS
603 - MATERIALS:	NON-COMBUSTIBLE - FOR EXTERIOR WALL CONSTRUCTION
707 - HORIZONTAL EXIT:	2 HR RATED FIRE BARRIER
716 - OPENINGS:	DOOR IN 2 HR FIRE BARRIER: 1 1/2 HR RATED DOOR IN 2 HR EXT WALL: 1 1/2 HR RATED DOOR IN 1 HR EXTERIOR WALL: 3/4 HR RATED WINDOW IN 1 HR EXTERIOR WALL: 3/4 HR RATED WINDOW IN FIRE BARRIER: RATED GLAZING PER ASTM E119 OR UL 263
903 - FIRE SUPPRESSION:	AUTOMATIC SPRINKLER SYSTEM PROVIDED IN NEW & EXISTING CONSTRUCTION
907 - FIRE ALARM:	ALARM AND DETECTION WITH EMERGENCY VOICE ALARM PROVIDED

'FIELD HOUSE' UNIT 1400/2400

303 - OCCUPANCY:	A-4 (INDOOR SPORTING, EVENTS, AND ACTIVITIES W/ SPECTATOR SEATING)
504 - ALLOWABLE:	HEIGHT = 100' STORIES = 12
505 - MEZZANINE:	ALLOWED, UP TO 50% OF ROOM & UP TO 10% ENCLOSED
506 - ALLOWABLE:	AREA / FLOOR = UNLIMITED
601 - CONSTRUCTION TYPE: I B	
PRIMARY FRAME:	2 HR - WHERE SUPPORTING A FLOOR 1 HR - WHERE SUPPORTING ROOF ONLY NO RATING - WHERE ROOF MEMBERS ARE MORE THAN 20' ABOVE FLOOR
BEARING WALL:	2 HR
INT NONBEARING WALL:	NO RATING
EXT NONBEARING WALL:	1 HR RATED WHERE FIRE SEPARATION DISTANCE IS LESS THAN 30'
FLOOR CONSTRUCTION:	2 HR
ROOF CONSTRUCTION:	NO RATING - WHERE ROOF IS MORE THAN 20' ABOVE FLOOR
603 - MATERIALS:	NON-COMBUSTIBLE
707 - HORIZONTAL EXIT:	2 HR RATED FIRE BARRIER
716 - OPENINGS:	DOOR IN 2 HR FIRE BARRIER: 1 1/2 HR RATED DOOR IN 2 HR EXT WALL: 1 1/2 HR RATED DOOR IN 1 HR EXTERIOR WALL: 3/4 HR RATED WINDOW IN 1 HR EXTERIOR WALL: 3/4 HR RATED WINDOW IN FIRE BARRIER: RATED GLAZING PER ASTM E119 OR UL 263
903 - FIRE SUPPRESSION:	AUTOMATIC SPRINKLER SYSTEM PROVIDED
907 - FIRE ALARM:	ALARM AND DETECTION WITH EMERGENCY VOICE ALARM PROVIDED

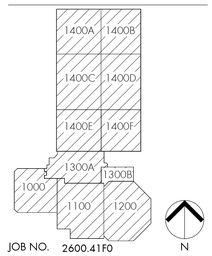
KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
LIFE SAFETY PLAN - FIRST FLOOR

SHEET NO.
G201

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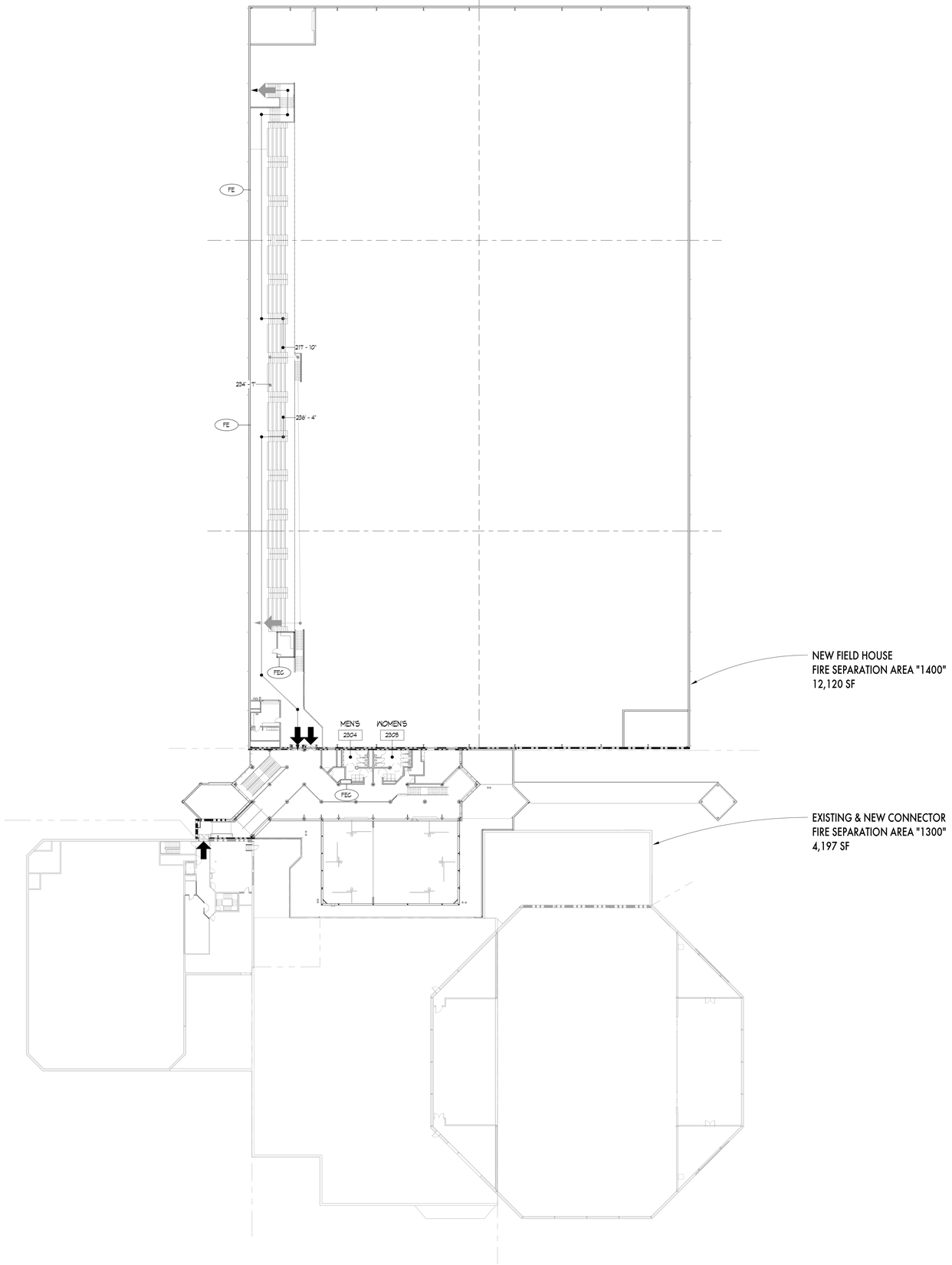

1 SECOND FLOOR CODE COMPLIANCE PLAN
1" = 30'-0"

LIFE SAFETY PLAN LEGEND

- NON-COMBUSTIBLE CONSTRUCTION
- EXISTING NON-COMBUSTIBLE CONSTRUCTION
- 1 HOUR FIRE RATED CONSTRUCTION
- EXISTING 1 HOUR FIRE RATED CONSTRUCTION
- 2 HOUR FIRE RATED CONSTRUCTION
- EXISTING 2 HOUR FIRE RATED CONSTRUCTION
- 0 HOUR - SMOKE TIGHT
- EXIT (BUILDING OR HORIZONTAL)
- EXIT (BUILDING OR HORIZONTAL) - AT LEVEL BELOW
- PATH OF EXIT TRAVEL
- X'-XX" EXIT TRAVEL DISTANCE
- PATH OF EXIT TRAVEL - CONTINUES ON LEVEL BELOW
- IMAGINARY PROPERTY LINE PER 705 - BUILDINGS ON THE SAME LOT
- 2 HOUR FIRE RATED PORTAL FRAME, REFER TO STRUCTURAL
- OVERHEAD COILING FIRE DOOR - 90 MIN RATED
- FEC FIRE EXTINGUISHER CABINET
- FE FIRE EXTINGUISHER ON BRACKET

GENERAL NOTES

1. CORRIDOR WALLS SHALL EXTEND TIGHT TO UNDERSIDE OF DECK TO RESIST THE PASSAGE OF SMOKE.
2. SEAL ALL PENETRATIONS AND OPENINGS IN FIRE RATED CONSTRUCTION WITH EQUAL OR GREATER RATED SEALANT, FIRE STOPPING, OR CONSTRUCTION.
3. THIS PLAN HAS BEEN DEVELOPED BASED ON EXISTING DRAWINGS FOUND. VERIFY PRIOR TO ORDER OF ANY DOORS, FRAMES AND GLAZING FOR CORRIDOR WALLS ANY RATING MARKING ABOVE CEILING.
4. FIRE EXTINGUISHER LOCATIONS SHALL BE FINALIZED UPON FIRE MARSHAL AND LOCAL FIRE DEPT. REVIEW.

MEANS OF EGRESS REQUIREMENTS

1004 - OCCUPANT LOAD: SEE PLANS AND ROOM SCHEDULE FOR ADDITIONAL INFORMATION
- EXISTING (UNITS 1000/2000-1200/2200): 1,912
- CONNECTOR LOBBY (UNIT 1300/2300): 508
- FIELD HOUSE (UNIT 1400/2400): 3,793
- TOTAL FOR COMPLEX: **6,213**

1006 - REQUIRED NUMBER OF EXITS
- EXISTING: 4 EXITS REQUIRED
- CONNECTOR: 3 EXITS REQUIRED
- FIELD HOUSE: 4 EXITS REQUIRED

1028 - HORIZONTAL EXITS: ALLOWED UP TO 50% OF REQUIRED EXITS FROM A SPACE

1030 - MAIN ENTRANCE SHALL MEET 50% OF ASSEMBLY OCCUPANT LOAD FOR EGRESS

	ALLOWED
1006 - SINGLE EXIT SPACE:	MAX 49 OCCUPANTS
1006 - COMMON PATH:	MAX 75'
1017 - EXIT TRAVEL DISTANCE:	MAX 250'
1020 - DEAD END CORRIDOR:	MAX 20'
1020 - CORRIDOR WALLS	NO RATING REQUIRED
1030 - ASSEMBLY SEATING COMMON PATH:	30'

BUILDING ENCLOSURE

5.2 - NEW CONSTRUCTION WILL COMPLY WITH PRESCRIPTIVE BUILDING ENVELOPE COMPLIANCE PATH

5.4 - CONTINUOUS AIR BARRIER REQUIRED
DESIGN AND INSTALLATION VERIFICATION PROGRAM IN PLACE FOR COMPLIANCE
WHOLE BUILDING PRESSURIZATION TESTING TO BE CONDUCTED FOR COMMISSIONING DATA

5.5 - PRESCRIPTIVE REQUIREMENTS BY COMPONENT

ROOFS	INSULATION ENTIRELY ABOVE DECK	R-30 C.I.
WALLS	MASS	R-11.4 C.I.
	METAL	R-19 C.I.
FLOOR	SLAB-ON-GRADE	R-15 - FOR 24' (ALL R VALUES ARE MINIMUMS)
DOORS	OPAQUE SWINGING	U-0.370
	OPAQUE OVERHEAD PANEL	U-0.370
	ENTRANCE DOOR ASSEMBLY	U-0.83 ǂ SHGC-0.33
WINDOWS	FIXED	U-0.36 ǂ SHGC-0.35
SKYLIGHTS	ALL	U-0.50 ǂ SHGC-0.40 (ALL U ǂ SHGC VALUES ARE MAXIMUMS)

PLUMBING FIXTURES

403 - REQUIRED FIXTURES:	PROVIDED FIXTURES:
MENS WATER CLOSETS = 33	MENS WATER CLOSETS = 54 (24 URINALS)
MENS LAVATORIES = 16	MENS LAVATORIES = 24
WOMENS WATER CLOSETS = 64	WOMENS WATER CLOSETS = 61 (BY VARIANCE)
WOMENS LAVATORIES = 21	WOMENS LAVATORIES = 32
DRINKING FOUNTAINS = 7	DRINKING FOUNTAINS = 11
SERVICE SINKS = 3	SERVICE SINKS = 3

BUILDING CODE INFORMATION

BUILDING CODES: MICHIGAN BUILDING CODE 2021 (IBC W/ AMENDMENTS)

BARRIER FREE DESIGN: MICHIGAN ACCESSIBILITY CODE 2017 (A117.1 W/ AMENDMENTS)

PLUMBING CODE: MICHIGAN PLUMBING CODE 2021 (IPC W/ AMENDMENTS)

MECHANICAL CODE: MICHIGAN MECHANICAL CODE 2021 (IMC W/ AMENDMENTS)

ELECTRICAL CODE: MICHIGAN ELECTRICAL CODE 2023 (NFPA 70 W/ AMENDMENTS)

ENERGY CODE: MICHIGAN COMMERCIAL ENERGY CODE 2018 (ASHRAE 90.1-2018)

REHABILITATION CODE: MICHIGAN REHAB CODE 2021 (IEBC W/ AMENDMENTS)

'EXISTING' UNITS 1000/2000 (NO CHANGE IN USE/OCCUPANCY)

303 - OCCUPANCY: A-4 (INDOOR SPORTING, EVENTS, AND ACTIVITIES W/ SPECTATOR SEATING)

504 - ALLOWABLE: HEIGHT = 75'
STORIES = 3
506 - ALLOWABLE: AREA / FLOOR = 29,500 SF

601 - CONSTRUCTION TYPE: II B

PRIMARY FRAME:	NO RATING
BEARING WALL:	NO RATING
NONBEARING WALL:	NO RATING
EXTERIOR WALL:	1 HR RATED WHERE FIRE SEPARATION DISTANCE IS LESS THAN 10'
FLOOR & ROOF:	NO RATINGS

603 - MATERIALS: NON-COMBUSTIBLE

707 - HORIZONTAL EXIT: 2 HR RATED FIRE BARRIER

716 - OPENINGS:

DOOR IN 2 HR FIRE BARRIER:	1 1/2 HR RATED
DOOR IN 1 HR EXTERIOR WALL:	3/4 HR RATED
WINDOW IN 1 HR EXTERIOR WALL:	3/4 HR RATED
WINDOW IN FIRE BARRIER:	RATED GLAZING PER ASTM E119 OR UL 263

903 - FIRE SUPPRESSION: AUTOMATIC SPRINKLER SYSTEM PROVIDED

907 - FIRE ALARM: ALARM AND DETECTION WITH EMERGENCY VOICE ALARM PROVIDED

'EXISTING' UNITS 1100/2100 (NO CHANGE IN USE/OCCUPANCY, ALTERATION LEVEL 2)

303 - OCCUPANCY: A-4 (INDOOR SPORTING, EVENTS, AND ACTIVITIES)

504 - ALLOWABLE: HEIGHT = 55'
STORIES = 2
506 - ALLOWABLE: AREA / FLOOR = 9,500 SF

601 - CONSTRUCTION TYPE: II B

PRIMARY FRAME:	NO RATING
BEARING WALL:	NO RATING
NONBEARING WALL:	NO RATING
EXTERIOR WALL:	1 HR RATED WHERE FIRE SEPARATION DISTANCE IS LESS THAN 10'
FLOOR & ROOF:	NO RATINGS

603 - MATERIALS: NON-COMBUSTIBLE

707 - HORIZONTAL EXIT: 2 HR RATED FIRE BARRIER

716 - OPENINGS:

DOOR IN 2 HR FIRE BARRIER:	1 1/2 HR RATED
DOOR IN 1 HR EXTERIOR WALL:	3/4 HR RATED
WINDOW IN 1 HR EXTERIOR WALL:	3/4 HR RATED
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907 - FIRE ALARM: ALARM AND DETECTION WITH EMERGENCY VOICE ALARM PROVIDED

'EXISTING' UNITS 1200/2200 (NO CHANGE IN USE/OCCUPANCY, ALTERATION LEVEL 1)

303 - OCCUPANCY: A-4 (INDOOR SPORTING, EVENTS, AND ACTIVITIES W/ SPECTATOR SEATING)

504 - ALLOWABLE: HEIGHT = 55'
STORIES = 2
506 - ALLOWABLE: AREA / FLOOR = 9,500 SF

601 - CONSTRUCTION TYPE: II B

PRIMARY FRAME:	NO RATING
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NONBEARING WALL:	NO RATING
EXTERIOR WALL:	1 HR RATED WHERE FIRE SEPARATION DISTANCE IS LESS THAN 10'
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WINDOW IN 1 HR EXTERIOR WALL:	3/4 HR RATED
WINDOW IN FIRE BARRIER:	RATED GLAZING PER ASTM E119 OR UL 263

903 - FIRE SUPPRESSION: NOT SPRINKLERED. NOT REQUIRED IN NEW CONSTRUCTION PER MRC 2021- 903.1

907 - FIRE ALARM: ALARM AND DETECTION WITH EMERGENCY VOICE ALARM PROVIDED

'CONNECTOR' UNIT 1300/2300

303 - OCCUPANCY: A-3 (GYMNASIUM W/O SPECTATOR SEATING)

504 - ALLOWABLE: HEIGHT = 75'
STORIES = 3
506 - ALLOWABLE: AREA / FLOOR = 29,500 SF

601 - CONSTRUCTION TYPE: III B

PRIMARY FRAME:	NO RATING
EXT BEARING WALL:	2 HR
INT BEARING WALL:	NO RATING
INT NONBEARING WALL:	NO RATING
EXT NONBEARING WALL:	1 HR RATED WHERE FIRE SEPARATION DISTANCE IS LESS THAN 30'
FLOOR & ROOF:	NO RATINGS

603 - MATERIALS: NON-COMBUSTIBLE - FOR EXTERIOR WALL CONSTRUCTION

707 - HORIZONTAL EXIT: 2 HR RATED FIRE BARRIER

716 - OPENINGS:

DOOR IN 2 HR FIRE BARRIER:	1 1/2 HR RATED
DOOR IN 2 HR EXT WALL:	1 1/2 HR RATED
DOOR IN 1 HR EXTERIOR WALL:	3/4 HR RATED
WINDOW IN 1 HR EXTERIOR WALL:	3/4 HR RATED
WINDOW IN FIRE BARRIER:	RATED GLAZING PER ASTM E119 OR UL 263

903 - FIRE SUPPRESSION: AUTOMATIC SPRINKLER SYSTEM PROVIDED IN NEW & EXISTING CONSTRUCTION

907 - FIRE ALARM: ALARM AND DETECTION WITH EMERGENCY VOICE ALARM PROVIDED

'FIELD HOUSE' UNIT 1400/2400

303 - OCCUPANCY: A-4 (INDOOR SPORTING, EVENTS, AND ACTIVITIES W/ SPECTATOR SEATING)

504 - ALLOWABLE: HEIGHT = 180'
STORIES = 12
505 - MEZZANINE: ALLOWED UP TO 50% OF ROOM & UP TO 10% ENCLOSED
506 - ALLOWABLE: AREA / FLOOR = UNLIMITED

601 - CONSTRUCTION TYPE: I B

PRIMARY FRAME:	2 HR - WHERE SUPPORTING A FLOOR 1 HR - WHERE SUPPORTING ROOF ONLY NO RATING - WHERE ROOF MEMBERS ARE MORE THAN 20' ABOVE FLOOR
BEARING WALL:	2 HR
INT NONBEARING WALL:	NO RATING
EXT NONBEARING WALL:	1 HR RATED WHERE FIRE SEPARATION DISTANCE IS LESS THAN 30'
FLOOR CONSTRUCTION:	2 HR
ROOF CONSTRUCTION:	NO RATING - WHERE ROOF IS MORE THAN 20' ABOVE FLOOR

603 - MATERIALS: NON-COMBUSTIBLE

707 - HORIZONTAL EXIT: 2 HR RATED FIRE BARRIER

716 - OPENINGS:

DOOR IN 2 HR FIRE BARRIER:	1 1/2 HR RATED
DOOR IN 2 HR EXT WALL:	1 1/2 HR RATED
DOOR IN 1 HR EXTERIOR WALL:	3/4 HR RATED
WINDOW IN 1 HR EXTERIOR WALL:	3/4 HR RATED
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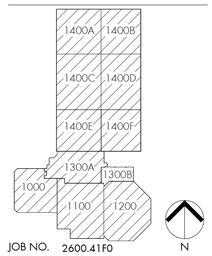
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
LIFE SAFETY PLAN - SECOND FLOOR

SHEET NO.
G202

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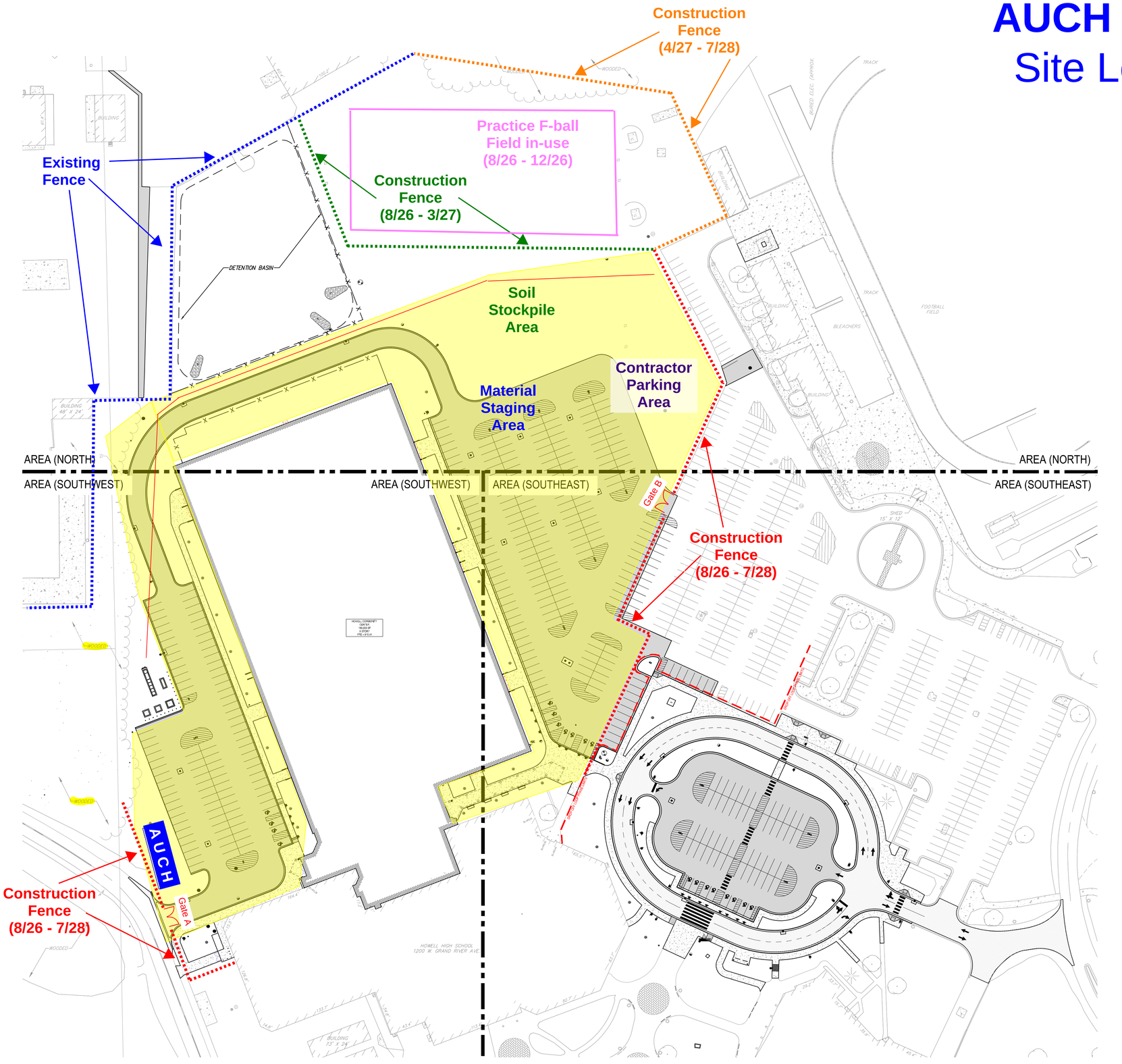
AUCH Construction
Site Logistics Plan

February 12, 2026



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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
DROP OFF LOOP (CD)	01.22.2025

KEY PLAN

GRAPHIC SCALE
0 25 50 100
(IN FEET)
1 inch = 50 ft.

NORTH

JOB NO. 2600.41E

SHEET TITLE
GENERAL SITE LAYOUT

SHEET NO.
C1.0

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LEGEND

- MANHOLE
- CATCH BASIN
- SEWER CLEAN OUT
- GAS METER
- GAS SHUT OFF VALVE
- VALVE BOX
- GATE VALVE & WELL
- WATER SHUT OFF VALVE
- FIRE HYDRANT
- SPRINKLER VALVE BOX
- LAWN SPRINKLER HEAD
- UNVERIFIED MAPPED OBJECT
- ELECTRIC RISER OR METER
- TELEPHONE RISER
- CABLE TV RISER
- AIR CONDITION UNIT
- UTILITY POLE
- UTILITY POLE W/ LAMP EXTENSION (ARROW INDICATES DIRECTION OF ARM)
- LIGHT POLE
- LIGHT POLE WITH LAMP EXTENSION
- TRAFFIC SIGNAL
- POLE W/ TRAFFIC SIGNAL (OVER ROAD)
- GUY GUY WIRE
- GROUND LEVEL / DECORATIVE LIGHTING
- FLAG POLE
- METAL OR CONC. POST
- MAILBOX
- SIGN
- WATER FOUNTAIN
- PARKING METER
- BILLBOARD OR LARGE SIGN
- BASKETBALL HOOP
- BOULDER
- STATUE OR SCULPTURE
- BENCH — BENCH
- BIKE RACK — BIKE RACK
- DETECTABLE WARNING STRIP
- PICNIC TABLE
- SOCCER GOAL — SOCCER GOAL
- STUMP
- DS-S — DOWNSPOUT INTO STORM DRAIN
- DS-G — DOWNSPOUT TO GROUND
- CONIFEROUS TREE
- DECIDUOUS TREE
- DECIDUOUS SHRUB
- CONIFEROUS SHRUB
- SECTION CORNER
- SDA#10 — TRAVERSE POINT
- STRUCTURE NUMBER
- SDA POINT No.
- 455.00 — SPOT ELEVATION
- TC — TOP OF CURB ELEVATION
- GU — GUTTER ELEVATION
- TP — TOP OF PAVEMENT ELEVATION
- EM — EDGE OF METAL ELEVATION
- TW — TOP OF WALK ELEVATION
- TWALL — TOP OF WALL ELEVATION
- BWALL — BOTTOM OF WALL ELEVATION
- GR — GROUND ELEVATION
- UG — UNDERGROUND
- FO — FIBER OPTIC
- CONC — CONCRETE
- ASPH — ASPHALT
- OVHG — OVERHANG
- FF — FINISH FLOOR ELEVATION
- DL — DOOR LEDGE ELEVATION
- F.I. — FOUND IRON
- F.I.P. — FOUND IRON PIPE
- MON — FOUND MONUMENT
- F.P.K. — FOUND P.K. NAIL
- S.I. — SET IRON W/SDA CAP
- S.P.K. — SET P.K. NAIL
- S.P.K./TAG — SET P.K. NAIL W/SDA TAG
- MAG/TAG — SET MAGNETIC NAIL W/SDA TAG
- M — MEASURED
- R — RECORD
- C — CALCULATED
- INV. — INVERT ELEVATION
- CMP — CORRUGATED METAL PIPE
- G — GAS
- SN — SANITARY SEWER (SAN)
- ST — STORM SEWER (STM)
- WM — WATERMAIN (WM)
- OH — OVERHEAD WIRE
- CS — COMBINED SEWER
- STE — STEAM LINE
- O — OIL LINE
- F — UG FIBER (COMM.)
- E — UG ELECTRIC (ELEC.)
- T — UG PHONE (PH)
- C — UG CABLE (CBL)
- CHAIN LINK FENCE (CL)
- WOOD FENCE
- BOVEL WIRE FENCE (WW)
- GUARD RAIL
- EDGE OF BRUSH/WOODS
- CENTERLINE OF DITCH
- CULVERT
- 650 — MAJOR CONTOUR
- 651 — MINOR CONTOUR
- BOUNDARY LINES
- ROW LINES
- SECTION LINES
- PROPERTY LINES
- BUILDING
- ASPHALT
- CONCRETE
- GRAVEL/ DIRT/ MULCH
- BRICK / PAVERS
- WATER
- WATER W/ VEGETATION

Know what's below. Call before you dig.



SITE

LOCATION MAP
NOT TO SCALE

UTILITY CONTACTS

CABLE SERVICE
COMCAST
C/O 3GNA NETWORK SERVICES
27096 OAKMEAD DR.
PERRYSBURG, OH 43551
419-874-9262 EXT. 208

TELEPHONE SERVICE
AT&T
CRAIG MCCREIGHT
550 S. MAPLE RD.
ANN ARBOR, MI 48103
TEL 734-996-5341

ELECTRIC SERVICE
DTE ENERGY
ONE ENERGY PLAZA
Detroit, MI 48226
SARA.FORCE@DTEENERGY.COM

GAS SERVICE
CONSUMERS ENERGY
1000 GRAND OAKS DR.
HOWELL, MI 48843
TEL 517-545-8750

WATER AND SEWER SERVICES
CITY OF HOWELL
DEPARTMENT OF PUBLIC WORKS
611 EAST GRAND RIVER AVE.
HOWELL, MI 48843
TEL 517-546-3500

NOTES

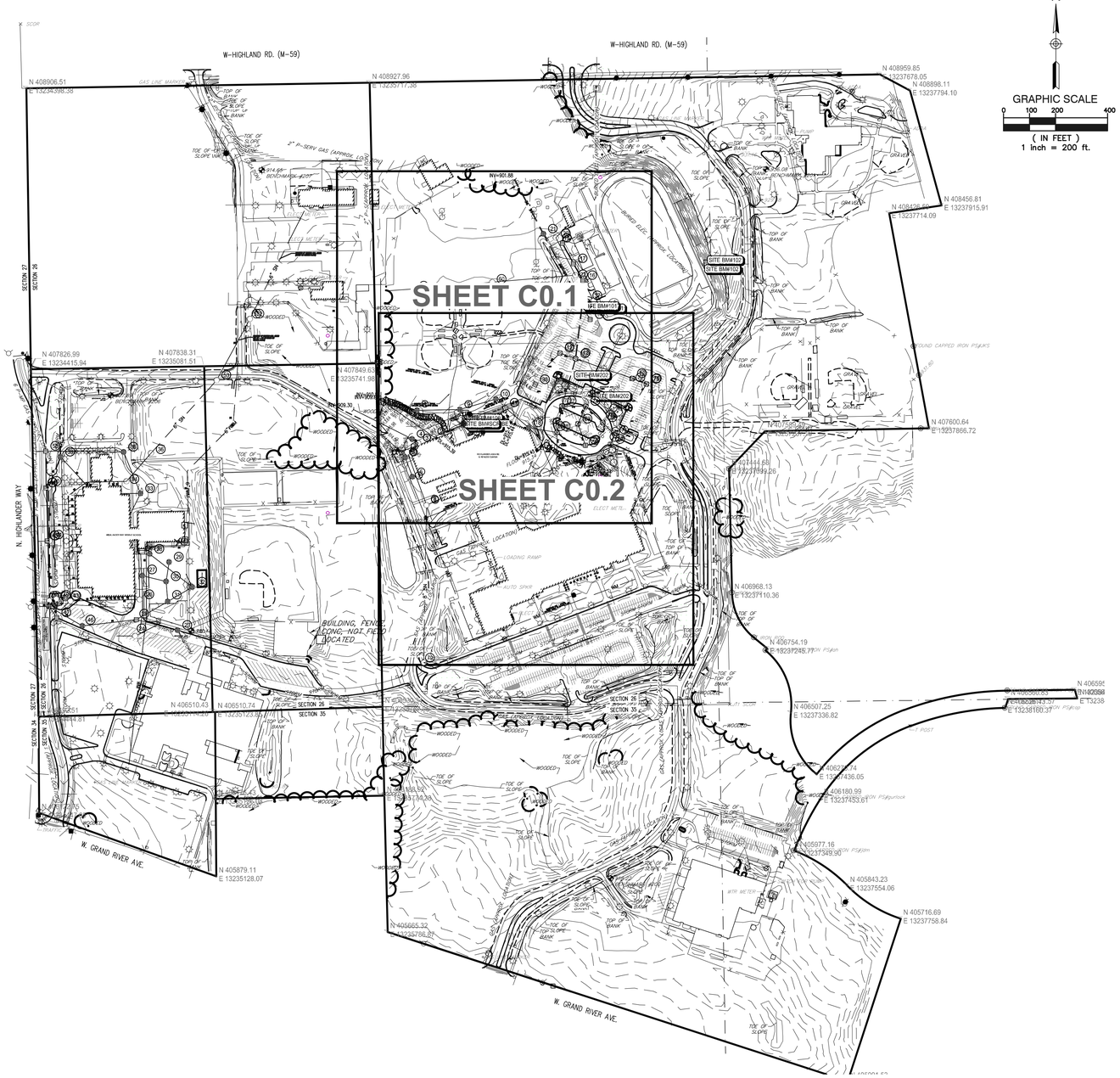
PROPERTY LINES AND SECTION LINES SHOWN ARE APPROXIMATE AND WERE BASED ON GIS DATA.

DISCLAIMER

THE SURVEY SHOWN IS ADOPTED FROM AN ORIGINAL SURVEY FROM SPICER GROUP. SPALDING DEDECKER HAS NOT VERIFIED THE ACCURACY OF THE SURVEY FROM SPICER GROUP. IF ANY DISCREPANCIES ARE FOUND BY THE CONTRACTOR, THE DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION.

LEGAL DESCRIPTION

THE EAST 1/2 OF THE SOUTHWEST 1/4 OF SECTION 26, T.3N., R.4E., CITY OF HOWELL, LIVINGSTON COUNTY (TAX I.D. 17-26-300- 011



N

GRAPHIC SCALE
0 100 200 400
(IN FEET)
1 inch = 200 ft.

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KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSED PROFESSIONAL ENGINEER
License No. 6201060447

JOB NO. 2600.41E

NORTH

SHEET TITLE
TOPOGRAPHIC SURVEY

SHEET NO.
C0.0

PLEASE RECYCLE

DISCLAIMER

THE SURVEY SHOWN IS ADOPTED FROM AN ORIGINAL SURVEY FROM SPICER GROUP. SPALDING DEDECKER HAS NOT VERIFIED THE ACCURACY OF THE SURVEY FROM SPICER GROUP. IF ANY DISCREPANCIES ARE FOUND BY THE CONTRACTOR, THE DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION.

N

GRAPHIC SCALE
0 30 60 120
(IN FEET)
1 inch = 60 ft.

LEGEND

- MANHOLE
- CATCH BASIN
- SEWER CLEAN OUT
- GAS METER
- GAS SHUT OFF VALVE
- VALVE BOX
- GATE VALVE & WELL
- WATER SHUT OFF VALVE
- FIRE HYDRANT
- SPRINKLER VALVE BOX
- LAWN SPRINKLER HEAD
- UNVERIFIED MAPPED OBJECT
- ELECTRIC RISER OR METER
- TELEPHONE RISER
- CABLE TV RISER
- AIR CONDITION UNIT
- UTILITY POLE
- UTILITY POLE W/ LAMP EXTENSION (ARROW INDICATES DIRECTION OF ARM)
- LIGHT POLE
- LIGHT POLE WITH LAMP EXTENSION
- TRAFFIC SIGNAL
- POLE W/ TRAFFIC SIGNAL (OVER ROAD)
- GUY WIRE
- GROUND LEVEL / DECORATIVE LIGHTING
- FLAG POLE
- METAL OR CONC. POST
- MAILBOX
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- WATER FOUNTAIN
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- BILLBOARD OR LARGE SIGN
- BASKETBALL HOOP
- BOULDER
- STATUE OR SCULPTURE
- BENCH
- BIKE RACK
- DETECTABLE WARNING STRIP
- PICNIC TABLE
- SOCCER GOAL
- STUMP
- DS-S DOWNSPOUT INTO STORM DRAIN
- DS-G DOWNSPOUT TO GROUND
- CONIFEROUS TREE
- DECIDUOUS TREE
- DECIDUOUS SHRUB
- CONIFEROUS SHRUB
- SECTION CORNER
- SDA#10 TRAVERSE POINT
- STRUCTURE NUMBER
- SDA POINT No.
- 955.00 SPOT ELEVATION
- TC TOP OF CURB ELEVATION
- GU GUTTER ELEVATION
- TP TOP OF PAVEMENT ELEVATION
- EM EDGE OF METAL ELEVATION
- TW TOP OF WALK ELEVATION
- T/WALL TOP OF WALL ELEVATION
- B/WALL BOTTOM OF WALL ELEVATION
- GR GROUND ELEVATION
- UG UNDERGROUND
- FO FIBER OPTIC
- CONC CONCRETE
- ASPH ASPHALT
- OVHG OVERHANG
- FF FINISH FLOOR ELEVATION
- DL DOOR LEDGE ELEVATION
- F.I. FOUND IRON
- F.I.P. FOUND IRON PIPE
- MON FOUND MONUMENT
- F.P.K. FOUND P.K. NAIL
- S.I. SET IRON W/SDA CAP
- S.P.K. SET P.K. NAIL
- S.P.K./TAG SET P.K. NAIL W/SDA TAG
- MAG/TAG SET MAGNETIC NAIL W/SDA TAG
- M MEASURED
- R RECORD
- C CALCULATED
- INV. INVERT ELEVATION
- CMP CORRUGATED METAL PIPE
- G GAS
- SN SANITARY SEWER (SAN)
- ST STORM SEWER (STM)
- WM WATERMAIN (V/M)
- OH OVERHEAD WIRE
- CS COMBINED SEWER
- STE STEAM LINE
- O OIL LINE
- F UG FIBER (COMM.)
- E UG ELECTRIC (ELEC.)
- T UG PHONE (PH)
- C UG CABLE (CBL)
- CHAIN LINK FENCE (CL)
- WOOD FENCE
- WOVEN WIRE FENCE (WW)
- GUARD RAIL
- EDGE OF BRUSH/WOODS
- CENTERLINE OF DITCH
- CULVERT
- 650 MAJOR CONTOUR
- 651 MINOR CONTOUR
- BOUNDARY LINES
- ROW LINES
- SECTION LINES
- PROPERTY LINES
- BUILDING
- ASPHALT
- CONCRETE
- GRAVEL/ DIRT/ MULCH
- BRICK / PAVERS
- WATER
- WATER W/ VEGETATION

BENCHMARKS

BM=202 – PAINTED SQUARE W/ "S" ON S. SIDE OF LIGHT POLE. LIGHT POLE IS ON THE N. SIDE OF HIGH SCHOOL CENTERLINE. LIGHT POLE IS IN BETWEEN CIRCLE DRIVE AND PARKING LOT.
NAVD88 EL. 917.92

NOTES

PROPERTY LINES AND SECTION LINES SHOWN ARE APPROXIMATE AND WERE BASED ON GIS DATA.

811 Know what's below. Call before you dig.

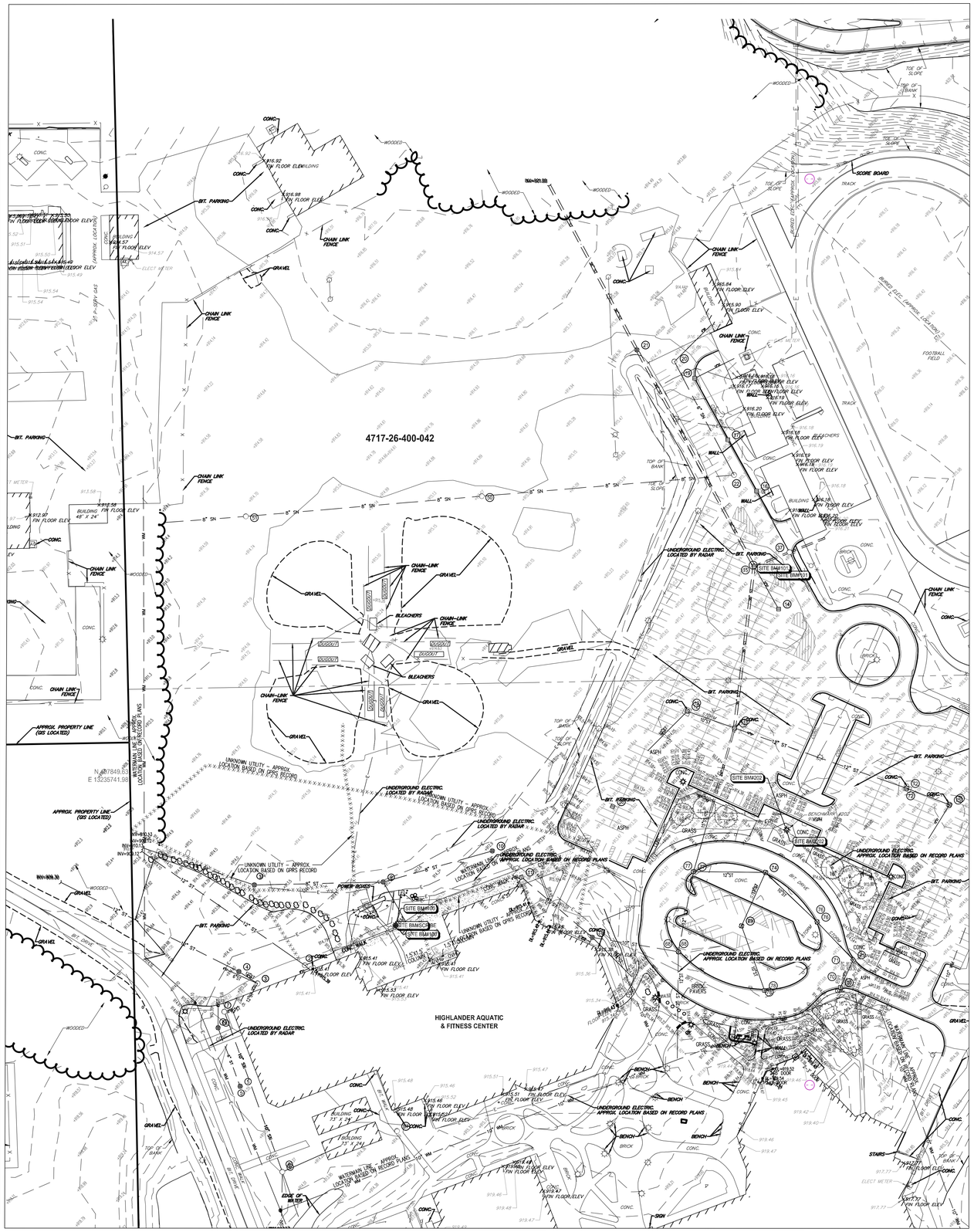
STRUCTURE TABLE

THE STRUCTURE TABLE ON THIS DRAWING IDENTIFIES THE AS-SURVEYED UNDERGROUND UTILITY MANHOLES THAT WERE FIELD MEASURED USING REASONABLE AND TRADITIONAL SURVEYING PRACTICES. PIPE SIZES, DIRECTIONS AND ELEVATIONS ARE INDICATED BY A COMBINATION OF FIELD EVIDENCE AND AVAILABLE RECORD INFORMATION. UNDERGROUND UTILITY PIPE SIZES AND CONNECTIONS ARE MANY TIMES AMBIGUOUS, SOME STRUCTURES MAY HAVE PIPES WITH UNKNOWN CONNECTIONS, SUMPS AND / OR PIPES THAT ARE FILLED WITH DEBRIS. IT WILL BE UP TO THE DESIGN ENGINEER TO LOOK AT THE PRESENTED SURVEY RESULTS AND DECIDE IF FURTHER INVESTIGATION BY OTHER METHODS SUCH AS VACUUM CLEAN OUT, UNDERGROUND RADAR, SMOKE TESTING AND PHYSICAL EXCAVATION IS REQUIRED AS AN ADDITIONAL SERVICE.

#	TYPE	RIM	SIZE	MTRL	INVERT	DIRECTION	CONNECT
1	**ROUND CATCH BASIN**	912.25	8"	PVC	910.37	WNW	E.S.
			8"	PVC	910.38	EAST	9
	TOP / WATER	910.37					
	TOP / DEBRIS	910.05					
2	**STORM MANHOLE**	915.30	8"	PVC	911.30	SE	BLDG
			12"	PVC	911.20	NW	
			8"	PVC	911.60	ENE	
3	**STORM MANHOLE**	915.27	12"	CPP	910.17	NW	4
			12"	RCP	910.27	SSW	BLDG
			6"	CPP	910.35	WNW	
4	**ROUND CATCH BASIN**	914.46	12"	RCP	909.93	NW	E.S.
			12"	CPP	909.96	SE	3
	TOP / WATER	909.93					
	TOP / DEBRIS	909.56					
5	**ROUND CATCH BASIN**	914.07	6"	CPP	912.37	NNW	8
	TOP / WATER	912.37					
	TOP / DEBRIS	911.97					
6	**SANITARY MANHOLE**	914.97	8"	CLAY	908.62	SSW	79
			8"	CLAY	909.69	ENE	
			10"	PVC	910.07	NNW	7
7	**SANITARY MANHOLE**	915.12	10"	PVC	911.04	ENE	BLDG
			10"	PVC	911.02	SSE	6
8	**ROUND CATCH BASIN**	914.07	6"	CPP	911.54	NORTH	
			6"	CPP	911.57	SSE	5
	TOP / WATER	911.57					
	TOP / DEBRIS	911.27					
9	**ROUND CATCH BASIN**	912.62	8"	PVC	910.86	WEST	1
			8"	PVC	910.85	ENE	10
			4"	CPP	911.82	SSE	
	TOP / WATER	910.87					
	TOP / DEBRIS	909.62					
10	**ROUND CATCH BASIN**	912.56	8"	PVC	911.06	WSW	9
	TOP / WATER	911.06					
	TOP / DEBRIS	902.56					
11	**SQUARE CATCH BASIN**	915.30	6"	PVC	910.50	SSE	BLDG
			6"	PVC	910.85	SW	
	TOP / WATER	910.50					
	TOP / DEBRIS	907.80					
12	**SQUARE CATCH BASIN**	913.21	10"	RCP	907.45	ESE	13
			10"	RCP	908.46	SW	
	TOP / WATER	907.45					
	TOP / DEBRIS	906.71					
13	**SQUARE CATCH BASIN**	913.07	10"	RCP	907.17	WEST	12
			36"	RCP	903.89	NORTH	15
			24"	RCP	904.07	SSW	
			12"	RCP	906.77	ESE	
	TOP / WATER	903.89					
14	**SQUARE CATCH BASIN**	914.20	12"	CPP	910.52	NNW	15
	TOP / WATER	910.52					
	TOP / DEBRIS	910.10					
15	**SQUARE CATCH BASIN**	914.11	12"	CPP	909.98	SOUTH	14
			24"	CPP	907.81	ENE	
			36"	RCP	903.58	SSW	13
			36"	RCP	903.49	NNW	21
16	**SQUARE CATCH BASIN**	914.80	12"	CPP	909.60	NNW	17
			12"	CPP	909.59	SSE	37
	TOP / WATER	903.89					
17	**SQUARE CATCH BASIN**	914.94	12"	CPP	909.94	NNW	19
			12"	CPP	909.93	SSE	16
	TOP / WATER	909.94					
	TOP / DEBRIS	909.64					
18	**ROUND CATCH BASIN**	913.95	8"	PVC	909.30	NW	11
			8"	PVC	909.35	SSW	
			10"	RCP	909.30	ESE	
			4"	PVC	911.02	SE	
19	**SQUARE CATCH BASIN**	914.22	12"	CPP	910.22	ENE	
			12"	CPP	910.17	SSE	17
	TOP / DEBRIS	910.02					
20	**SANITARY MANHOLE**	914.52	6"	PVC	911.86	SSE	22
			4"	PVC	911.00	NE	BLDG
	TOP / WATER	911.87					
	BOTTOM	910.02					
21	**ROUND CATCH BASIN**	913.94	36"	RCP	902.81	NNW	E.S.
			36"	RCP	902.84	SOUTH	15
22	**SANITARY MANHOLE**	915.61	8"	PVC	911.11	NNW	20
			8"	PVC	911.09	WEST	50
	TOP / WATER	911.31					
	BOTTOM	909.61					
23	**ROUND CATCH BASIN**	907.70	12"	CPP	901.85	WNW	25
			12"	CPP	901.85	SSE	
	TOP / WATER	901.85					
	TOP / DEBRIS	900.70					
24	**SANITARY MANHOLE**	907.86	6"	PVC	902.90	WEST	
			6"	PVC	902.96	ENE	
25	**SQUARE CATCH BASIN**	906.86	15"	RCP	899.58	WEST	46 (R)
			12"	RCP	899.59	ESE	23
			12"	RCP	899.71	NE	31
	TOP / WATER	899.58					
	BOTTOM	898.68					
26	**SANITARY MANHOLE**	907.98	6"	PVC	902.45	WEST	
			6"	PVC	902.51	NNE	

#	TYPE	RIM	SIZE	MTRL	INVERT	DIRECTION	CONNECT
27	**ROUND CATCH BASIN**	907.72	12"	RCP	903.17	ESE	30
	TOP / WATER	903.17					
	TOP / DEBRIS	901.52					
28	**ROUND CATCH BASIN**	907.34	6"	PVC	903.74	WEST	BLDG
			12"	CPP	902.59	SE	32
	TOP / WATER	903.59					
	TOP / DEBRIS	902.54					
29	**ROUND CATCH BASIN**	907.17	12"	CPP	904.32	SSW	30
	TOP / WATER	904.32					
	TOP / DEBRIS	902.37					
30	**ROUND CATCH BASIN**	907.28	12"	CPP	902.15	WNW	27
			12"	CPP	902.05	SSE	31
			12"	CPP	902.06	NNE	29
	TOP / WATER	902.05					
	TOP / DEBRIS	900.48					
31	**ROUND CATCH BASIN**	907.26	12"	RCP	900.56	SW	25
			12"	CPP	900.58	NNE	30
			12"	RCP	900.47	NE	32
	TOP / WATER	900.56					
	TOP / DEBRIS	899.76					
32	**ROUND CATCH BASIN**	905.32	4"	CLAY	901.82	NNW	
			12"	CPP	901.42	NW	28
			12"	RCP	901.41	SW	31
	TOP / WATER	901.42					
	TOP / DEBRIS	900.82					
33	**ROUND CATCH BASIN**	905.72	8"	CPP	902.22	NNW	35
			6"	PVC	904.62	SSW	BLDG
			6"	CLAY	902.32	WEST	BLDG
	TOP / WATER	902.22					
	TOP / DEBRIS	902.02					
34	**SANITARY MANHOLE**	907.85	6"	CLAY	903.95	NE	36
			6"	CLAY	903.95	WEST	BLDG
35	**ROUND CATCH BASIN**	905.91	12"	RCP	901.53	WEST	
			8"	CPP	901.55	SSE	33
	TOP / WATER	901.53					
	TOP / DEBRIS	900.31					
36	**SANITARY MANHOLE**	911.58	6"	CLAY	904.78	SW	34
			6"	CLAY	904.83	NE	
37	**STORM MANHOLE**	915.20	12"	CPP	909.39	NW	16
			12"	CPP	909.39	SSE	
			24"	CPP	909.10	ENE	
			24"	CPP	909.09	WSW	15
	TOP / WATER	909.10					
	BOTTOM	908.90					
38	**SQUARE CATCH BASIN**	912.89					
	UNABLE TO OPEN						
39	**ROUND CATCH BASIN**	N/A	24"	N/A	N/A	NORTH	(R)
			24"	N/A	N/A	SW	40 (R)
			8"	N/A	N/A	SE	BLDG. (R)
40	**STORM MANHOLE**	N/A	24"	N/A	N/A	SOUTH	41 (R)
			24"	N/A	N/A	NW	39 (R)
			N/A	N/A	N/A	WEST	44 (R)
41	**STORM MANHOLE**	N/A	24"	N/A	N/A	SOUTH	42 (R)
			24"	N/A	N/A	NORTH	40 (R)
			N/A	N/A	N/A	WEST	45 (R)
42	**STORM MANHOLE**	N/A	N/A	N/A	N/A	SOUTH	48 (R)
			24"	N/A	N/A	NORTH	41 (R)
			N/A	N/A	N/A	ENE	49 (R)
43	**SANITARY MANHOLE**	N/A	8"	N/A	N/A	EAST	26 (R)
			8"	N/A	N/A	NORTH	(R)
44	**SQUARE CATCH BASIN**	N/A	12"	N/A	897.41	NORTH	40 (R)
			12"	N/A	897.28	SOUTH	
45	**SQUARE CATCH BASIN**	N/A	12"	N/A	897.43	NORTH	41 (R)
			12"	N/A	897.42	SOUTH	
46	**ROUND CATCH BASIN**	N/A	15"	N/A	N/A	EAST	25 (R)
			N/A	N/A	N/A	NW	48 (R)
47	**SQUARE CATCH BASIN**	N/A	N/A	N/A	N/A	NNW	48 (R)
48	**ROUND CATCH BASIN**	N/A	N/A	N/A	N/A	SSE	47 (R)
			N/A	N/A	N/A	SE	46 (R)
			N/A	N/A	N/A	NORTH	42 (R)
			N/A	N/A	N/A	WEST	(R)
49	**STORM MANHOLE**	N/A	N/A	N/A	N/A	WSW	47 (R)
50	**SANITARY MANHOLE**	914.97	8"	PVC	911.32	EAST	22
			8"	PVC	911.37	WEST	51
	TOP / WATER	911.47					
	BOTTOM	911.27					
51	**SANITARY MANHOLE**	913.95	8"	PVC	910.40	EAST	50
			8"	PVC	910.35	WEST	52
52	**SANITARY MANHOLE**	N/A	8"	PVC	909.09	EAST	51 (R)
	NOT SURVEYED (R)		8"	PVC	908.99	WSW	53 (R)
53	**SANITARY MANHOLE**	N/A	8"	PVC	907.12	EAST	52 (R)
	NOT SURVEYED (R)		8"	PVC	907.02	S	54 (R)
			6"	PVC		ENE	
54	**SANITARY MANHOLE**	911.36	6"	PVC	906.66	NNE	53 (R)
			6"	PVC	906.56	WSW	
55	**STORM MANHOLE**	903.01	12"	RCP	889.63	NNW	
			12"	RCP	889.93	EAST	35
			12"	RCP	899.81	SOUTH	
			12"	RCP		WEST	
56	**SQUARE CATCH BASIN**	899.62	12"	RCP	895.72	NORTH	
			12"	RCP	895.97	SOUTH	
			12"	RCP		WEST	

** STRUCTURE TABLE CONTINUE ON SHEET C1.2 **



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REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSE NO. 6201064447
REGISTERED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
TOPOGRAPHIC SURVEY

SHEET NO.
C0.1

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N

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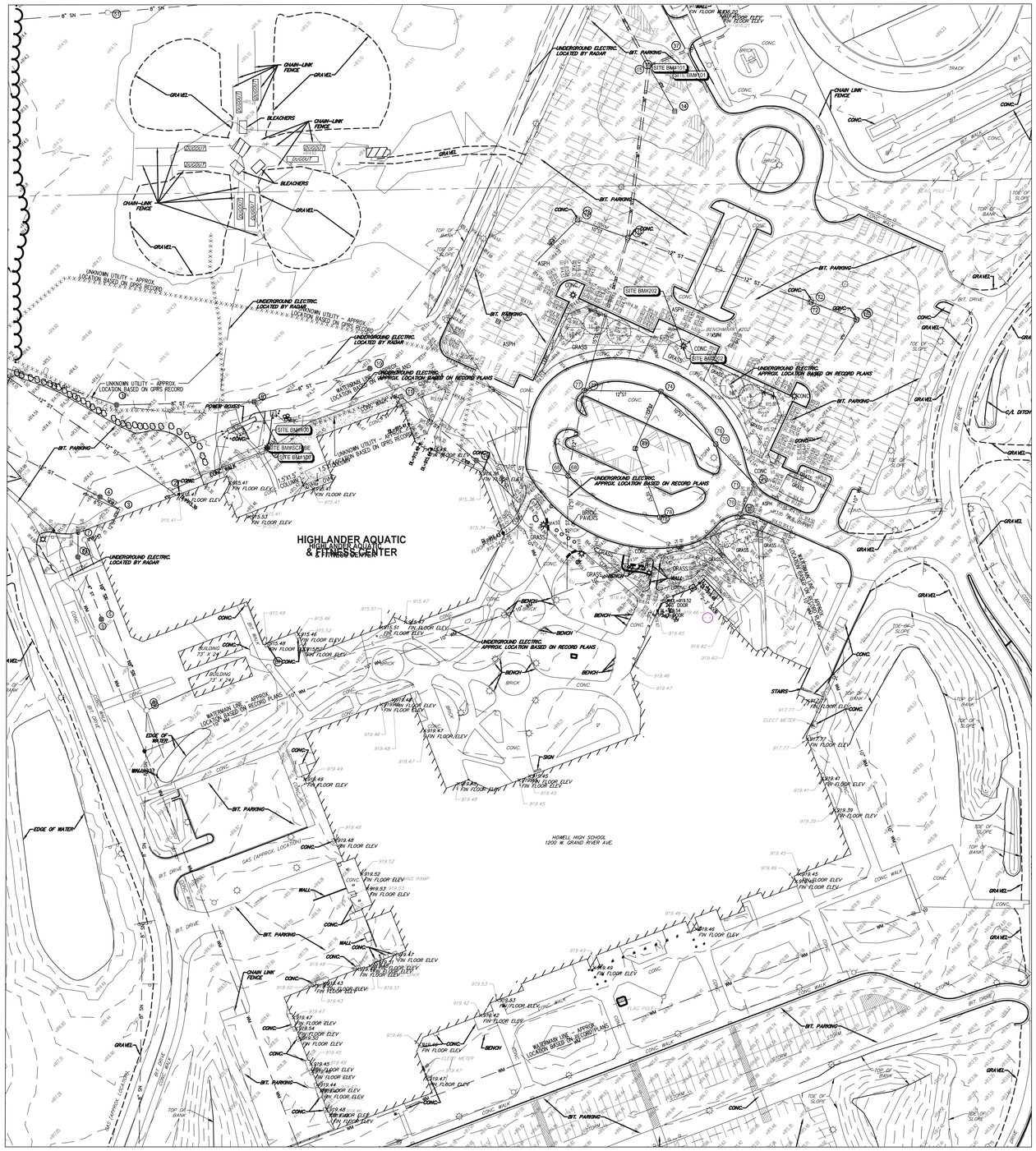
** STRUCTURE TABLE ON SHEET C1.1 **

#	TYPE	RIM	SIZE	MTRL	INVERT	DIRECTION	CONNECT
68	**SQUARE CATCH BASIN**	912.47	12"	RCP	906.32	NNE	77
			12"	RCP	906.34	SSE	
			10"	RCP	907.87	WNW	18
	TOP / WATER	906.32					
	BOTTOM	905.57					
69	**SQUARE CATCH BASIN**	912.06	12"	RCP	908.06	NNE	74
			10"	RCP	908.10	SSE	78
	TOP / WATER	908.06					
	BOTTOM	906.76					
70	**SQUARE CATCH BASIN**	913.59	10"	RCP	909.56	NNE	71
	TOP / WATER	909.54					
	TOP / DEBRIS	909.39					
71	**SQUARE CATCH BASIN**	913.12	10"	RCP	908.82	NW	76
			10"	RCP	908.97	SSW	70
	TOP / WATER	908.82					
	TOP / DEBRIS	908.42					
72	**SQUARE CATCH BASIN**	912.86	12"	RCP	908.08	ESE	75
			12"	RCP	908.06	WNW	13
	TOP / WATER	908.06					
	BOTTOM	907.71					
74	**SQUARE CATCH BASIN**	913.06	12"	RCP	907.40	WNW	77
			12"	RCP	907.61	SSW	69
			10"	RCP	907.56	SE	76
	TOP / WATER	907.41					
	BOTTOM	906.66					
75	**SQUARE CATCH BASIN**	912.48	12"	RCP	908.15	WNW	72
			12"	RCP	908.20	SW	
	TOP / WATER	908.18					
	BOTTOM	907.78					
76	**SQUARE CATCH BASIN**	913.19	10"	RCP	908.49	SE	71
			10"	RCP	908.29	NW	74
	TOP / WATER	908.29					
	BOTTOM	907.99					
77	**SQUARE CATCH BASIN**	913.16	15"	RCP	905.46	NNE	13
			12"	RCP	906.76	ENE	74
			12"	RCP	905.56	SSW	68
	TOP / WATER	905.46					
	BOTTOM	903.66					
78	**SQUARE CATCH BASIN**	912.76	10"	RCP	908.64	NNW	69
	BOTTOM	908.46					
79	**SANITARY MANHOLE**	918.05	8"	CLAY	905.75	NNE	6
			8"	CLAY	905.63	WSW	
			10"	PVC	906.05	ENE	



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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSE NO. 6201056447
REGISTERED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
TOPOGRAPHIC SURVEY

SHEET NO.
C0.2

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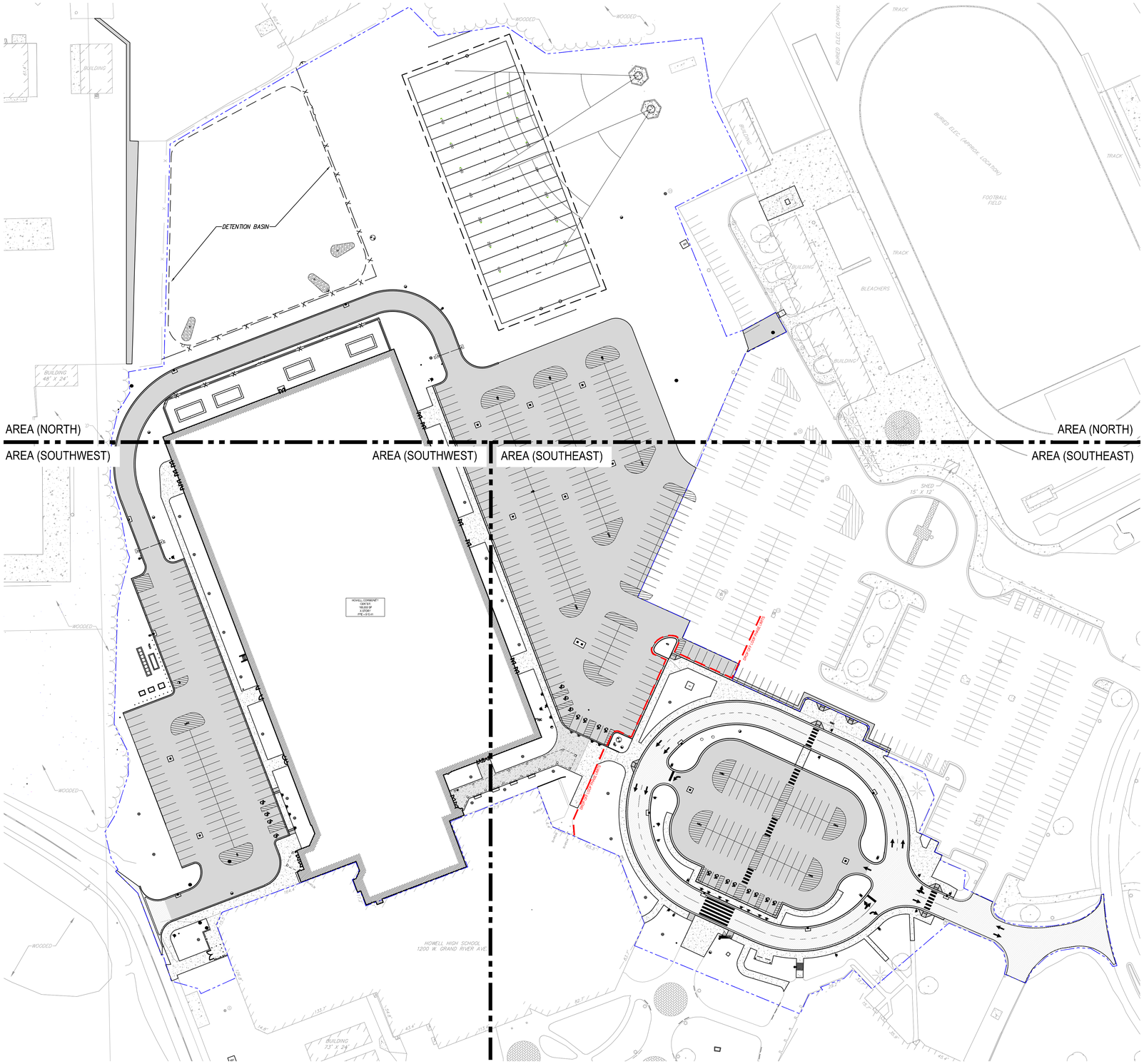

GRAPHIC SCALE

0 25 50 100

(IN FEET)

1 inch = 50 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/RECTIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB-2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

PHASE LIMITS

- DROP OFF LOOP PROJECT PHASE LIMITS
- LIMITS OF DISTURBANCE

SITE LAYOUT SURVEYING NOTES

1. THE BUILDING ADDITION FOOTPRINT SHALL BE STAKED BASED ON THE STRUCTURAL PLANS.

PARKING COUNT

NEW WEST PARKING LOT
TOTAL PARKING SPACES = 101
ADA PARKING SPACES = 4

NEW DROP OFF LOOP LOT
TOTAL PARKING SPACES = 60
ADA PARKING SPACES = 8

NEW EAST PARKING LOT
TOTAL PARKING SPACES = 208
ADA PARKING SPACES = 7

TOTAL PARKING SPACES = 369
TOTAL ADA PARKING SPACES = 19

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HOWELL COMMUNITY CENTER
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HOWELL PUBLIC SCHOOLS

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KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201054447
REGISTERED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
GENERAL SITE LAYOUT

SHEET NO.
C1.0

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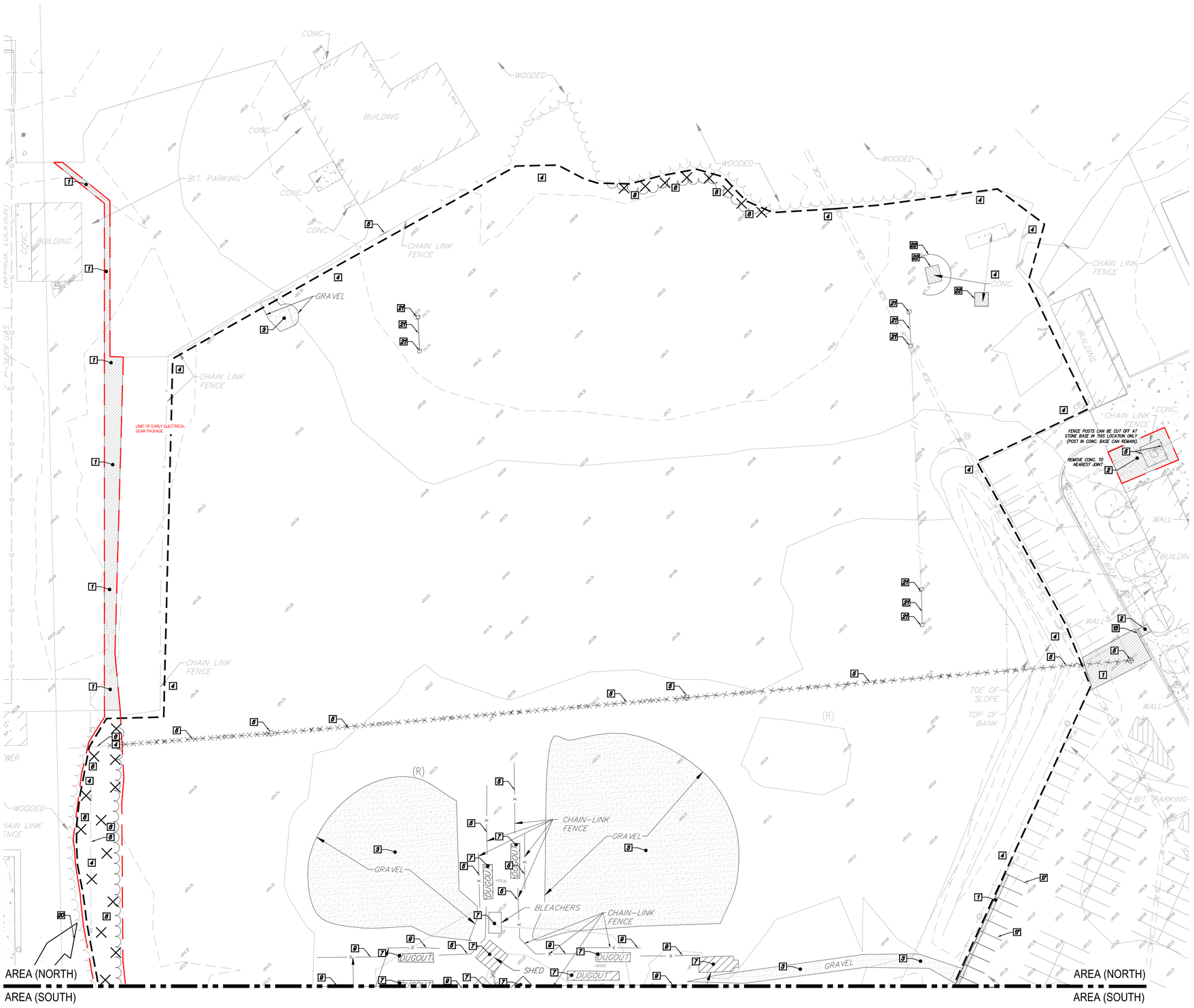

DEMOLITION NOTES

- 1 — REMOVE ASPHALT PAVEMENT TO FULL DEPTH. ASPHALT PAVEMENT DEPTH VARIES. (EXISTING PAVEMENT SECTIONS ARE SHOWN ON GEOTECHNICAL REPORT MADE BY SME). SAWCUT FULL DEPTH WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT. EXCAVATE EXISTING AGGREGATE BASE AND SUBGRADE AS NECESSARY TO INSTALL NEW PAVEMENT SECTION AS SHOWN ON THE PAVING PLANS, INCLUDING NEW AGGREGATE BASE.
- 2 — REMOVE CONCRETE PAVEMENT TO FULL DEPTH. SAWCUT FULL DEPTH TO NEAREST JOINT WHERE NEW PAVEMENT WILL BE PLACED ADJACENT TO EXISTING PAVEMENT.
- 3 — REMOVE EXISTING GRAVEL.
- 4 — CLEAR AND GRUB TO THE LIMITS SHOWN. INCLUDE REMOVAL OF ALL SIGNS, POSTS, FOOTINGS, GRAVEL, BRUSH, SHRUBS, GRASS, AND TREES NOT INDICATED FOR PROTECTION, INCLUDING ROOTS. STRIP TOPSOIL AND STOCKPILE ON SITE IN DESIGNATED LOCATION.
- 5 — REMOVE EXISTING UTILITY AND STRUCTURES UNLESS OTHERWISE NOTED TO BE ABANDONED. BACKFILL WITH CLASS II SAND AND COMPACT TO 95% MAXIMUM DENSITY. INSTALL WATERTIGHT BULKHEADS AT STRUCTURES. GROUT PIPE ENDS THAT REMAIN.
- 6 — PROTECT EXISTING UTILITIES AND UTILITY STRUCTURES TO REMAIN.
- 7 — DEMO AND REMOVE EXISTING BUILDING OR STRUCTURE. BACKFILL WITH CLASS II SAND FILL COMPACTED TO 95% OF MAXIMUM DENSITY IN LIFTS NOT TO EXCEED 8" AND IN ACCORDANCE WITH **GEOTECHNICAL REPORT BY SME.**
- 8 — REMOVE EXISTING TREE (INCLUDING STUMPS AND ROOTS).
- 9 — REMOVE EXISTING CHAIN LINK FENCE, INCLUDING ALL GATES, POSTS, AND FOOTINGS.
- 10 — REMOVE EXISTING LIGHT POLE INCLUDING BASE AND FOOTINGS.
- 11 — REMOVE EXISTING SIGN POST.
- 12 — REMOVE EXISTING BOULDER
- 13 — REMOVE CONCRETE CURB AND GUTTER, SAWCUT FULL DEPTH TO NEAREST JOINT, WHERE SHOWN. REMOVAL LIMITS TO BE FIELD VERIFIED.
- 14 — REMOVE EXISTING BOLLARD INCLUDING FOOTING.
- 15 — REMOVE EXISTING BRICK PAVERS.
- 16 — SALVAGE EXISTING BENCHES AND RELOCATE AT DIRECTION OF SCHOOL.
- 17 — REMOVE EXISTING STRIPING.
- 18 — DEMO AND REMOVE EXISTING PUMP STATION AND ASSOCIATED SEWER LEAD & FORCE MAIN. BACKFILL WITH CLASS II SAND FILL COMPACTED TO 95% OF MAXIMUM DENSITY IN LIFTS OF NOT TO EXCEED 8" AND IN ACCORDANCE WITH **GEOTECHNICAL REPORT BY SME.**
- 19 — PROTECT EXISTING SYNTHETIC TURF TO REMAIN.
- 20 — PROTECT EXISTING WETLANDS.
- 21 — REMOVE EXISTING FIELD GOAL POSTS INCLUDING FOOTINGS.
- 22 — REMOVE DISCUSS CONCRETE PAD, NETTING, POSTS, AND FOOTINGS.

EXISTING SIGNAGE AND MAILBOXES WITHIN THE CLEARING LIMITS ARE TO BE REMOVED AND SALVAGED. STAGE IN ON SITE LOCATION AS SPECIFIED BY OWNER.

ALL DEPRESSIONS CREATED BY DEMOLITION PROCEDURES SHALL BE BACKFILLED WITH CLASS II FILL MATERIAL, IN 8" LIFTS COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT, UP TO PROPOSED SUBGRADE.

CONTRACTOR IS RESPONSIBLE FOR DOING AN EARTHWORK CALCULATION FOR CUT AND FILL REQUIREMENTS, AND IS RESPONSIBLE FOR INCLUDING IMPORT AND EXPORT OF MATERIALS IN THEIR BID. ALL EXCESS MATERIAL (INCLUDING TOPSOIL, CLEAN FILL, AND WASTE MATERIAL) SHALL BE REMOVED FROM THE SITE.

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CONTRACTOR TO PROVIDE UNIT PRICES (\$/CY/S) IN THE BID DOCUMENTS FOR UNDERCUT AND REPLACEMENT OF POOR SOILS. UNIT PRICE TO INCLUDE DISPOSAL OF POOR SOILS AND IMPORT AND PLACEMENT OF 1"X3" CRUSHED CONCRETE OR 21AA CRUSHED CONCRETE, WITH GEOTEXTILE FABRIC, UP TO PROPOSED SUBGRADE.

ELECTRICAL DEMO NOTE

SEE ELECTRICAL PLANS FOR ALL UNDERGROUND ELECTRIC DEMOLITION AND NEW ELECTRIC ROUTING. ALL UNDERGROUND ELECTRIC SHOWN ON THIS PLAN IS APPROXIMATE AND IS FOR INFORMATION PURPOSES ONLY. UNDERGROUND ELECTRIC IS SHOWN BASED ON RECORD DRAWINGS AND IN SOME AREAS, SPECIFICALLY NEAR THE BASEBALL FIELDS, LOCATED BY GROUND PENETRATING RADAR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UNDERGROUND ELECTRIC USING GROUND PENETRATING RADAR PRIOR TO CONSTRUCTION.

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSED PROFESSIONAL ENGINEER
6201054447

JOB NO. 2600.41E

NORTH

SHEET TITLE
NORTH DEMOLITION PLAN

SHEET NO.
C2.1A

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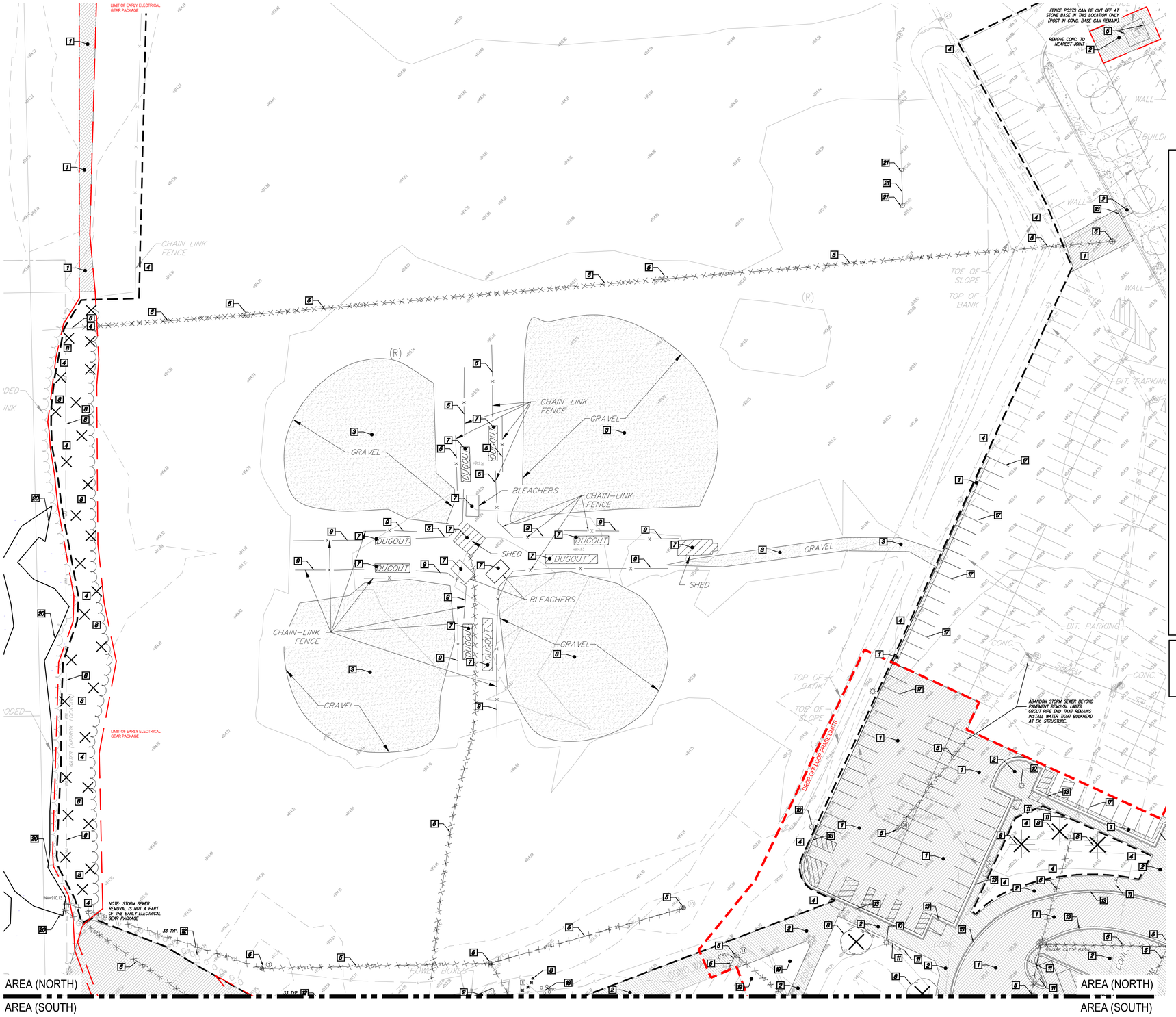

GRAPHIC SCALE

0 15 30 60

(IN FEET)

1 inch = 30 ft.

DEMOLITION NOTES

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ELECTRICAL DEMO NOTE

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201084447
REGISTERED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
NORTH DEMOLITION PLAN

SHEET NO.
C2.1B

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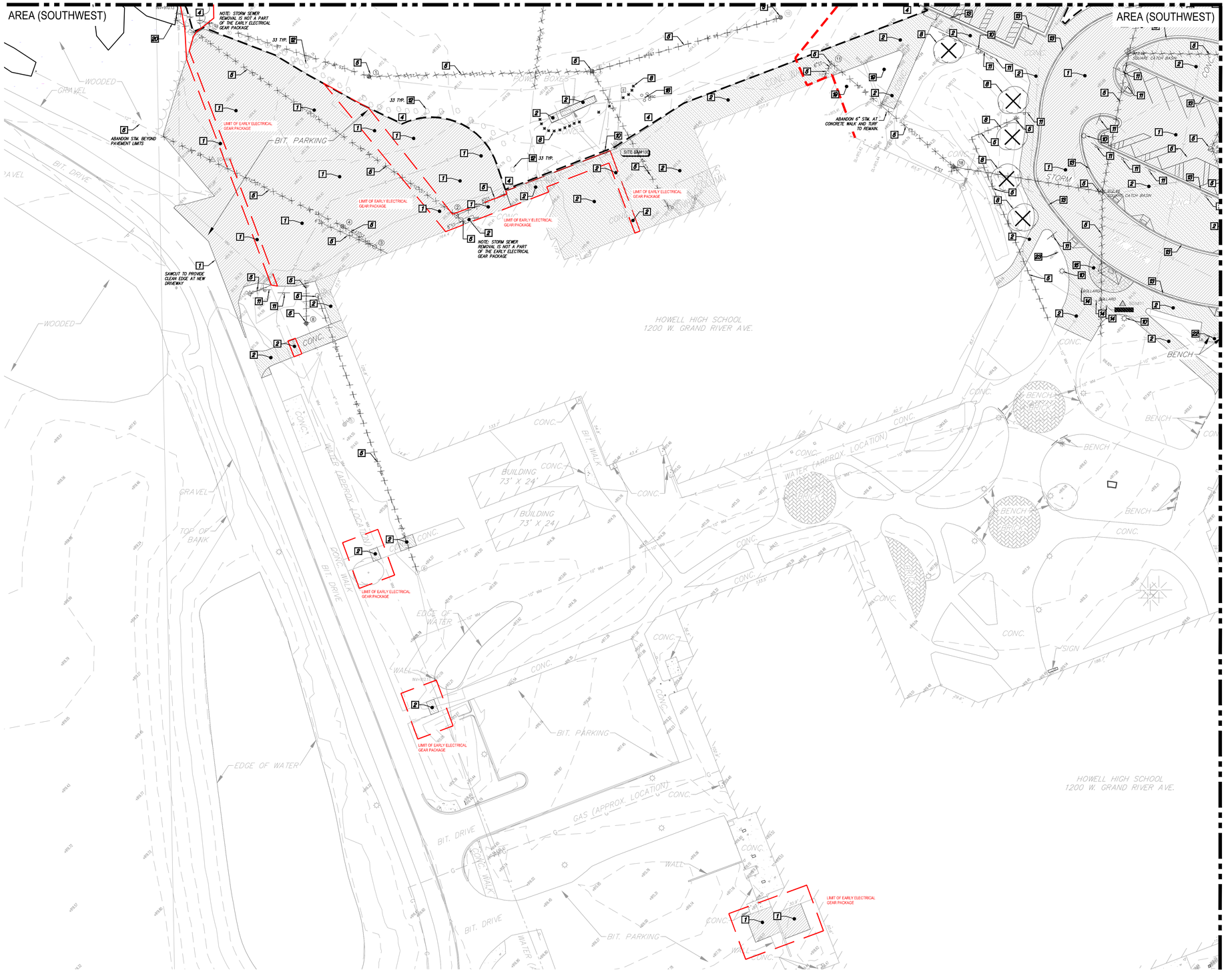
AREA (NORTH)

AREA (SOUTHWEST)

AREA (NORTH)

AREA (SOUTHWEST)

AREA (SOUTHEAST)



GRAPHIC SCALE

0 15 30 60

(IN FEET)

1 inch = 30 ft.

DEMOLITION NOTES

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW DATE

CONSTRUCTION DOCUMENTS 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSED
6201054447
PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
SOUTHWEST DEMOLITION PLAN

SHEET NO.
C2.2

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GRAPHIC SCALE
0 15 30 60
(IN FEET)
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DEMOLITION NOTES

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11. REMOVE EXISTING SIGN POST.
12. REMOVE EXISTING BOULDER
13. REMOVE CONCRETE CURB AND GUTTER, SAWCUT FULL DEPTH TO NEAREST JOINT, WHERE SHOWN. REMOVAL LIMITS TO BE FIELD VERIFIED.
14. REMOVE EXISTING BOLLARD INCLUDING FOOTING.
15. REMOVE EXISTING BRICK PAVERS.
16. SALVAGE EXISTING BENCHES AND RELOCATE AT DIRECTION OF SCHOOL.
17. REMOVE EXISTING STRIPING.
18. DEMO AND REMOVE EXISTING PUMP STATION AND ASSOCIATED SEWER, LEAD & FORCE MAIN. BACKFILL WITH CLASS II SAND FILL COMPACTED TO 95% OF MAXIMUM DENSITY IN LIFTS OF NOT TO EXCEED 8" AND IN ACCORDANCE WITH **GEOTECHNICAL REPORT BY SME.**
19. PROTECT EXISTING SYNTHETIC TURF TO REMAIN.
20. PROTECT EXISTING WETLANDS.
21. REMOVE CONCRETE STAIRS AND ASSOCIATED RETAINING WALL INCLUDING FOUNDATIONS.
22. SALVAGE EXISTING BUS STOP CANOPY STRUCTURE AND BENCHES. UNBOLT ALL COMPONENTS AS NEEDED TO RE-ASSEMBLE STRUCTURE AND BENCHES AT NEW BUS STOP LOCATION SHOWN ON PAVING PLAN.
23. RELOCATE EXISTING BOLLDER. SEE LANDSCAPE PLAN.

EXISTING SIGNAGE AND MAILBOXES WITHIN THE CLEARING LIMITS ARE TO BE REMOVED AND SALVAGED. STAGE IN ON SITE LOCATION AS SPECIFIED BY OWNER.

ALL DEPRESSIONS CREATED BY DEMOLITION PROCEDURES SHALL BE BACKFILLED WITH CLASS II FILL MATERIAL, IN 8" LIFTS COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT, UP TO PROPOSED SUBGRADE.

CONTRACTOR IS RESPONSIBLE FOR DOING AN EARTHWORK CALCULATION FOR CUT AND FILL REQUIREMENTS, AND IS RESPONSIBLE FOR INCLUDING IMPORT AND EXPORT OF MATERIALS IN THEIR BID. ALL EXCESS MATERIAL (INCLUDING TOPSOIL, CLEAN FILL, AND WASTE MATERIAL) SHALL BE REMOVED FROM THE SITE.

EXISTING SUPPORTED SLABS AT BUILDING ENTRY/DOORS TO REMAIN, UNLESS OTHERWISE DIRECTED. CONTRACTOR TO VERIFY LIMITS OF EXISTING SUPPORTED SLAB AND REMOVE ADJACENT WALKS AS SHOWN ON PLANS.

CONTRACTOR TO PROTECT EXISTING WALKS, PAVEMENT, CURBS, GUTTERS, WALLS, FENCES, GATES, LANDSCAPING AND TREES TO REMAIN DURING CONSTRUCTION.

CONTRACTOR TO PROVIDE UNIT PRICES ($/CY) IN THE BID DOCUMENTS FOR UNDERCUT AND REPLACEMENT OF POOR SOILS. UNIT PRICE TO INCLUDE DISPOSAL OF POOR SOILS AND IMPORT AND PLACEMENT OF 1"X3" CRUSHED CONCRETE OR 21AA CRUSHED CONCRETE, WITH GEOTEXTILE FABRIC, UP TO PROPOSED SUBGRADE.

ELECTRICAL DEMO NOTE

SEE ELECTRICAL PLANS FOR ALL UNDERGROUND ELECTRIC DEMOLITION AND NEW ELECTRIC ROUTING. ALL UNDERGROUND ELECTRIC SHOWN ON THIS PLAN IS APPROXIMATE AND IS FOR INFORMATION PURPOSES ONLY. UNDERGROUND ELECTRIC IS SHOWN BASED ON RECORD DRAWINGS AND IN SOME AREAS, SPECIFICALLY NEAR THE BASEBALL FIELDS, LOCATED BY GROUND PENETRATING RADAR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UNDERGROUND ELECTRIC USING GROUND PENETRATING RADAR PRIOR TO CONSTRUCTION.

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL
PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSED PROFESSIONAL ENGINEER
6201064447

JOB NO. 2600.41E
NORTH

SHEET TITLE
SOUTHEAST DEMOLITION PLAN

SHEET NO.
C2.3

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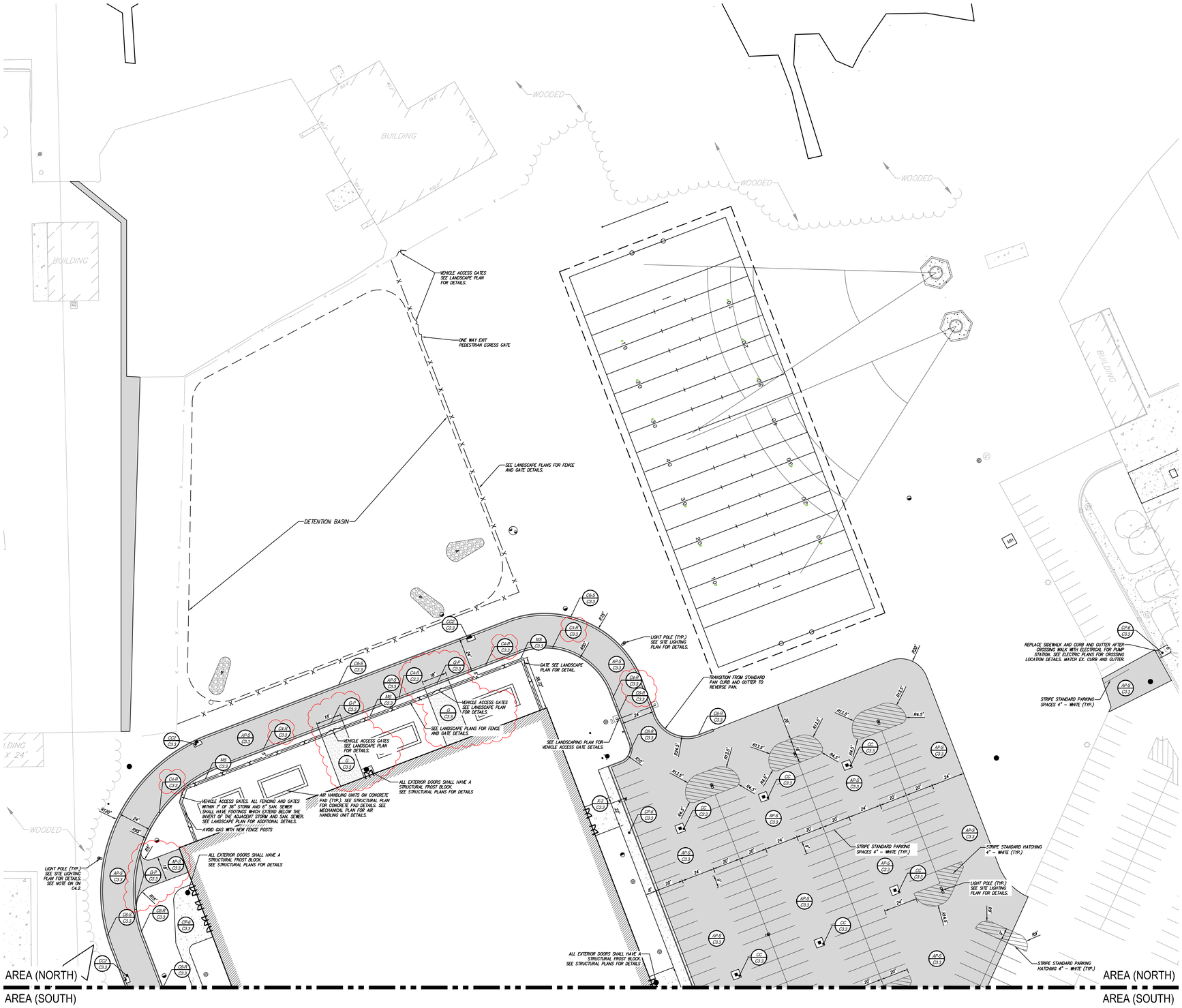

GRAPHIC SCALE
0 15 30 60
(IN FEET)
1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/RECEIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

PAVING CONSTRUCTION NOTES

1. EARTHWORK AND PAVEMENT CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION UNLESS OTHERWISE NOTED IN THE FOLLOWING ITEMS.
2. REMOVE ANY EXISTING TOPSOIL, VEGETATION, TREES AND OTHER DELETERIOUS MATERIALS TO EXPOSE THE SUBGRADE SOIL. TREE ROOTS SHALL BE COMPLETELY REMOVED.
3. EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES AND THE PLACEMENT OF THE RECOMMENDED PAVEMENT SYSTEM.
4. THE TOP 12 INCHES OF THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D 1557-91).
5. THE FINAL SUBGRADE SHALL BE THOROUGHLY PROOFROLLED UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
6. THE AGGREGATE BASE SHALL BE COMPACTED TO A DENSITY NO LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR (ASTM D 1557-91). THE BASE SHALL EXTEND A MINIMUM OF 1 FOOT BEYOND THE PAVED EDGE.
7. ALL BITUMINOUS MATERIAL SHALL BE COMPACTED TO A DENSITY NO LESS THAN 97 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY THE MARSHALL METHOD.
8. A BOND COAT OF SS-1H EMULSION IS REQUIRED BETWEEN THE LEVELING COURSE AND THE WEARING COURSE WHEN EITHER 24 HOURS HAVE ELAPSED BETWEEN PLACEMENT OF THE BITUMINOUS COURSES OR THE SURFACE OF THE PAVEMENT HAS BEEN CONTAMINATED WITH DIRT, DUST, OR FOREIGN MATERIAL. THE BOND COAT SHALL BE APPLIED IN A UNIFORM MANNER OVER THE SURFACE AT A RATE OF 0.1 GALLONS/S.Y. IN THE EVENT A BOND COAT IS NOT REQUIRED, THE LEVELING COURSE MAY REQUIRE LOCALIZED BROOM CLEANING.
9. PERFORMANCE GRADE PG64-28 ASPHALT CEMENT SHALL BE USED IN THE PRODUCTION OF HEAVY DUTY ASPHALT PAVEMENT AND PERFORMANCE GRADE PG58-28 IN THE PRODUCTION OF STANDARD DUTY ASPHALT PAVEMENT. RECLAIMED ASPHALT PAVEMENT (RAP) SHALL BE LIMITED TO MDOT TIER 1 (0-17% BY WEIGHT) FOR BOTH COURSES.
10. CONSTRUCTION TRAFFIC SHALL BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE PLACEMENT OF THE FINAL LIFT SHALL BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR TO ANY DAMAGED SECTION RESULTING FROM CONSTRUCTION ACTIVITY.
11. TAPER CURB HEIGHT DOWN TO ZERO HEIGHT IN FIVE FEET AT ALL CURB ENDINGS UNLESS OTHERWISE NOTED ON THE PLAN.
12. WHERE CURB AND GUTTER SECTION IS ADJACENT TO A BARRIER FREE RAMP, DROP CURB HEIGHT TO MAXIMUM 1/4" ACROSS THE RAMP OPENING.
13. PAVEMENT REHAB SHALL BE PERFORMED PER THE CURRENT MDOT STANDARD SPECS FOR CONSTRUCTION. BLOW OUT EX. CRACKS WITH COMPRESSED AIR TO REMOVE ALL DIRT, VEGETATION, AND FOREIGN MATERIAL. USE "CHEMBAND CRACK FILL" PER SECTION 505 OF MDOT SPECS FOR ALL CRACKS IN EXCESS OF 1/4" WIDTH. CLEAR SURFACE OF ALL DEBRIS AND THOROUGHLY WASH THE SURFACE AS INDICATED IN SECTION 506.03.C. PROVIDE AND APPLY SLURRY SEAL PER SECTION 506 OF THE MDOT SPECS.
14. STRIPE PARKING LOTS AS SHOWN, USING 4" PAVEMENT MARKING – BLUE FOR BARRIER FREE SPACES, YELLOW FOR STANDARD SPACES. 4" NEW PARKING LAYOUT IS NOT INDICATED, MATCH ORIGINAL STRIPING PATTERN.
15. CONTRACTOR SHALL PROTECT EXISTING CURB, GUTTER, SIDEWALK, WALLS, FENCES AND ALL OTHER EXISTING SITE FEATURES NOT INDICATED FOR REMOVAL OR REHABILITATION.
16. PLACE EXPANSION JOINTS WHERE NEW CONCRETE PAVEMENT OF WALKS ABUT BUILDING WALLS (PROPOSED OR EXISTING), COLUMN WALLS OR BASES, CONCRETE FOUNDATIONS OR BASES, CURBS, OR EXISTING CONCRETE PAVEMENT. PLACE JOINT SEALANT ON ALL EXPANSION JOINTS.
17. CONTRACTOR TO CONSTRUCT CONTRACTION AND EXPANSION JOINTS IN ALL NEW CONCRETE PAVEMENT. CONTRACTION JOINTS SHALL BE TOOLED WHERE SIDEWALK WIDTH IS 8' OR LESS, AND SHALL BE SPACED EQUAL TO THE WIDTH OF THE PAVEMENT (I.E. 6' SPACING FOR 6' WIDE WALK), BUT NOT MORE THAN 10' APART. PLACE EXPANSION JOINTS WITH JOINT SEALANT AT MAXIMUM 50' SPACING. CONTRACTOR SHALL GENERALLY MATCH THE JOINT PATTERNS FOR CONCRETE PAVEMENT WHEN SHOWN ON THE PLANS.
18. WHERE THESE PLANS DIFFER FROM THE STANDARD DETAILS OR STANDARD SPECIFICATIONS OF THE CITY OF HOWELL AND LIVINGSTON COUNTY, THE REQUIREMENTS OF THE CITY OF HOWELL AND LIVINGSTON COUNTY SHALL GOVERN.
19. CONCRETE PAVEMENT SHALL MEET THE REQUIREMENTS FOR MDOT GRADE 4000 CONCRETE PER THE CURRENT MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
20. APPLY SILENCURE SRT (OR APPROVED EQUIVALENT) ACRYLIC CURING COMPOUND AND SILOXANE SEALER ON ALL CONCRETE PAVING, CURBS, AND WALKS (APPLY PER MANUFACTURER RECOMMENDATIONS).

SITE LAYOUT SURVEYING NOTES

1. THE BUILDING ADDITION FOOTPRINT SHALL BE STAKED BASED ON THE STRUCTURAL PLANS.

KINGSCOTT
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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026
ADDENDUM 001	09.08.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSED
6201054643
PROFESSIONAL ENGINEER

JOB NO. 2600.41E
NORTH

SHEET TITLE
NORTH SITE LAYOUT

SHEET NO.
C3.0

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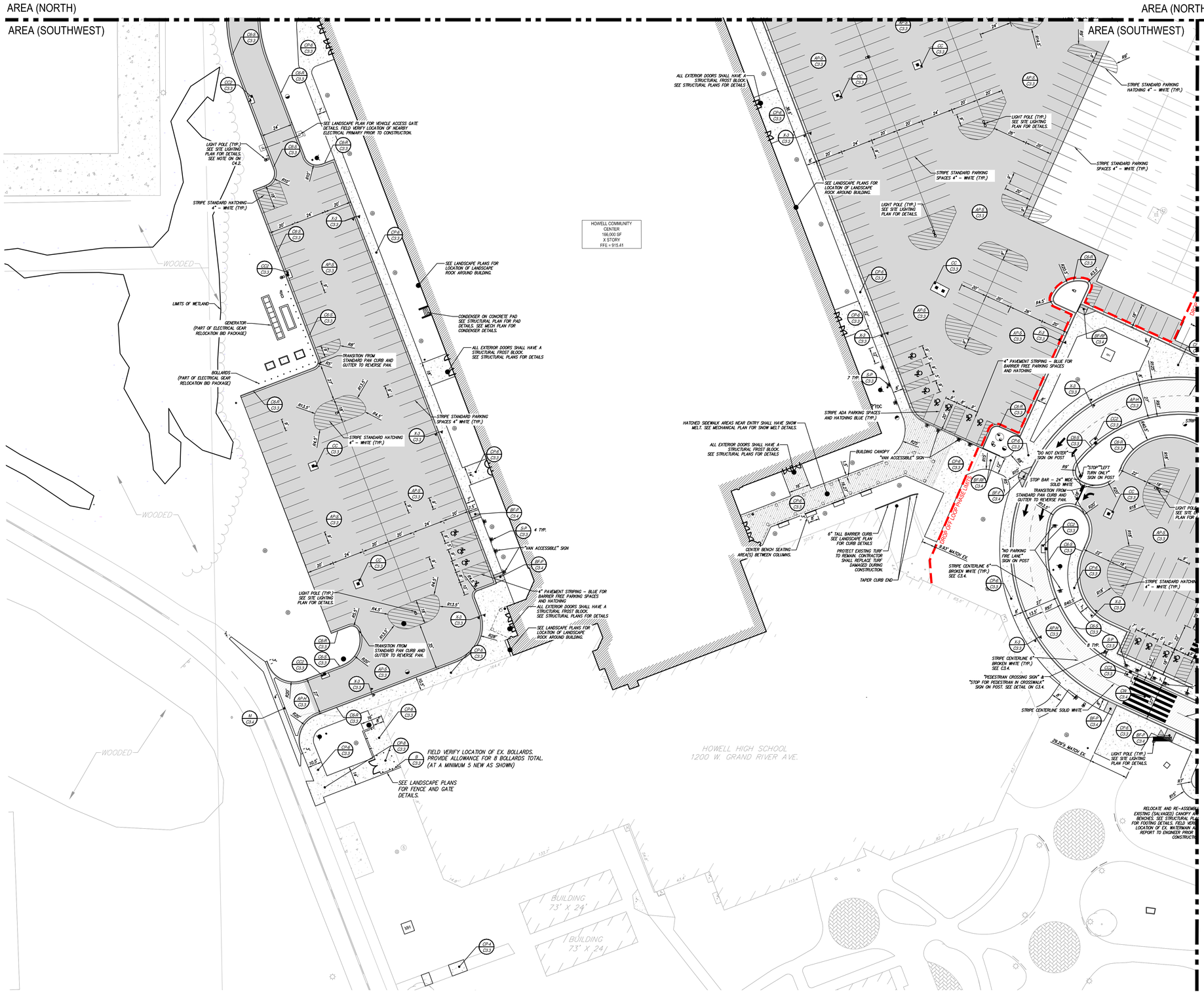

GRAPHIC SCALE
0 15 30 60
(IN FEET)
1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
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SITE LAYOUT SURVEYING NOTES

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KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201094447
LICENSED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
SOUTHWEST SITE LAYOUT

SHEET NO.
C3.1

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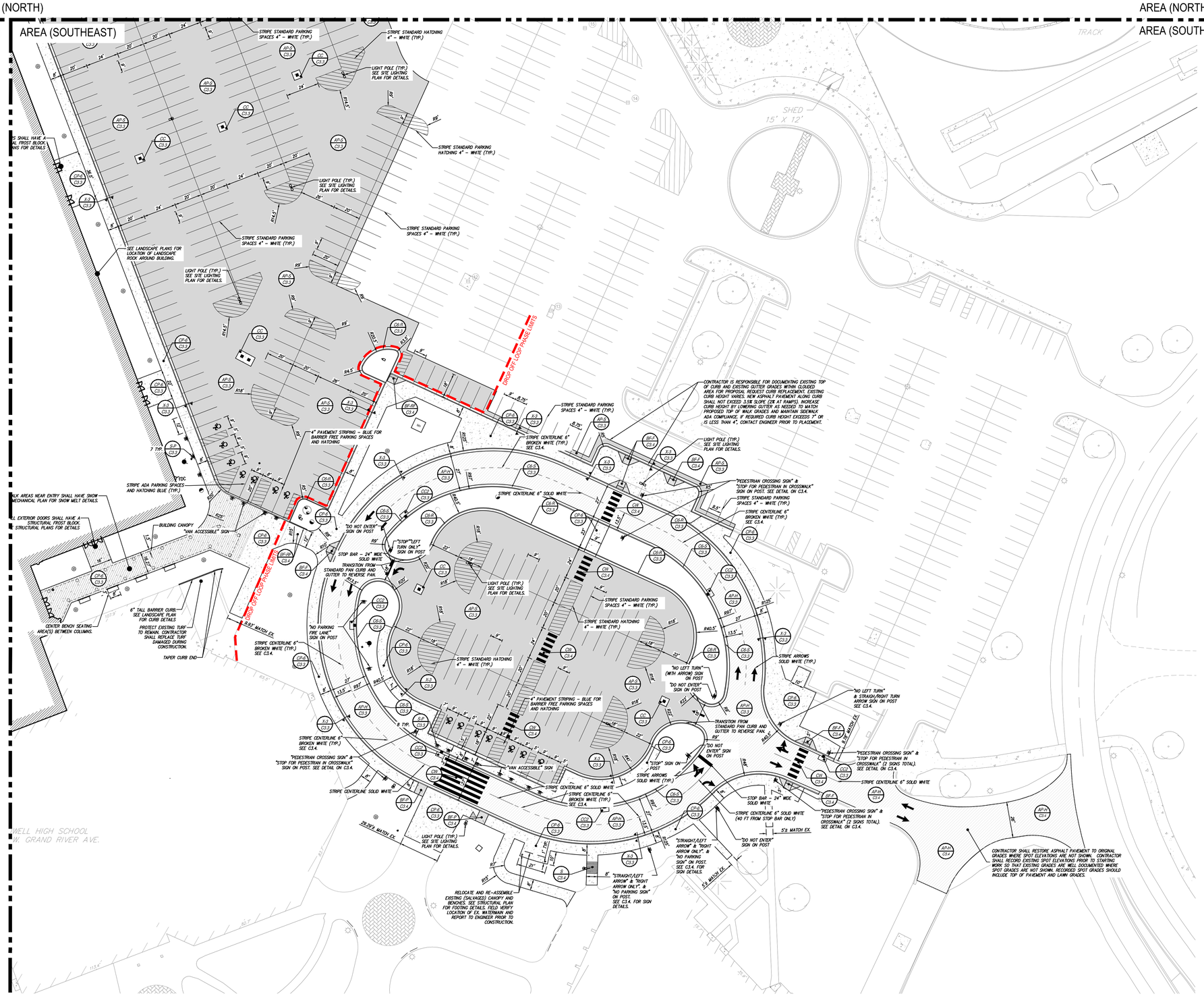
AREA (NORTH)

AREA (SOUTHWEST)

AREA (SOUTHEAST)

AREA (NORTH)

AREA (SOUTH)



GRAPHIC SCALE

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(IN FEET)

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LEGEND

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SITE LAYOUT SURVEYING NOTES

1. THE BUILDING ADDITION FOOTPRINT SHALL BE STAKED BASED ON THE STRUCTURAL PLANS.

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW DATE

CONSTRUCTION DOCUMENTS 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201064447
LICENSED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
SOUTHEAST SITE LAYOUT

SHEET NO.
C3.2

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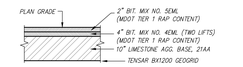
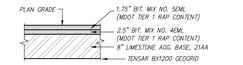
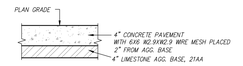


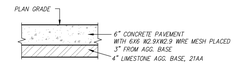
DETAIL
HEAVY DUTY BITUMINOUS PAVEMENT
AP-H C3.3



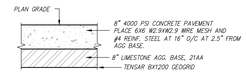
DETAIL
STANDARD BITUMINOUS PAVEMENT
AP-S C3.3



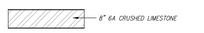
DETAIL
4" CONCRETE WALK
CP-4 C3.3



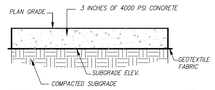
DETAIL
6" CONCRETE WALK
CP-6 C3.3



DETAIL
8" CONCRETE PAVEMENT
CP-8 C3.3

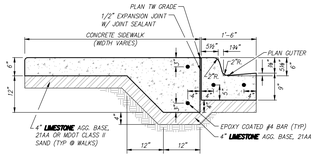


DETAIL
CRUSHED STONE
6A C3.3



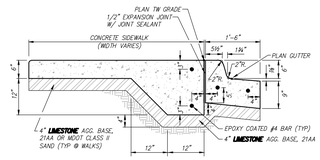
DETAIL
2' MAINTENANCE STRIP (TYP.)
MS C3.3

WITH EXPANSION JOINT

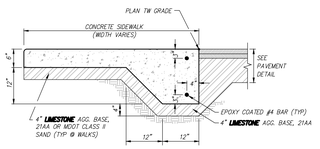


SECTION
WALK/CURB & GUTTER STANDARD PAN
X-2 C3.3

WITH EXPANSION JOINT



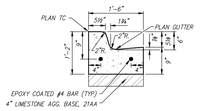
SECTION
WALK/CURB & GUTTER REVERSE PAN
X-3 C3.3



SECTION
WALK FLUSH W/ PAVEMENT SECTION
X-4 C3.3

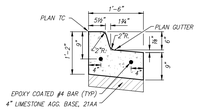


SECTION
INTEGRAL WALK/CURB
X-1 C3.3

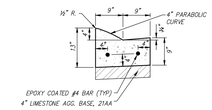


NOTE: CURB AND GUTTER SHOWN ADJACENT TO CONCRETE PAVEMENT SHALL BE CONSTRUCTED AS INTEGRAL CURB AND GUTTER.

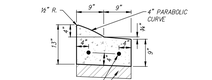
DETAIL
6' CURB & GUTTER STANDARD PAN
(MDOT TYPE F1)
GS-3 C3.3



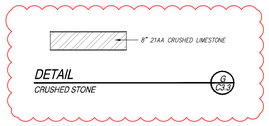
DETAIL
6' CURB & GUTTER REVERSE PAN
(MDOT TYPE F1)
GS-R C3.3



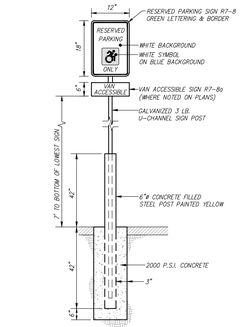
DETAIL
4" MOUNTABLE CURB & GUTTER
STANDARD PAN
C4-S C3.3



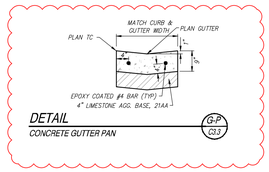
DETAIL
4" MOUNTABLE CURB & GUTTER
REVERSE PAN
C4-R C3.3



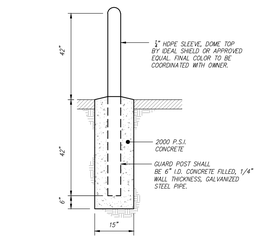
DETAIL
CRUSHED STONE
G C3.3



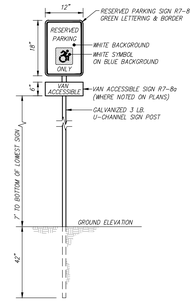
DETAIL
BARRIER FREE SIGN IN PAVEMENT DETAIL
S-P C3.3



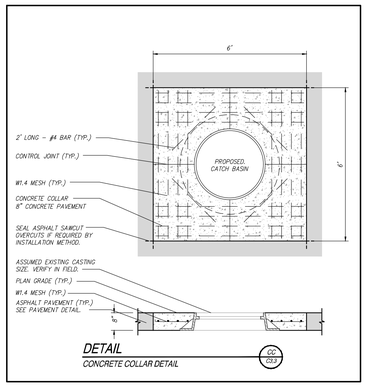
DETAIL
CONCRETE GUTTER PAN
G-P C3.3



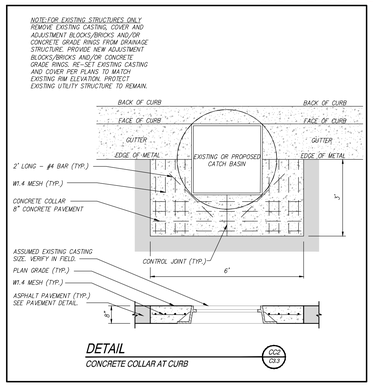
DETAIL
BOLLARD DETAIL
B C3.3



DETAIL
BARRIER FREE SIGN DETAIL
S1 C3.3



DETAIL
CONCRETE COLLAR DETAIL
CC C3.3



DETAIL
CONCRETE COLLAR AT CURB
CC2 C3.3

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HOWELL PUBLIC SCHOOL
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HOWELL
PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026
ADDENDUM 001	09.08.2026

KEY PLAN



JOB NO. 2600.41E

NORTH

SHEET TITLE
PAVING DETAILS

SHEET NO.
C3.3

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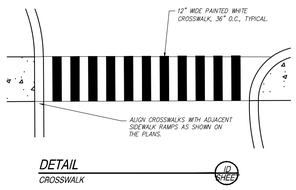
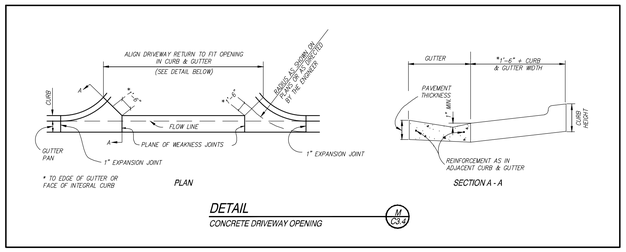
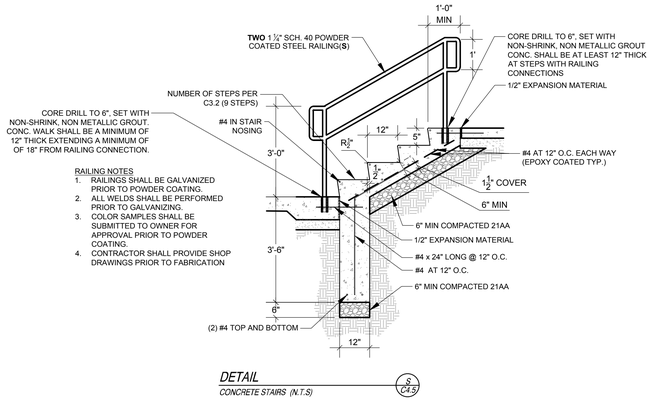


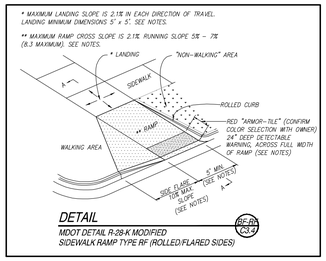
DETAIL
CROSSWALK
10 SHEET



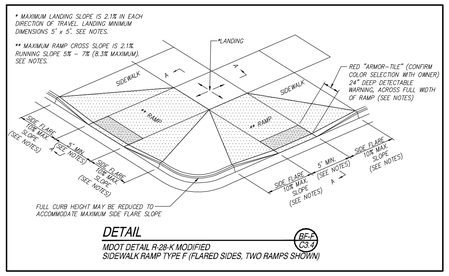
DETAIL
CONCRETE DRIVEWAY OPENING
10 C3.4



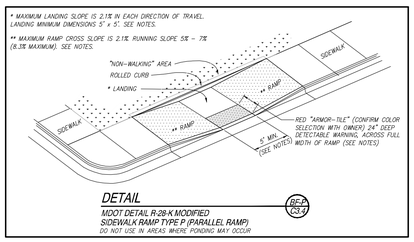
DETAIL
CONCRETE STAIRS (N.T.S)
S C4.5



DETAIL
MDOT DETAIL R-28-K MODIFIED
SIDEWALK RAMP TYPE RF (ROLLED/FLARED SIDES)
RF-RS C3.4



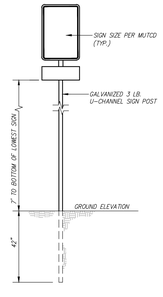
DETAIL
MDOT DETAIL R-28-K MODIFIED
SIDEWALK RAMP TYPE F (FLARED SIDES, TWO RAMPS SHOWN)
BF-F C3.4



DETAIL
MDOT DETAIL R-28-K MODIFIED
SIDEWALK RAMP TYPE P (PARALLEL RAMP)
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR
BF-P C3.4

SIDEWALK RAMP NOTES (MDOT DETAIL R-28-K MODIFIED)

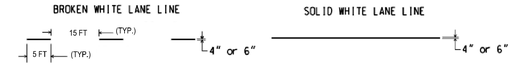
1. DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS BY ALL PUBLIC AGENCIES AND BY ALL PRIVATE ORGANIZATIONS CONSTRUCTING FACILITIES FOR PUBLIC USE.
2. SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
3. RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.
4. SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.
5. SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.
6. CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.
7. RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.
8. PROVIDE TURNING SPACES WHERE PEDESTRIAN TURNING MOVEMENTS ARE REQUIRED.
9. WHEN 5' MINIMUM WIDTHS ARE NOT FEASIBLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND TURNING SPACES TO NOT LESS THAN 4' x 4'.
10. CURB RAMPS WITH RUNNING SLOPE EQUAL TO OR LESS THAN 5% DO NOT REQUIRE A TOP LANDING. HOWEVER, ANY CONTINUOUS SIDEWALK OR PEDESTRIAN ROUTE CROSSING THROUGH OR INTERSECTING THE CURB RAMP MUST INDEPENDENTLY MAINTAIN A CROSS SLOPE NOT GREATER THAN 2.1% PERPENDICULAR TO ITS OWN DIRECTION(S) OF TRAVEL.
11. DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.
12. FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.
13. THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH INCLUDING LANDINGS OR TRANSITIONS.
14. IF POSSIBLE, DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED IN THE NEW CONSTRUCTION, THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN 1/2". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.
15. TRANSITION THE GUTTER PAN CROSS SECTION SUCH THAT THE COUNTER SLOPE IN THE DIRECTION OF RAMP TRAVEL IS NOT GREATER THAN 5.0% IN THE AREA OF THE CURB CUT OF THE SIDEWALK RAMP. MAINTAIN THE NORMAL GUTTER PAN CROSS SECTION ACROSS DRAINAGE STRUCTURES.
16. THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.
17. CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".
18. FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE, OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.
19. DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING. DETECTABLE WARNING PLATES TO BE RED CAST-IN-PLACE "ARMOR-TILE", OR APPROVED EQUAL (CONFIRM COLOR SELECTION WITH OWNER). IN ACCORDANCE WITH ANSI SECTIONS 406.13 AND 705, AND ADA CODE OF REGULATION 4A.29.



DETAIL
TYPICAL SIGN ON POST DETAIL



TYPES OF PERMANENT LONGITUDINAL LINES



DETAIL
PAVEMENT STRIPING

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HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN



JOB NO. 2600.41E
NORTH

SHEET TITLE
PAVING DETAILS

SHEET NO.
C3.4

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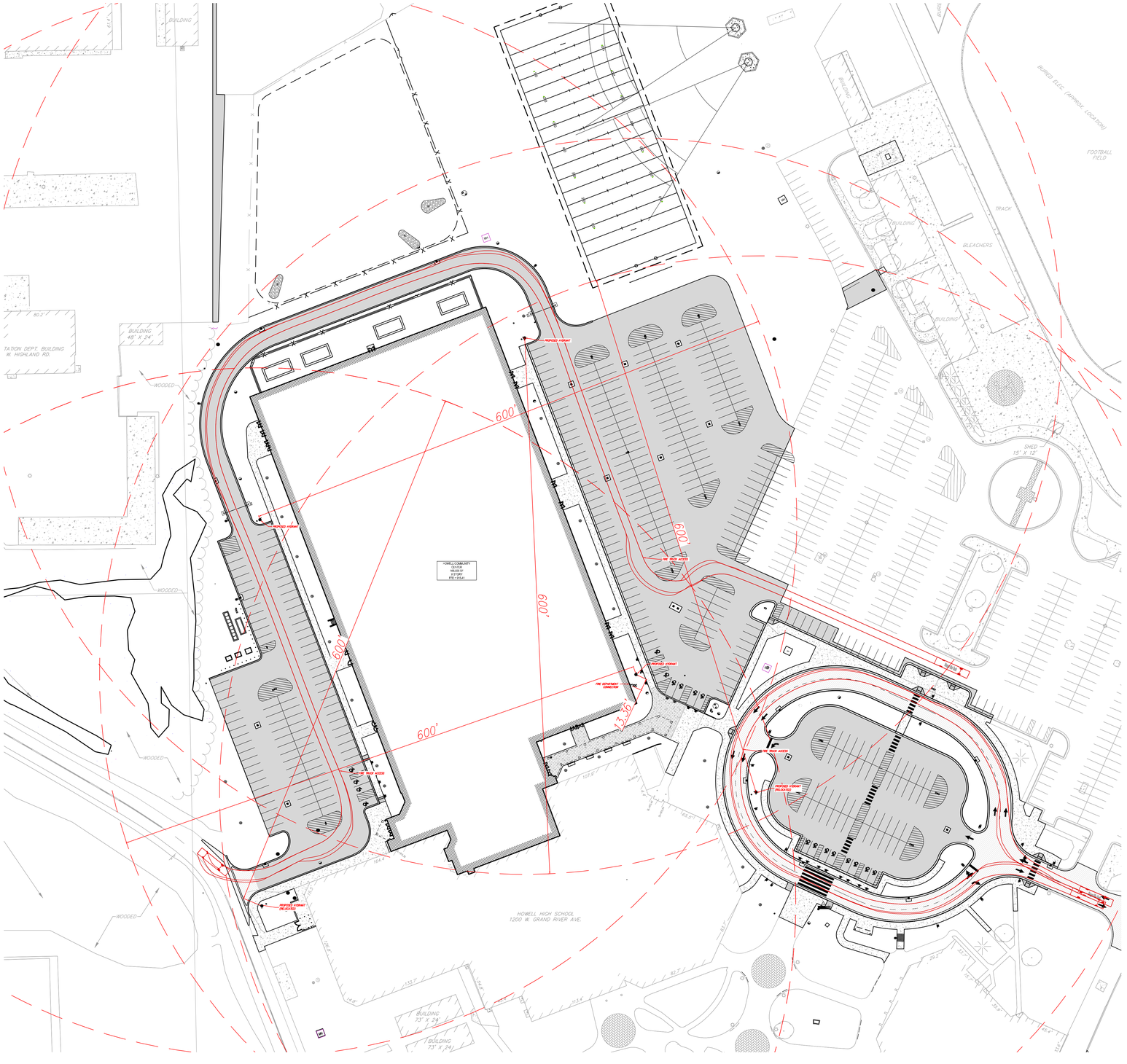

GRAPHIC SCALE

0 25 50 100

(IN FEET)

1 inch = 50 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/RECTIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 XXX — STRUCT. NO. / STRUCT. TYPE

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REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GEINGLER
LICENSED PROFESSIONAL ENGINEER
6201064437

JOB NO. 2600.41E

NORTH

SHEET TITLE
FIRE ACCESS PLAN

SHEET NO.
C3.5

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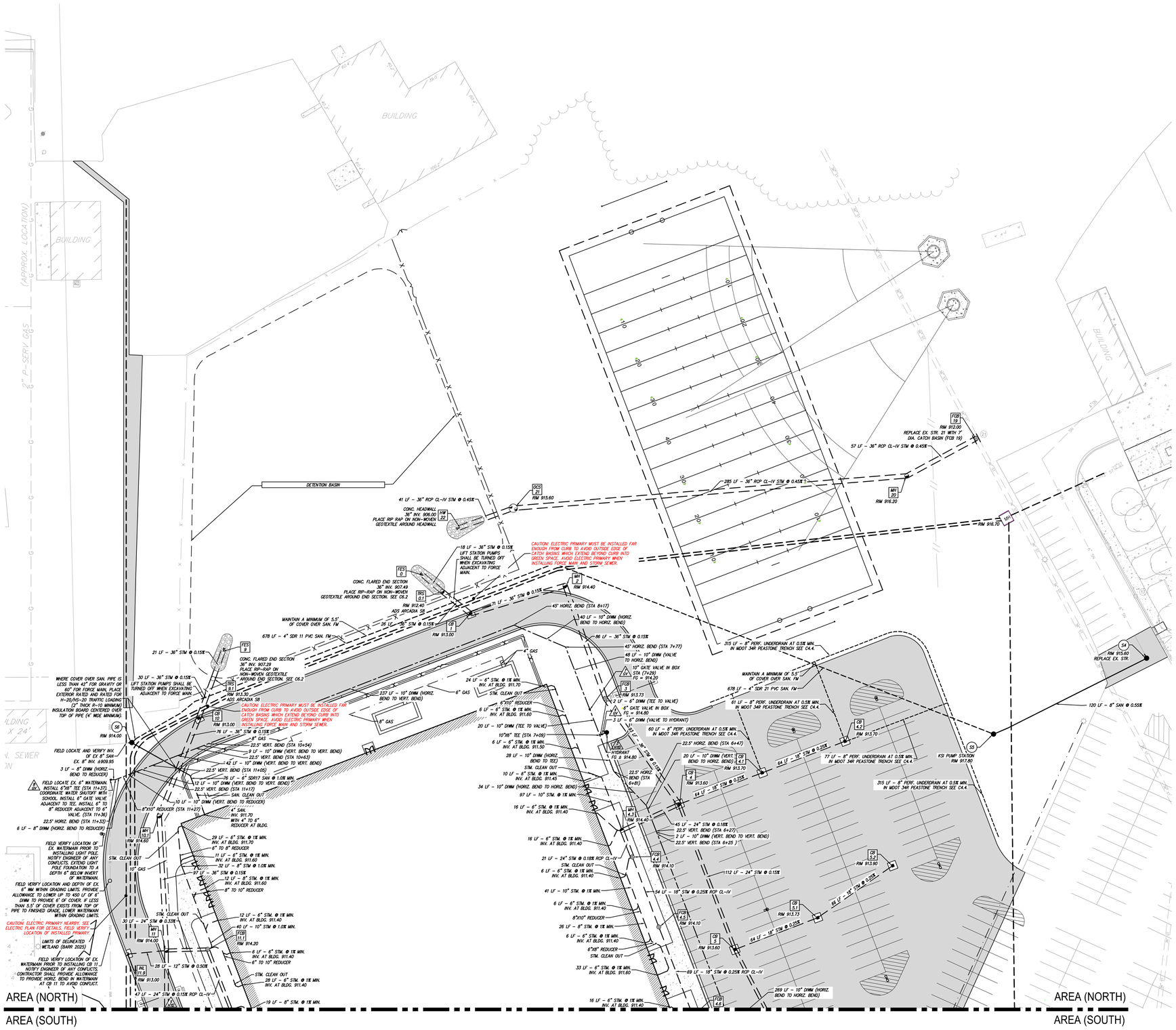
BUILDING
BUILDING
BUILDING
(APPROX. LOCATION)
2" P-SERV GAS
DETENTION BASIN
AREA (NORTH)
AREA (SOUTH)
AREA (NORTH)
AREA (SOUTH)
MH 20
RIM 916.20
RIM 916.70
RIM 915.60
REPLACE EX. STR.
RIM 915.40
RIM 913.30
RIM 913.00
RIM 914.00
RIM 914.40
RIM 914.10
RIM 913.60
RIM 913.73
RIM 914.20
RIM 914.60
RIM 914.00
RIM 913.00
RIM 913.70
RIM 913.90
RIM 913.60
RIM 914.60
RIM 914.00
RIM 913.00
RIM 917.80
KSI PUMP STATION
RIM 917.80
FCB 19
RIM 912.00
REPLACE EX. STR. 21 WITH 7' DIA. CATCH BASIN (FCB 19)
57 LF – 36" RCP CL–IV STM @ 0.45%
285 LF – 36" RCP CL–IV STM @ 0.45%
41 LF – 36" RCP CL–IV STM @ 0.45%
CONC. HEADWALL 36" INV. 906.00
PLACE RIP RAP ON NON–WOVEN GEOTEXTILE AROUND HEADWALL
FES 12
18 LF – 36" STM @ 0.15%
LIFT STATION PUMPS SHALL BE TURNED OFF WHEN EXCAVATING ADJACENT TO FORCE MAIN.
CAUTION! ELECTRIC PRIMARY MUST BE INSTALLED FAR ENOUGH FROM CURB TO AVOID OUTSIDE EDGE OF CATCH BASINS WHICH EXTEND BEYOND CURB INTO GREEN SPACE. AVOID ELECTRIC PRIMARY WHEN INSTALLING FORCE MAIN, AND STORM SEWER.
CONC. FLARED END SECTION 36" INV. 907.49
PLACE RIP–RAP ON NON–WOVEN GEOTEXTILE AROUND END SECTION. SEE C6.2
FES 0
RD 0.1
RIM 912.40
ADS ARCADIA SB
MH 2
RIM 914.40
45° HORIZ. BEND (STA 8+17)
71 LF – 36" STM @ 0.15%
MAINTAIN A MINIMUM OF 5.5' OF COVER OVER SAN. FM
26 LF – 36" STM @ 0.15%
CB 1
RIM 913.00
678 LF – 4" SDR 11 PVC SAN. FM
10 LF – 10" DWM (HORIZ. BEND TO HORIZ. BEND)
86 LF – 36" STM @ 0.15%
45° HORIZ. BEND (STA 7+77)
48 LF – 10" DWM (VALVE TO HORIZ. BEND)
10" GATE VALVE IN BOX STA (7+29) FG = 914.20
FCB 7.0
RIM 913.73
2 LF – 6" DWM (TEE TO VALVE)
6" GATE VALVE IN BOX FG = 914.80
FCB 7.1
3 LF – 6" DWM (VALVE TO HYDRANT)
HYDRANT FG = 914.80
FCB 6.1
315 LF – 8" PERF. UNDERDRAIN AT 0.5% MIN. IN MDOT 34R PEASTONE TRENCH SEE C4.4.
61 LF – 8" PERF. UNDERDRAIN AT 0.5% MIN. IN MDOT 34R PEASTONE TRENCH SEE C4.4.
60 LF – 8" PERF. UNDERDRAIN AT 0.5% MIN. IN MDOT 34R PEASTONE TRENCH SEE C4.4.
77 LF – 8" PERF. UNDERDRAIN AT 0.5% MIN. IN MDOT 34R PEASTONE TRENCH SEE C4.4.
315 LF – 8" PERF. UNDERDRAIN AT 0.5% MIN. IN MDOT 34R PEASTONE TRENCH SEE C4.4.
MAINTAIN A MINIMUM OF 5.5' OF COVER OVER SAN. FM
678 LF – 4" SDR 21 PVC SAN. FM
120 LF – 8" SAN @ 0.55%
CB 4.2
CB 4.1
CB 4
CB 5.2
CB 5.1
CB 5
CB 4.4
CB 4.3
CB 6
64 LF – 18" STM @ 0.25%
77 LF – 18" STM @ 0.25%
64 LF – 18" STM @ 0.25%
64 LF – 18" STM @ 0.25%
69 LF – 18" STM @ 0.25% RCP CL–IV
269 LF – 10" DWM (HORIZ. BEND TO HORIZ. BEND)
112 LF – 24" STM @ 0.15%
54 LF – 18" STM @ 0.25% RCP CL–IV
45 LF – 24" STM @ 0.15%
22.5° VERT. BEND (STA 6+27)
2 LF – 10" DWM (VERT. BEND TO VERT. BEND)
22.5° VERT. BEND (STA 6+25.7)
22.5° HORIZ. BEND (STA 6+47)
20 LF – 10" DWM (VERT. BEND TO HORIZ. BEND)
22.5° HORIZ. BEND (STA 6+81)
FES 9
FES 11
FES 10
FES 8.1
FES 11.1
FES 11.9
CB 10
CB 11
CB 10.1
MH 10.2
MH 11.1
MH 11.9
WHERE COVER OVER SAN. PIPE IS LESS THAN 42" FOR GRAVITY OR 60" FOR FORCE MAIN, PLACE EXTERIOR RATED AND RATED FOR H–20/HS–20 TRAFFIC LOADING (2" THICK R–10 MINIMUM) INSULATION BOARD CENTERED OVER TOP OF PIPE (4' WIDE MINIMUM).
30 LF – 36" STM @ 0.15%
CAUTION! ELECTRIC PRIMARY MUST BE INSTALLED FAR ENOUGH FROM CURB TO AVOID OUTSIDE EDGE OF CATCH BASINS WHICH EXTEND BEYOND CURB INTO GREEN SPACE. AVOID ELECTRIC PRIMARY WHEN INSTALLING FORCE MAIN AND STORM SEWER.
237 LF – 10" DWM (HORIZ. BEND TO VERT. BEND)
24 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.70
STM. CLEAN OUT
6"X10" REDUCER
6 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.60
20 LF – 10" DWM (TEE TO VALVE)
10"X6" TEE (STA 7+09)
6 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.50
28 LF – 10" DWM (HORIZ. BEND TO TEE)
STM. CLEAN OUT
10 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.40
34 LF – 10" DWM (HORIZ. BEND TO HORIZ. BEND)
97 LF – 10" STM. @ 1% MIN.
16 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.40
16 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.40
21 LF – 24" STM @ 0.15% RCP CL–IV
STM. CLEAN OUT
6 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.40
41 LF – 10" STM. @ 1% MIN.
6 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.40
8"X10" REDUCER
26 LF – 8" STM. @ 1% MIN.
6 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.40
6"X8" REDUCER
STM. CLEAN OUT
33 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.60
16 LF – 6" STM. @ 1% MIN. INV. AT BLDG. 911.40
FCB 4.4
FCB 4.5
FCB 4.6
FCB 5
FCB 5.1
FCB 6
FCB 6.1
FCB 7.0
FCB 7.1
FCB 10
FCB 10.1
FCB 11
FCB 11.1
FCB 11.9
FES 0
FES 8.1
FES 9
FES 10
FES 11
FES 11.1
FES 11.9
FES 12
RD 0.1
RD 8.1
RD 10
RD 11.9
RD 12
RD 13
RD 14
RD 15
RD 16
RD 17
RD 18
RD 19
RD 20
RD 21
RD 22
RD 23
RD 24
RD 25
RD 26
RD 27
RD 28
RD 29
RD 30
RD 31
RD

AREA (NORTH)

AREA (SOUTHWEST)

AREA (NORTH)

AREA (SOUTHWEST)

AREA (SOUTHEAST)

HOWELL COMMUNITY CENTER
166,000 SF
X STORY
FFE = 915.41

HOWELL HIGH SCHOOL
1200 W. GRAND RIVER AVE.

BUILDING 73' X 24'

BUILDING 73' X 24'

PROP. CR LOOP PHASE 2 LIMITS

GRAPHIC SCALE
0 15 30 60
(IN FEET)
1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB — STRUCT. TYPE; 2 — STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 — STRUCT. NO.; XXX — STRUCT. TYPE

ELECTRICAL ROUTING NOTE

ALL UNDERGROUND ELECTRIC SHOWN ON THIS PLAN IS APPROXIMATE AND IS FOR INFORMATION PURPOSES ONLY. UNDERGROUND ELECTRIC IS SHOWN BASED ON RECORD DRAWINGS AND IN SOME AREAS, SPECIFICALLY NEAR THE BASEBALL FIELDS, LOCATED BY GROUND PENETRATING RADAR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UNDERGROUND ELECTRIC USING GROUND PENETRATING RADAR PRIOR TO CONSTRUCTION. SEE ELECTRICAL PLANS FOR ALL UNDERGROUND ELECTRIC DEMOLITION AND NEW ELECTRIC ROUTING.

STORM STRUCTURE SCHEDULE

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT	COORD.
4.10	4' DIA FIELD CATCH BASIN	914.30	12" 12"	N W	909.80' 910.00'	In In	N 407687.25 E 1323257.49
4.11	2' DIA INLET CB	914.00	10" 6"	SE S	910.20' 910.40'	Out Out	N 407704.17 E 1323222.47
4.12	2' DIA INLET CB	914.30	10"	N	910.40'	Out	N 407666.35 E 1323201.97
4.13	2' DIA INLET CB	914.20	10" 6"	E S	910.50' 910.70'	Out Out	N 407680.82 E 1323163.28
4.14	2' DIA INLET CB	914.40	10"	N	910.60'	Out	N 407651.22 E 1323169.64
4.5	4' DIA FIELD CATCH BASIN	914.10	18" 18"	S N	908.75' 908.75'	Out In	N 407994.53 E 1323156.27
4.6	4' DIA FIELD CATCH BASIN	914.10	18" 18" 10"	S N SW	908.92' 908.92' 910.30'	Out In In	N 407930.46 E 1323180.85
4.7	4' DIA FIELD CATCH BASIN	914.10	18"	N S	909.05' 909.05'	In Out	N 407882.20 E 1323189.03
4.8	4' DIA FIELD CATCH BASIN	914.10	18" 18" 8"	S N SW	909.19' 909.19' 910.20'	Out In In	N 407831.94 E 1323218.36
4.9	4' DIA MANHOLE	914.35	12" 18" 6" 8"	S N E SW	909.64' 909.44' 909.90' 910.30'	Out In In Out	N 407737.65 E 1323255.73
5	5' DIA CATCH BASIN	913.60	24" 24" 18"	N SE E	908.32' 908.32' 909.20'	In Out Out	N 407978.29 E 1323271.30
5.1	4' DIA CATCH BASIN	913.73	18" 18"	W NE	909.36' 909.36'	In Out	N 408001.19 E 1323271.01
5.2	4' DIA CATCH BASIN	913.90	18"	SW	909.52'	In	N 408038.77 E 1323235.13
6	4' DIA CATCH BASIN	913.10	24" 24"	NW SE	908.56' 908.57'	In Out	N 407834.93 E 1323285.18
7	4' DIA CATCH BASIN	913.10	24" 24"	NW S	908.58' 908.58'	In Out	N 407832.37 E 1323290.06
11	6' DIA MANHOLE	914.00	30" 36" 24" 12"	S N E W	907.80' 907.63' 908.40' 908.00'	In Out Out In	N 407977.50 E 1323800.81
11.1	4' DIA FIELD CATCH BASIN	914.20	24" 24" 10"	S W E	908.50' 908.50' 910.50'	Out In Out	N 407978.39 E 1323830.67
11.2	4' DIA FIELD CATCH BASIN	914.20	24" 24" 8"	S N E	908.53' 908.57' 910.60'	In Out Out	N 407934.87 E 1323847.31
11.3	4' DIA FIELD CATCH BASIN	914.20	18" 18" 8"	S N E	909.04' 908.64' 910.60'	Out In Out	N 407890.32 E 1323864.26
11.4	4' DIA FIELD CATCH BASIN	914.20	18" 18"	S N	909.17' 909.17'	In Out	N 407846.04 E 1323881.10
11.5	4' DIA FIELD CATCH BASIN	914.20	18" 18" 6"	S N NE	909.32' 909.32' 910.60'	Out In Out	N 407795.08 E 1323900.62
11.6	4' DIA FIELD CATCH BASIN	914.20	18" 18" 8"	S N NE	909.52' 909.52' 910.60'	Out In Out	N 407729.84 E 1323925.50
11.7	4' DIA FIELD CATCH BASIN	914.20	12" 18" 10"	S N E	910.21' 909.72' 909.91'	Out In Out	N 407656.30 E 1323953.50
11.8	4' DIA FIELD CATCH BASIN	914.20	12"	N	910.29'	In	N 407633.83 E 1323962.01
11.9	2' DIA INLET	913.00	12"	E	908.14'	Out	N 407974.88 E 1323772.57
12	4' DIA CATCH BASIN	913.30	24" 30"	SE N	908.03' 908.03'	In Out	N 407944.43 E 1323800.88
13	4' DIA MANHOLE	913.90	24" 24"	S NW	908.12' 908.12'	In Out	N 407788.63 E 1323829.93
14	4' DIA CATCH BASIN	913.00	24" 24"	S N	908.25' 908.25'	In Out	N 407701.70 E 1323820.04
15	4' DIA CATCH BASIN	913.00	12" 24" 18"	W N SE	908.59' 908.39' 908.39'	In Out In	N 407613.84 E 1323853.60
15.1	5' DIA MANHOLE	914.50	12" 18" 10"	E NW NE	910.00' 908.57' 908.98'	Out Out Out	N 407547.97 E 1323890.24
16	4' DIA FIELD CATCH BASIN	912.90	12" 12" 12"	N SE E	908.77' 908.77' 908.77'	Out Out Out	N 407592.39 E 1323801.21
16.1	4' DIA FIELD CATCH BASIN	912.90	12"	S	908.93'	In	N 407638.54 E 1323784.10
17	4' DIA CATCH BASIN	913.80	12" 12"	SE NW	908.94' 908.94'	In In	N 407546.39 E 1323828.49
18	2' DIA INLET CB	914.20	12" 6"	NW S	909.12' 911.30'	In In	N 407494.95 E 1323852.12

SANITARY STRUCTURE SCHEDULE

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT	COORD.
S1	4' DIA MANHOLE	915.10	8" 8" 4" 10"	S NW NE E	909.95' 910.34' 911.00' 911.04'	In In Out In	N 407508.28 E 1323580.65
S2	4' DIA MANHOLE	915.00	8" 8" 8"	NE SE NW	910.48' 910.38' 910.60'	In Out In	N 407514.07 E 1323584.04
S2.1	KSI PUMP STATION	914.40	2" 4"	S NE	908.90' 906.66'	In Out	N 407557.65 E 1323584.67
S3	4' DIA MANHOLE	913.90	8" 8"	E SW	910.90' 910.80'	Out Out	N 407584.07 E 1323587.67

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSED PROFESSIONAL ENGINEER
6201054447

(AS NOTED)
NORTH

JOB NO. 2600.41E

SHEET TITLE
UTILITY PLAN SOUTHWEST

SHEET NO.
C4.2

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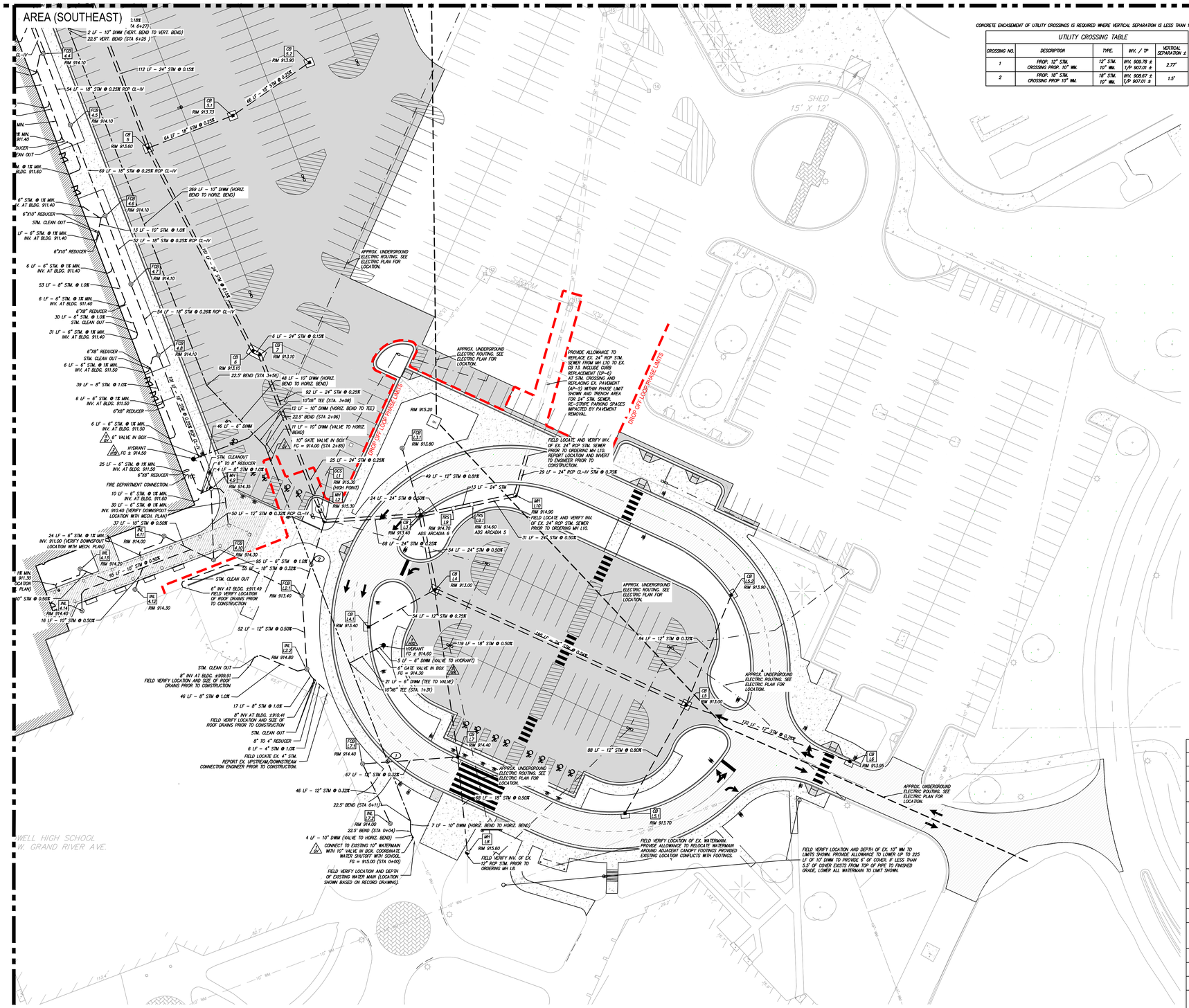
AREA (NORTH)

AREA (SOUTHWEST)

AREA (SOUTHEAST)

AREA (NORTH)



CONCRETE ENCASEMENT OF UTILITY CROSSINGS IS REQUIRED WHERE VERTICAL SEPARATION IS LESS THAN 1.5'

UTILITY CROSSING TABLE

CROSSING NO.	DESCRIPTION	TYPE	INV. / TP	VERTICAL SEPARATION ±
1	PROP. 12" STM. CROSSING PROP. 10" WM.	12" STM. 10" WM.	INV. 909.78 ± T/P 907.01 ±	2.77'
2	PROP. 18" STM. CROSSING PROP 10" WM.	18" STM. 10" WM.	INV. 908.67 ± T/P 907.01 ±	1.5'

GRAPHIC SCALE

0 15 30 60

(IN FEET)

1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- 2 – UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 – STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX – STRUCT. NO. / STRUCT. TYPE

UTILITY NOTES

1. STORM SEWER 12" AND LARGER SHALL BE ADS HP PIPE (HDPP) UNLESS OTHERWISE NOTED.
2. STORM SEWER 6" AND SMALLER SHALL BE PVC SDR 23.5. STORM SEWER GREATER THAN 6" THROUGH 10" SHALL BE PVC SDR 26.
3. SANITARY SEWER SHALL SHALL BE SOLID WALL, PVC, SDR 23.5 UNLESS OTHERWISE NOTED.
4. WATER MAIN SHALL BE CLASS 54 DUCTILE IRON. WATER MAINS SHALL BE LEAKAGE AND PRESSURE TESTED IN ACCORDANCE WITH AWWA STANDARD C600. WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD C651 PRIOR TO BEING PUT INTO SERVICE.
5. ALL UTILITY TRENCHES THAT FALL WITHIN A 1–ON–1 INFLUENCE OF PAVEMENT AREAS SHALL BE BACKFILLED WITH CLASS 2 SAND AND COMPACTED TO 95% OF MAXIMUM DENSITY.
6. ALL WATER MAIN SHALL BE BURIED WITH 6' OF COVER FROM PROPOSED GRADES. USE 22.5° BENDS TO LOWER WATER MAIN WHERE NOTED AT UTILITY CROSSINGS.
7. WHERE HYDRANTS ARE INDICATED ON THE PLAN, COMPLETE HYDRANT ASSEMBLIES ARE REQUIRED, INCLUDING SHUT–OFF VALVE AND BOX (REFER TO THE STANDARD DETAIL SHEET FOR DETAILED REQUIREMENTS) THE ELEVATION OF THE VALVE BOX SHALL BE EQUAL TO THE FINISH GRADE (FG) ELEVATION OF THE HYDRANT UNLESS OTHERWISE NOTED.
8. ALL UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE **CITY OF HOWELL**.
9. ALL UTILITIES SHALL BE INSTALLED ON CLASS "B" BEDDING OR BETTER.
10. ALL HYDRANTS MUST BE AT LEAST 5' FROM THE BACK OF CURB OR EDGE OF PAVEMENT.
11. ALL UTILITIES SHALL BE PLACED AT LEAST 10' FROM OTHER UTILITIES, SIGNIFICANT TREES, AND FIXED STRUCTURES.
12. UNLESS OTHERWISE NOTED, ALL STORM SEWER STRUCTURES SHALL BE 4' DIAMETER (INLETS SHALL BE 2' DIAMETER). CONTRACTOR IS RESPONSIBLE FOR VERIFYING STRUCTURES SIZES IN RELATION TO PIPE SIZES AND ANGLES AND PRICING THEIR BID ACCORDINGLY, UNLESS OTHERWISE INDICATED ON THE STANDARD DETAIL SHEETS (STORM STRUCTURES SHALL BE): P1M1 CATCH BASINS – EJIW 5105 – "M1" (FRAMES WITH CURB BOXES WILL NOT BE ALLOWED)
YARD CATCH BASINS – EJIW 1040 – "T02"
MANHOLES – EJIW 1040 – "A"
13. PLACEMENT OF EDGE DRAINS AND FINGER DRAINS AT ALL PAVEMENT CATCH BASINS IS REQUIRED. SEE STRUCTURE UNDERDRAIN DETAIL SHEET C3.1.
14. FOR CURB CATCH BASINS, SEE BASIN LOCATION DETAIL FOR BASIN STAKING RELATIVE TO THE CURB.
15. SANITARY MANHOLE COVERS SHALL BE LABELED "SANITARY SEWER" ONLY. REFER TO STANDARD DETAIL SHEET FOR REQUIRED TEXT OF UTILITY CASTINGS.
16. LOCATIONS OF LIGHT POLES, IF SHOWN ON THESE DRAWINGS, MAY BE APPROXIMATE. CONFIRM EXACT LOCATION (I.E. CURB OFFSETS, SIDEWALK OFFSETS, ETC.) PRIOR TO STAKING AND CONSTRUCTION. REFER TO SITE ELECTRICAL PLAN FOR DETAILS, AND COORDINATE WITH ELECTRICAL ENGINEER, ARCHITECT, AND CIVIL ENGINEER TO DETERMINE PROPER PLACEMENT.
17. WHERE THESE PLANS DIFFER FROM THE STANDARD DETAILS OR STANDARD SPECIFICATIONS OF THE CITY OF HOWELL AND LIVINGSTON COUNTY, THE CITY OF HOWELL AND LIVINGSTON COUNTY REQUIREMENTS SHALL GOVERN.

ELECTRICAL ROUTING NOTE

ALL UNDERGROUND ELECTRIC SHOWN ON THIS PLAN IS APPROXIMATE AND IS FOR INFORMATION PURPOSES ONLY. UNDERGROUND ELECTRIC IS SHOWN BASED ON RECORD DRAWINGS AND IN SOME AREAS, SPECIFICALLY NEAR THE BASEBALL FIELD, LOCATED BY GROUND PENETRATING RADAR. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UNDERGROUND ELECTRIC USING GROUND PENETRATING RADAR PRIOR TO CONSTRUCTION. SEE ELECTRICAL PLANS FOR ALL UNDERGROUND ELECTRIC DEMOLITION AND NEW ELECTRIC ROUTING.

STORM STRUCTURE SCHEDULE

STR. NO.	TYPE	RIM ELEV.	INV. SIZE	INV. DIR.	INVERT	IN/OUT	COORD.
L1	OUTLET CONTROL STRUCTURE	915.30	24" 24"	N SE	908.87' 908.87'	In Out	N 407723.30 E 1323633Z.30
L2	4' DIA MANHOLE	915.30	24" 18" 24"	NW S E	908.84' 908.20' 907.80'	In Out Out	N 407714.83 E 1323633S.86
L2.1	4' DIA FIELD CATCH BASIN	913.40	12" 18" 6"	S N NW	908.78' 908.38' 909.17'	In In Out	N 407661.93 E 1323631Z.96
L2.2	2' DIA INLET CB	914.80	12" 8" 6"	N SE W	909.04' 909.24' 909.24'	Out Out Out	N 407610.13 E 1323632Z.34
L3	6' DIA. CATCH BASIN	913.40	24" 24" 24" 12"	S W E N	905.36' 907.63' 905.34' 909.40'	In In In Out	N 407718.89 E 1323643.87
L3.1	4' DIA FIELD CATCH BASIN	913.80	12"	S	909.80'	In	N 407766.22 E 1323639Z.60
L4	5' DIA CATCH BASIN	913.00	12" 24" 24" 18"	SW SE N S	909.00' 907.49' 905.61' 905.61'	In Out Out In	N 407666.06 E 1323643.59
L4.1	4' DIA CATCH BASIN	913.40	12"	NE	909.40'	Out	N 407639.91 E 1323636Z.87
L5	4' DIA CATCH BASIN	913.00	24" 12" 12" 12"	NW N SW E	907.96' 908.66' 909.00' 909.00'	In Out Out Out	N 407584.81 E 1323659Z.24
L5.1	4' DIA CATCH BASIN	913.70	12"	NE	909.70'	In	N 407508.25 E 1323654B.07
L5.2	4' DIA CATCH BASIN	913.90	12"	S	908.93'	In	N 407562.46 E 1323663.05
L6	4' DIA CATCH BASIN	913.95	12"	W	909.95'	In	N 407544.87 E 1323670Z.85
L7	4' DIA CATCH BASIN	914.40	18" 12" 18"	S W N	906.21' 909.63' 906.21'	Out In Out	N 407548.05 E 1323642S.90
L7.1	4' DIA FIELD CATCH BASIN	914.40	12" 12"	SE E	909.85' 909.85'	Out Out	N 407543.15 E 1323636Z.74
L7.2	2' DIA INLET CB	914.00	12"	NW	910.00'	In	N 407500.98 E 1323638Z.28
L8	4' DIA MANHOLE	915.60	18" 12"	N S	906.55' 908.55'	In Out	N 407480.47 E 1323643Z.72
L9	TREATMENT STRUCTURE	914.70	24" 24"	W E	905.23' 905.23'	Out In	N 407723.78 E 1323642Z.02
L9.1	TREATMENT STRUCTURE	914.60	24" 24"	W E	905.16' 905.16'	Out In	N 407728.47 E 1323643Z.81
L10	5' DIA MANHOLE	914.90	24" 24"	W N	905.00' 905.00'	Out Out	N 407732.95 E 1323647Z.60

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WELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE

CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN



(AS NOTED)

NORTH

JOB NO. 2600.41E

SHEET TITLE
UTILITY PLAN SOUTHEAST

SHEET NO.
C4.3

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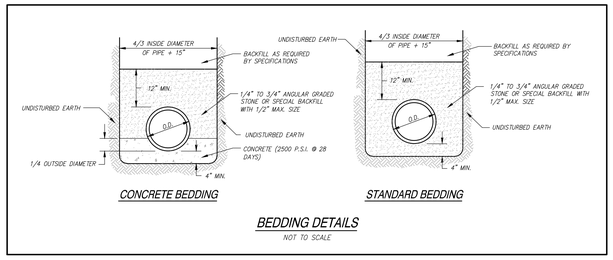
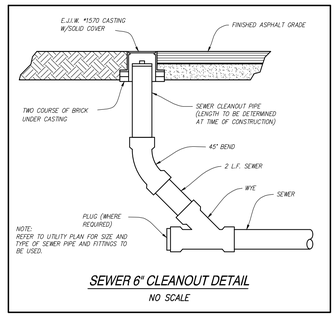


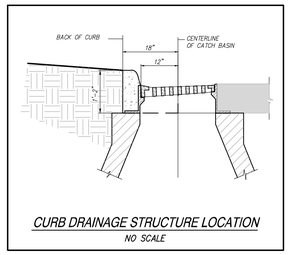
BEDDING DETAILS

NOT TO SCALE



SEWER 6" CLEANOUT DETAIL

NO SCALE



CURB DRAINAGE STRUCTURE LOCATION

NO SCALE

PIPE RESTRAINT SCHEDULE

GROUND BURIED PRESSURE PIPE – DUCTILE IRON

PIPE DIAMETER	TEES, 90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS	DEAD ENDS	REDUCERS (ONE SIZE REDUCTION)*	REDUCERS (TWO SIZE REDUCTION)*
4	11	5	2	1	28	–	–
6	16	7	3	2	41	21	–
8	21	9	4	2	52	21	49
12	30	12	6	3	75	40	81
16	38	16	8	4	97	41	96
20	46	19	9	5	118	42	94
24	54	22	11	5	139	42	92
30	65	27	13	6	169	59	117
36	75	31	15	7	197	59	132

LENGTHS OF PIPE RESTRAINT ARE GIVEN IN FEET.

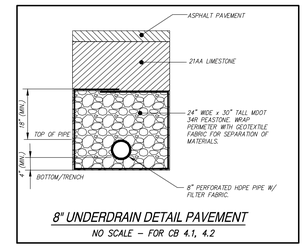
IF REQUIRED PIPE DIAMETER IS NOT LISTED IN THIS TABLE, THE NEXT LARGEST PIPE DIAMETER SHALL BE USED.

THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE PLUS WATER HAMMER). FOR OTHER TEST PRESSURES, ALL VALUES TO BE INCREASED OR DECREASED PROPORTIONALLY.

THE VALUES PROVIDED OF RESTRAINT LENGTH ARE IN EACH DIRECTION FROM THE POINT OF DEFLECTION OR TERMINATION EXCEPT FOR TEES, AT WHICH ONLY THE BRANCH IN THE DIRECTION OF THE STEM.

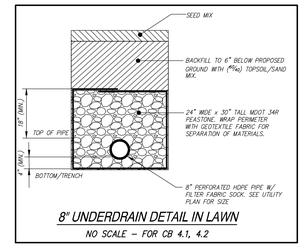
* SIZE REDUCTION IS BASED UPON THE PIPE DIAMETER SHOWN IN THIS TABLE.

BASED UPON: INTERNAL PRESSURE: 180
PIPE DEPTH: 5
BEDDING CLASS: TYPE 4
SOIL TYPE: GOOD SAND
SAFETY FACTOR: 2



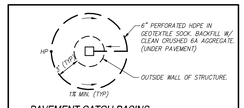
8" UNDERDRAIN DETAIL PAVEMENT

NO SCALE – FOR CB 4.1, 4.2

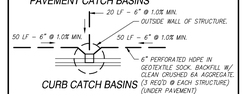


8" UNDERDRAIN DETAIL IN LAWN

NO SCALE – FOR CB 4.1, 4.2



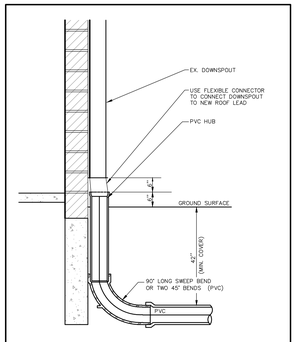
PAVEMENT CATCH BASINS



CURB CATCH BASINS

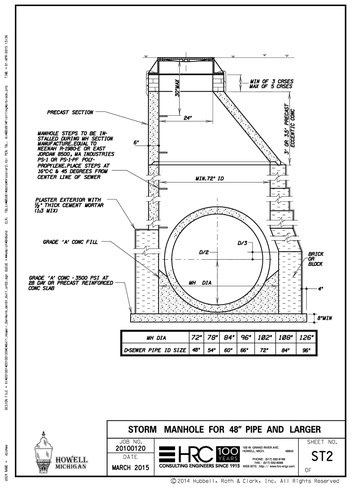
STRUCTURE UNDERDRAIN DETAIL

NO SCALE



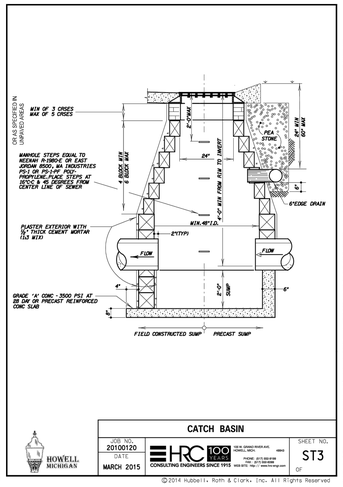
TYPICAL ROOF CONDUCTOR CONNECTION

NO SCALE

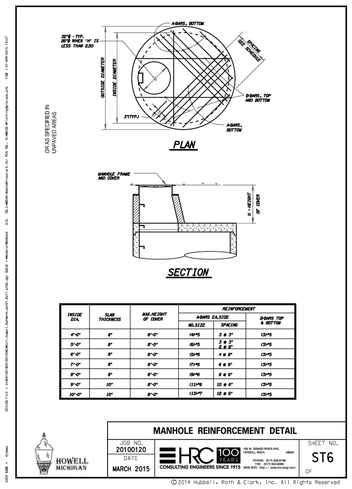


MH. DIA	72"	78"	84"	96"	102"	108"	120"
D-SEWER PIPE I.D. SIZE	48"	54"	60"	66"	72"	84"	96"

STORM MANHOLE FOR 48" PIPE AND LARGER

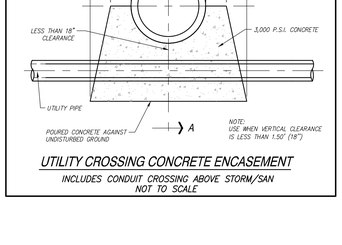


CATCH BASIN

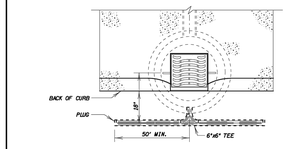


SHEET DIA.	SLAB THICKNESS	MAX HEIGHT OF COVER	REINFORCEMENT	
			ASBWL CAGE SIZE	
			W5.5 SIZE	SPACING
4'-0"	8"	8'-0"	W4.5	3 @ 3"
5'-0"	8"	8'-0"	W5.5	3 @ 3" 2 @ 6"
6'-0"	8"	8'-0"	W5.5	3 @ 3" 3 @ 6"
7'-0"	8"	8'-0"	W5.5	4 @ 3" 4 @ 6"
8'-0"	8"	8'-0"	W5.5	4 @ 3" 4 @ 6"
8'-0"	9"	8'-0"	W5.5	4 @ 3" 4 @ 6"
9'-0"	10"	8'-0"	W5.5	4 @ 3" 4 @ 6"
10'-0"	10"	8'-0"	W5.5	4 @ 3" 4 @ 6"

MANHOLE REINFORCEMENT DETAIL



FRAME AND COVER



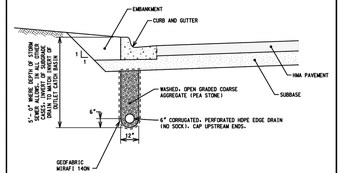
NOTES:
1. LENGTH OF 6" EDGE DRAIN TO BE A MINIMUM 50 FT. EACH WAY UNLESS OTHERWISE DETERMINED BY THE CITY. AREAS OF POORLY DRAINED SUBGRADE MAY REQUIRE ADDITIONAL EDGE DRAIN.
2. EDGE DRAIN SHALL BE INSTALLED AT ALL CATCH BASINS & INLETS WITHIN LIMITS OF PAVEMENT OF A PUBLIC ROAD.
3. 6" EDGE DRAIN TO BE GEOTEXTILE WRAPPED CORRUGATED PLASTIC PIPE WITH FOUR ROWS OF SLOTTED PERFORATIONS, OR APPROVED EQUAL.
4. NO SUMP LINES OR DRAINAGE LINES CAN BE TIED INTO EDGE DRAIN.

6" EDGE DRAIN AT STRUCTURE

STORM SEWER NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF HOWELL.
2. IT SHALL BE THE OWNER'S ENGINEER AND CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES.
3. ALL SEWER TRENCHES UNDER THE 45 DEGREE ZONE OF INFLUENCE LINE OF EXISTING OR PROPOSED PAVEMENTS, DRIVEPATHS, SIDEWALKS OR DRIVE APPROACHES SHALL BE BACKFILLED WITH MDOT 6A SAND IT SHALL BE COMPACTED TO AT LEAST 95% OF MAXIMUM UNIT WEIGHT.
4. ALL STORM SEWER SHALL BE INSTALLED ON CLASS "B" BEDDING OR BETTER.
5. JOINTS FOR STORM SEWER SHALL BE PREMIUM JOINTS (TONGUE AND GROOVE WITH RUBBER GASKETS).
6. LEAD MATERIAL SHALL BE SCHED 40 PVC OR SDR 35.

STORM SEWER NOTES



EDGE DRAIN UNDER CURB

THESE DRAWINGS AND THE WORK REPRESENTED THEREON ARE THE PROPERTY OF AND COPYRIGHTED BY KINGSCOTT ASSOCIATES AND MAY NOT BE USED ON REPRODUCED WITHOUT PERMISSION.

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201084447
LICENSED PROFESSIONAL ENGINEER

(AS NOTED)

JOB NO. 2600.41E — NORTH

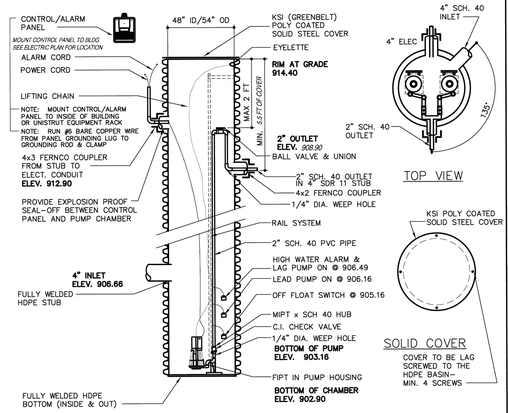
SHEET TITLE
UTILITY DETAILS

SHEET NO.
C4.4

© KINGSCOTT ASSOCIATES INC. KALAMAZOO, MICHIGAN

KSI PUMP STATION (S2.1)

KSI CUSTOM DUPLEX GRINDER PUMP PACKAGE
48" DIA. x 11.50 FT DEEP HDPE CHAMBER



KSI MUST HAVE A REPRESENTATIVE ON-SITE DURING INSTALLATION TO CERTIFY INSTALLATION FOR KSI WARRANTY

BY OTHERS (YOUR ELECTRICIAN) – KSI REQUIRES THAT IF THE PUMP CHAMBER WILL BE EXPOSED TO THE OUTSIDE ELEMENTS FOR MORE THAN A WEEK PRIOR TO INSTALLATION–ALL EXPOSED (OPEN) ELECTRICAL ENDS NEED TO BE SEALED FROM MOISTURE EXPOSURES BY A WATER TIGHT CONNECTION, CAP OR SHRINK HEAT TAPE, ETC.

KSI PROVIDES A ONE YEAR EQUIPMENT WARRANTY

NOTE: LINE HOLE W/MIN. 4 OZ NON-WOVEN GEOTEXTILE FABRIC AND BACKFILL WITH MDOT 6A CRUSHED STONE

CROSS SECTION

QTY.	PART NO.	DESCRIPTION
2	KSI 840 GRINDER	460 VOLT, 3 PH, 2 HP, NON AUTOMATIC PUMP
2	–	2" CHECK VALVE
2	–	2" BALL VALVE & UNION
1	–	DUPLEX ALTERNATING CONTROL PANEL W/ ALARM (NEMA 4X)
1	–	48" DIA. HDPE BASIN W/ SOLID COVER
2	–	RAIL SYSTEM W/ BASE

DESIGN BY: AG / RK | REV. DATE: 1-16-26 | 1 OF 1
MANUF. APPROVAL BY: - | SCALE: NTS | SHEET NO.
DRAWING NO. KSI 48 DUP GRINDER PC v25

KSI
KENNEDY SOLUTIONS, INC.
10051 Bergin Road
Howell, MI 48843
Ph: 517-225-8338

INSTALLATION INSTRUCTIONS
FOR KSI HDPE PUMP CHAMBER STRUCTURES

INSTALLATION GUIDELINES

1. KSI REQUIRES A COMPANY REP. TO BE ON SITE TO WITNESS THE INSTALLATION. KSI MUST BE NOTIFIED OF THE INSTALLATION DATE WITH A 3–4 DAY LEAD TIME TO ENSURE HAVING A REP ON SITE. FAILURE TO COMPLY WILL RESULT IN THE WARRANTY BEING NULL & VOID.

2. WRAP STRUCTURE ENVELOPE IN GEOTEXTILE FABRIC (4 OZ. NON–WOVEN)

3. EXCAVATE AREA FOR KSI STRUCTURE AND PREPARE TRENCH BOTTOM PER ASTM D2321, SECTIONS 6 & 7.

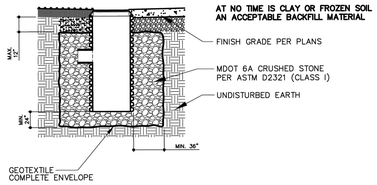
4. THE KSI STRUCTURE SHALL BE INSTALLED ON A BED OF NO LESS THAN 24" MDOT 6A CRUSHED STONE BEDDING MATERIALS COMPACTED TO 95% PROCTOR DENSITY.

5. INSTALL KSI STRUCTURES AT ELEVATIONS INDICATED ON SITE PLAN. COUPLE INLET AND OUTLET STUBS WITH APPROPRIATE PIPE COUPLINGS, FERNCOS OR HDPE DOUBLE BELL GASKETED COUPLERS TO CONVEYANCE PIPE.

6. BACKFILL UNIT WITH MDOT 6A CRUSHED STONE PER ASTM D2321. BACKFILL SHALL BE COMPACTED TO 95% PROCTOR DENSITY.

7. DURING INSTALLATION IT MAY BE NECESSARY TO FILL THE PUMP CHAMBER WITH WATER TO ASSIST WITH PLACEMENT, UPON COMPLETION OF INSTALL – FILL CHAMBER WITH WATER UP TO OUTLET ELEVATION.

8. INSTALL SAFETY FENCE – SEE NOTE BELOW.



AT NO TIME IS CLAY OR FROZEN SOIL AN ACCEPTABLE BACKFILL MATERIAL

INSTALLATION NOTE:
PUMP CHAMBER SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321. CARE SHOULD BE EXERCISED WITH CONSTRUCTION EQUIPMENT DURING INSTALLATION TO PROTECT THE CHAMBER FROM DAMAGE DUE TO POINT AND IMPACT LOADING. BACKFILL THE CHAMBER WITH MDOT 6A CRUSHED STONE. UPON INSTALLTION, THE CHAMBER SHALL BE FILLED WITH WATER TO THE OUTLET ELEVATION. ONCE THE CHAMBER IS INSTALLED, PLACE AN ORANGE SAFETY FENCE 4–5 FT HIGH WITH TEE POSTS AROUND THE CHAMBER. PLACE FENCE MIN. 3 FT BEYOND THE PUMP CHAMBER EXCAVATION AREA. ANY DAMAGE TO THE SYSTEM AS A RESULT OF NOT FOLLOWING THESE INSTRUCTIONS AND BLUEPRINT DETAILS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR THE REPAIR COST.

BY OTHERS (YOUR ELECTRICIAN) – KSI REQUIRES THAT IF THE PUMP CHAMBER WILL BE EXPOSED TO THE OUTSIDE ELEMENTS FOR MORE THAN A WEEK PRIOR TO INSTALLATION–ALL EXPOSED (OPEN) ELECTRICAL ENDS NEED TO BE SEALED FROM MOISTURE EXPOSURES BY A WATER TIGHT CONNECTION, CAP OR SHRINK HEAT TAPE, ETC.

DESIGN BY: AG / RK | REV. DATE: 8-5-25 | DATE: 8-27-19 | 1 OF 1
MANUF. APPROVAL BY: - | SCALE: NTS | SHEET NO.
DRAWING NO. PC INSTALL

KSI
KENNEDY SOLUTIONS, INC.
10051 Bergin Road
Howell, MI 48843
Ph: 517-225-8338

1/16/2026, 2:14 PM

Kennedy Solutions Inc.

TDH Calculations

Project Name:	Howell Community Center - Building
Q Allowable =	0.078
Total GPM =	35
Number of Pumps =	2
Each pump required capcity (Q) =	35

Static Head Calculations

Highest Elevation	914.4
Bottom of Pump Elevation	903.16
Static Head (Hs)	**11.24**

Dynamic Head Calculations

	2"	QTY	Total
Pipe & Fitting Size			
Length of Discharge Pipe	36	1	36
90° Elbow	5.2	3	15.6
Check Valve	17.2	1	17.2
Ball/Gate Valve	1.4	1	1.4
Length of pipe in chamber	2	1	2
		Total pipe length (L) =	**72.2**

C =	150
d for 2" =	2.047

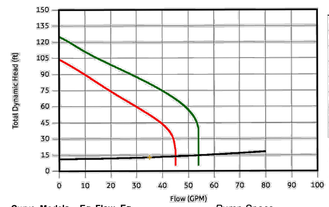
$$\text{Hazen-Williams} = \frac{10.44 \times L \times Q^{1.85}}{C^{1.85} \times d^{4.87}}$$

$$\text{dynamic head} = \frac{10.44 \times L \times Q^{1.85}}{C^{1.85} \times d^{4.87}}$$

dynamic head = 1.56

TDH = 12.80

Known Flow
Grinder
Sizing ID: TG7-PQL-NE4



Curve	Models	Eq. Flow	Eq. Head
	840	45.00	13.65
	841	54.00	14.62

System Curve

GPM	TDH (ft)
0.00	11.24
16.00	11.60
32.00	12.52
48.00	13.96
64.00	15.87
80.00	18.24
96.00	21.06

Flow (GPM)*: 35.00
TDH (ft)*: 12.75
***Per user data**

Fittings

Thru Tees	1
90° Elbows	3
Gate Valves	1
Check Valves	1

Pump Specs

Electrical	460 volt, 3 phase, 60 Hertz
Physical	
Discharge Size	1.25" NPT
Pipe Size	2.00"
Pipe Length (ft)	36.0000
Pipe Type	Plastic
Solids Handling (in.)	0
Static Head (ft)	11.2400
Discharge Pressure	0 PSI

By registering on this site, user acknowledges that Zoeller Company is not responsible for inaccurate pump sizing or misapplication due to incorrect information entered by the user. For sizing assistance, please contact Zoeller's Product Support Department at 1-800-928-7867 (or +1-502-778-2731), extension 6, or email zcctechnical@zoeller.com

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ZOELLER PUMP COMPANY

MAIL TO: P.O. BOX 16347 • Louisville, KY 40256-0347
SHIP TO: 3649 Cane Run Road • Louisville, KY 40211-1961
Tel: (502) 778-2731 • 1 (800) 928 PUMP

Visit our website: zoellerpumps.com

SECTION: 2.25.070
FM2709
0625
Supersedes
0724

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

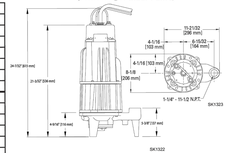
TECHNICAL DATA SHEET
MODEL 840 & 841
DUAL SEAL GRINDER PUMPS
Pump Systems And Controls

THE SHARK SERIES

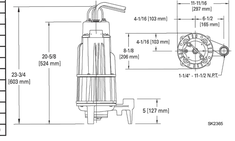
PRODUCT SPECIFICATIONS

MOTOR	Horse Power	2
	Voltage	200 - 460
	Phase	1 or 3 Ph
	Hertz	60 Hz
	RPM	3450
	Type	Capacitor start / capacitor run or 3 Ph
	Insulation	Class F
	Amps	5.5 - 20.0
PUMP	Operation	Nonautomatic
	Discharge Size	1-1/4" NPT vertical or horizontal
	Cord Length	20' (6 m) standard
	Cord Type	SOW or SOOW, multi-wire neoprene
	Max. Head	125' (38.1 m)
	Max. Flow Rate	59 GPM (223 LPM)
	Max. Operating Temp.	130 °F (54 °C)
	Cooling	Oil filled
	Motor Protection	Auto reset thermal overload (1 Ph), thermal sensor (3 Ph) Moisture Sensors
MATERIALS	Cap	Cast iron
	Motor Housing	Cast iron
	Adapter	Cast iron
	Pump Housing	Cast iron
	Upper Bearing	Ball bearing
	Lower Bearing	Ball bearing
	Mechanical Seals	Carbon/ceramic
	Impeller Type	Non-clogging vortex
	Impeller	Ductile iron
	Hardware	Stainless steel 304
	Motor Shaft	Stainless steel 416
	Square Rings	Neoprene
	Cutter	Hardened stainless steel, Rockwell C55-60

Model 840
(Reversing Grinder Pump)



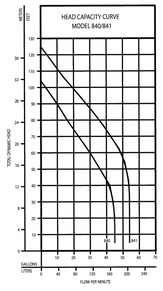
Model B41
Vertical Discharge



TOTAL DYNAMIC HEAD
FLOW PER MINUTE

MODEL	840		841	
Feet	Meters	Gal.	Liters	Gal.	Liters
5	1.5	45	170	54	204
10	3.0	45	170	54	204
20	6.1	45	170	54	204
30	9.1	44	167	54	204
40	12.2	42	159	54	204
50	15.2	36	136	52	197
60	18.3	30	114	49	185
70	21.3	23	87	43	163
80	24.4	16	61	36	136
90	27.4	10	38	28	106
100	30.5	3	11	19	72
110	33.5	--	--	11	42
120	36.6	--	--	4	15
Shut-off Head:		104 ft (31.7 m)		125 ft (38.1 m)	

016532



ELECTRICAL DATA AND CONTROL PANEL SELECTION GUIDE					
A) Models	Weight	Volts / Phase	Amps	B) NEMA 4X Control Panels	
840 REVERSING GRINDER				SIMPLEX	DUPLEX
EB40*	137 lbs (62.1 Kg)	230 / 1	17.2	23734-0001	24734-0001
IB40*	137 lbs (62.1 Kg)	200 / 1	20.0	23734-0001	24734-0001
FB40	132 lbs (59.8 Kg)	230 / 3	10.8	234F4-0001	244F4-0001
JB40	132 lbs (59.8 Kg)	200 / 3	12.3	234F4-0001	244F4-0001
GB40	132 lbs (59.8 Kg)	460 / 3	5.5	234D4-0001	244D4-0001
841 SINGLE DIRECTION GRINDER				SIMPLEX	DUPLEX
EB41*	137 lbs (62.1 Kg)	230 / 1	17.2	21734-0001	22734-0001
IB41*	137 lbs (62.1 Kg)	200 / 1	20.0	21734-0001	22734-0001
FB41	132 lbs (59.8 Kg)	230 / 3	10.8	114F4-0001	124F4-0001
JB41	132 lbs (59.8 Kg)	200 / 3	12.3	114F4-0001	124F4-0001
GB41	132 lbs (59.8 Kg)	460 / 3	5.5	114D4-0001	124D4-0001

B) CONTROL PANEL STANDARD FEATURES:
- NEMA 4X outdoor rating
- Automatic reversing circuit (840 model only)
- Audible and visual high water alarm
- Starting, control, and alarm circuits
- Thermal-cut-out circuit (3 Ph only)
- Circuit breaker and rated motor contactor (1 Ph)
- Capacitors and motor starting relay on (1 PH)
- Motor protective switch (circuit breaker / phase adjustable overloads) and rated motor contactor (3 Ph)
- Alternating circuit (duplex)
- High water alarm light
- Internal seal leak light
- HOA switches and pilot light(s)
- Terminal strips
- Padlock hasp
- Flasher for high water alarm light
- Dry auxiliary contact
- Elapsed time meters

* Single phase units require a set of capacitors and relay starting components, included in panel

STARTER KITS*		
P/N	Pump Model	Type
10-0380	840 & 841	Shipped Loose
*Starter kits needed if using existing panels and single phase (E or I model) grinder pumps		

CAUTION All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

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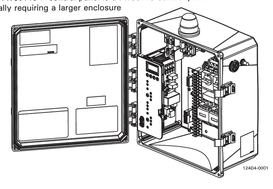
Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

ZOELLER PUMP COMPANY

SECTION: 2.50.056
FM3391
0322
Supersedes
0122

TECHNICAL DATA SHEET
Pivot Pro Series Control Panels

- ☐ Pivot — 1Ph control panel, highly featured
- ☑ Pivot Pro — 1Ph or 3Ph control panel with advanced features such as a user-friendly LCD interface and support for pump sensors and Z Control®
- ☐ Pivot Pro + — The Pivot Pro + control panel is a Pivot Pro control panel built with one or more options and usually requiring a larger enclosure



SPECIFICATIONS

Certifications
- cCSAus certified to standard UL508
- FCC Class-B certification to ISED Canada ICES-003, Issue 6
- For outdoor or indoor use,-40 °F to +140 °F (-40 °C to +60 °C)

Components
- Red alarm beacon with 360° visibility
- Audible alarm buzzer rated 95 db at 2' (0.6 m)
- SILENCE/RESET/TEST toggle switch with weatherproof rubber boot
- HAND/OFF/AUTO control are included for each pump
- RS-485 (12VDC, 2W) powered serial port for optional Z Control® Gateway connectivity
- Auxiliary output dry contacts (NO-COM-NC) terminals, Form C, 5A resistive load
- PUMP RUN dry contact, (NO-COM)
- NEMA 4X 14"x12"x6" enclosure with lockable latch

Power
- Control circuit powered by 120VAC, 60 Hz
- Alarm circuit can be powered by separate power feed, if needed
- Alarm and control circuits individually fused, 3A, fast-acting, 120VAC
- Circuit breaker protection on 1Ph models
- Multi-tap 200/230/460V transformer on 3Ph models
- Max alarm and control circuit power consumption: Simplex models 32W, Duplex models 40W
- Max standby power consumption: 5W
- Terminals for 120VAC control power, 120VAC alarm power, up to 4 float switches (duplex), pump input power
- 1Ph IEC motor contactors, models 120/208/240 VAC, 50/60Hz, up to 50A maximum
- 3PH IEC motor contactors, models 208/230/380/460/575 VAC, 60Hz

Field Wiring & Maintenance
- 4 enclosure mounting brackets are included
- 2 sets of wiring schematics and installation instructions are included along with an inside door mounted QR code for easy access to additional support material online
- All wires and terminal locations thoroughly labeled for easy identification
- All components are serviceable (See FM3364 for available replacement parts)

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WELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSED
6201064447
PROFESSIONAL ENGINEER

(AS NOTED)
NORTH

JOB NO. 2600.41E

SHEET TITLE
UTILITY DETAILS

SHEET NO.
C4.5

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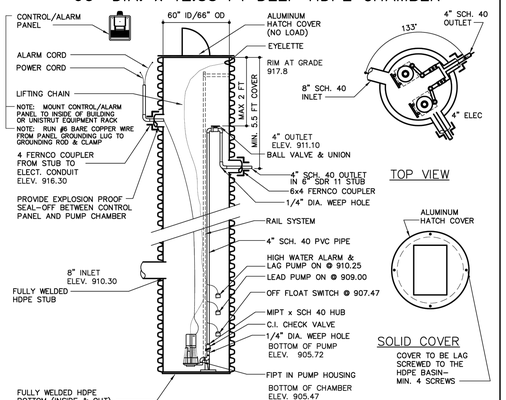
KSI PUMP STATION (S5)

KSI CUSTOM DUPLEX GRINDER PUMP PACKAGE
60" DIA. x 12.33 FT DEEP HDPE CHAMBER



KSI MUST HAVE A REPRESENTATIVE ON-SITE DURING INSTALLATION TO CERTIFY INSTALLATION FOR KSI WARRANTY

BY OTHERS (YOUR ELECTRICIAN) – KSI REQUIRES THAT IF THE PUMP CHAMBER WILL BE EXPOSED TO THE OUTSIDE ELEMENTS FOR MORE THAN A WEEK PRIOR TO INSTALLATION–ALL EXPOSED (OPEN) ELECTRICAL ENDS NEED TO BE SEALED FROM MOISTURE EXPOSURES BY A WATER TIGHT CONNECTION, CAP OR SHRINK HEAT TAPE, ETC.

KSI PROVIDES A ONE YEAR EQUIPMENT WARRANTY

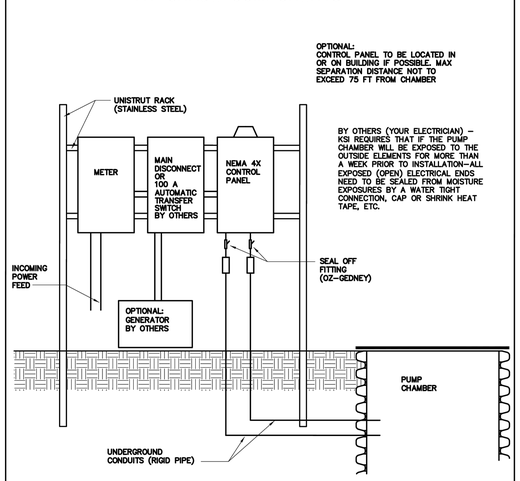
CROSS SECTION

NOTE: LINE HOLE W/MIN. 4 OZ NON–WOVEN GEOTEXTILE FABRIC AND BACKFILL WITH MDOT 6A CRUSHED STONE

QTY.	PART NO.	DESCRIPTION
2	KSI 71 GRINDER	460 VOLT, 3 PH, 5 HP, NON AUTOMATIC PUMP
2	–	4" CHECK VALVE
2	–	4" BALL VALVE & UNION
1	–	DUPLEX ALTERNATING CONTROL PANEL W/ ALARM (NEMA 4X)
1	–	60" DIA. ALUMINUM HATCH COVER
2	–	RAIL SYSTEM W/ BASE

DESIGN BY: AG / RK	REV: 3-24-26 DATE: 1-14-26	1 OF 1	KSI
MANUF. APPROVAL BY: -	SCALE: NTS	SHEET NO.	KENNEDY SOLUTIONS, INC. 10051 Bergin Road Howell, MI 48843 Ph: 517-225-8338
DRAWING NO. KSI 60 DUP GRINDER PC v25			

KSI STANDARD PUMP CHAMBER
AT GRADE COMPONENTS



DESIGN BY: AG / RK	REVISED: 8-5-25 DATE: 12-1-09	1 OF 1	KSI
MANUF. APPROVAL BY: -	SCALE: NTS	SHEET NO.	KENNEDY SOLUTIONS, INC. 10051 Bergin Road Howell, MI 48843 Ph: 517-225-8338
DRAWING NO. UNISTRUCT RACK DETAIL			

INSTALLATION INSTRUCTIONS
FOR KSI HDPE PUMP CHAMBER STRUCTURES

INSTALLATION GUIDELINES

1. KSI REQUIRES A COMPANY REP TO BE ON SITE TO WITNESS THE INSTALLATION. KSI MUST BE NOTIFIED OF THE INSTALLATION DATE WITH A 3–4 DAY LEAD TIME TO ENSURE HAVING A REP ON SITE. FAILURE TO COMPLY WILL RESULT IN THE WARRANTY BEING NULL & VOID.

2. WRAP STRUCTURE ENVELOPE IN GEOTEXTILE FABRIC (4 OZ. NON–WOVEN)

3. EXCAVATE AREA FOR KSI STRUCTURE AND PREPARE TRENCH BOTTOM PER ASTM D2321, SECTIONS 6 & 7.

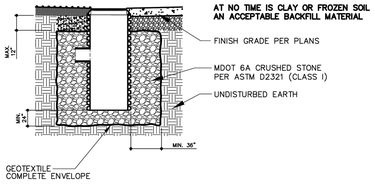
4. THE KSI STRUCTURE SHALL BE INSTALLED ON A BED OF NO LESS THAN 24" MDOT 6A CRUSHED STONE BEDDING MATERIALS COMPACTED TO 95% PROCTOR DENSITY.

5. INSTALL KSI STRUCTURES AT ELEVATIONS INDICATED ON SITE PLAN. COUPLE INLET AND OUTLET STUBS WITH APPROPRIATE PIPE COUPLINGS, FERNCOS OR HDPE DOUBLE BELL GASKETED COUPLERS TO CONVEYANCE PIPE.

6. BACKFILL UNIT WITH MDOT 6A CRUSHED STONE PER ASTM D2321. BACKFILL SHALL BE COMPACTED TO 95% PROCTOR DENSITY.

7. DURING INSTALLATION IT MAY BE NECESSARY TO FILL THE PUMP CHAMBER WITH WATER TO ASSIST WITH PLACEMENT. UPON COMPLETION OF INSTALL – FILL CHAMBER WITH WATER UP TO OUTLET ELEVATION.

8. INSTALL SAFETY FENCE – SEE NOTE BELOW.



INSTALLATION NOTE:
PUMP CHAMBER SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321. CARE SHOULD BE EXERCISED WITH CONSTRUCTION EQUIPMENT DURING INSTALLATION TO PROTECT THE CHAMBER FROM DAMAGE DUE TO POINT AND IMPACT LOADING. BACKFILL THE CHAMBER WITH MDOT 6A CRUSHED STONE. UPON INSTALLTION, THE CHAMBER SHALL BE FILLED WITH WATER TO THE OUTLET ELEVATION. ONCE THE CHAMBER IS INSTALLED, PLACE AN ORANGE SAFETY FENCE 4–5 FT HIGH WITH TEE POSTS AROUND THE CHAMBER. PLACE FENCE MIN. 3 FT BEYOND THE PUMP CHAMBER EXCAVATION AREA. ANY DAMAGE TO THE SYSTEM AS A RESULT OF NOT FOLLOWING THESE INSTRUCTIONS AND BLUEPRINT DETAILS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR THE REPAIR COST.

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DESIGN BY: AG / RK	REV: 8-5-25 DATE: 8-27-19	1 OF 1	KSI
MANUF. APPROVAL BY: -	SCALE: NTS	SHEET NO.	KENNEDY SOLUTIONS, INC. 10051 Bergin Road Howell, MI 48843 Ph: 517-225-8338
DRAWING NO. PC INSTALL			

Pump Data Sheet - Zoeller

Company: Kennedy Solutions Inc.
Name: Alicia Grifka
Date: 03/25/2026

ZOELLER ENGINEERED PRODUCTS

Pump:

Size:	3, 5, or 7.5 HP, FLG DC,	Dimensions:	
Type:	71 Series Grinder	Suction:	---
Synch Speed:	3600 rpm	Discharge:	---
Dia:	5.0625 in		
Solids Capacity:	---		
Motor Type:	STD		

Fluid:

Name:	Water		
SG:	1	Vapor Pressure:	0.256 psi a
Density:	62.4 lb/ft³	Atm Pressure:	14.7 psi a
Viscosity:	1.1 cP		
Temperature:	60 °F	Margin Ratio:	1

Pump Limits:

Temperature:	---	Sphere Size:	---
Wkg Pressure:	---		

Motor:

Standard:	NEMA	Size:	5 hp
Enclosure:	TEFC	Speed:	3600 rpm
Frame:	184T		
Sizing Criteria:	Max Power on Design Curve		

Search Criteria:

Flow:	148 US gpm	Near Miss:	---
Head:	19.01 ft	Static Head:	10.08 ft

Pump Selection Warnings:
None

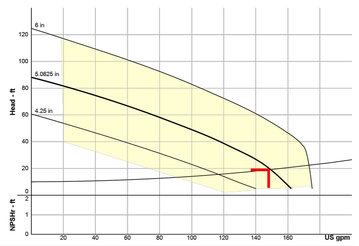
--- Duty Point ---

Flow:	149 US gpm
Head:	19.2 ft
Eff:	---
Power:	4.63 hp
NPSHr:	---
Speed:	3450 rpm

--- Design Curve ---

Shutoff Head:	88.1 ft
Shutoff dP:	38.2 psi
Min Flow:	--- US gpm
BEP:	--- %
NOL Power:	4.63 hp @ 19.9 US gpm

--- Max Curve ---
Max Power:
7.5 hp @ 175 US gpm



Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
178	3450	---	---	---	---
148	3450	20.2	---	4.63	---
118	3450	39.6	---	4.63	---
88.8	3450	54	---	4.63	---
59.2	3450	66.1	---	4.63	---

Selected from catalog: Zoeller Grinder Pumps.60, Vers 1.2.1

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Visit our website: zoellerengineered.com

SECTION: Z3.20.050
ZM1766
0823
Supersedes
0323

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.

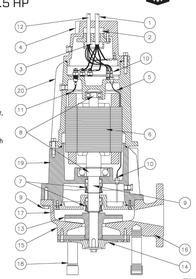
Sitewide Rainwater Area Application — SWPA Approved Option and Data Format

71 HD SERIES
GRINDER PUMP PRODUCT FEATURES
3, 5, & 7.5 HP

CSA US (Tested to UL778 and CSA22.2 108 Standards)

APPLICATIONS
- Sewage lift stations
- Housing developments
- Low pressure sewer systems
- High vertical lift or long force mains

MATERIAL FEATURES
PUMP:
- 440 stainless steel cutter and plate hardened to Rockwell C55-60
- Discharge size - 2-1/2" flanged horizontal adaptable to 3" flange, 2" NPT optional
- Dual mechanical silicon carbide / silicon carbide lower and carbon ceramic upper, Buna-N elastomers.
- Moisture detection system
- Construction - cast iron ASTM A-48, Class 30, 30,000# tensile strength, protected with a corrosion-resistant baked on epoxy powder coating
- Balanced concentric pump housing and impeller
- Attaching hardware - 304 stainless steel
- Square ring seals - Buna-N
- Impeller - ductile iron vortex design
- Optional: ☐ Trimmed impeller ☐ Silicon carbide seal ☐ Viton square ring seals ☐ Additional cord length ____ ft. ☐ High flow ☐ Automatic reversing - (3-Phase flanged models only) ☐ 2" NPT vertical discharge - HH and HF units only ☐ Rail systems



MOTOR:
- 1 Phase - 230 Volt (3 & 5 HP only)
- 3 Phase - 200/230/460/575 Volt, 3450 RPM
- Stator - Class F insulation and lead wires Nema B design
- Thermal sensor with leads
- Housing - cast iron, oil-filled
- Ball bearings - upper and lower high carbon chromium steel
- Power and sensor cable length - 25' (7.6 m)

FEATURES:
1. 25' heavy duty power cable.
2. Protected cable entrance. The compression grommet allows for field replacement of the cable.
3. Each conductor is individually sealed to eliminate cord wicking of liquids.
4. Lifting lug integral part of housing.
5. Oil-filled motor housing assures uniform heat distribution, lubricates bearings, and conducts heat for cooler running.
6. Heavy duty motor features ball bearing construction. Class F motor insulation is double dipped and baked. End connections and lead wires are Class F. At maximum load, winding temperature will not exceed 250 °F (121 °C) with motor housing not submerged.
7. Tandem seals. Silicon carbide / silicon carbide lower and carbon ceramic upper, Buna-N elastomers.
8. Upper and lower high carbon chromium steel ball bearings.
9. Stainless steel shaft and non-corrodible hardware.
10. Patented moisture detection system with upper and lower probes, protecting the motor from liquid entry.
11. Thermal sensor protection.
12. 25' sensor cable.
13. Ductile iron vortex impeller design, bronze optional, fully balanced with integral pump out vane to clear debris.
14. "Star" type stainless steel cutter and plate hardened to Rockwell C55-60.
15. Concentric case reduces radial loading for longer bearing and seal life.
16. 2-1/2" flanged horizontal discharge adaptable to 3' flange. Optional 2' NPT vertical discharge available for HH and HF models.
17. Vent hole helps prevent air lock.
18. Screw on pipe legs for field flexibility.
19. Class 30 cast iron housing protected with corrosion-resistant baked on epoxy powder coating.
20. Finned motor housing for quicker heat dissipation.

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SECTION: Z3.20.100
ZM1786
0625
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0823

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Sitewide Rainwater Area Application — SWPA Approved Option and Data Format

71 SERIES
GRINDER PUMPS TECHNICAL DATA
3, 5, 7.5 HP

MODEL NUMBER:	☐ 7110	☐ 7111	☐ 7112
PUMP NAME PLATE HORSEPOWER: HP	3.0	5.0	7.5
SERVICE FACTOR:	1.2	1.2	1.2
NEC LOCKED ROTOR CODE:	M (1 Ph) G (3 Ph)	G (1 Ph) H(3 Ph)	D
MAXIMUM KW INPUT:	5.3	6.4	8.0
IMPELLER DIAMETERS: in (mm) STANDARD	REFER TO PUMP PERFORMANCE DATA		
DISCHARGE SIZE:	☐ 2-1/2" flanged, adaptable to 2"	☐ 2" npt	
☐ High head design	☐ High flow design	☐ Reversible design (3 phase flange models only)	

IMPELLER TYPE:	Ductile Iron Vortex	TANDEM SEALS:	Standard
FLANGE:	ANSI B16.1	MOTOR DESIGN LETTER:	NEMA B (3 Ph) NEMA L (1 Ph)
PUMP NET WEIGHT: lbs. (kg)	245 lbs. (111 kg)	POWER CORD LENGTH: ft (m)	25' (7.6 m) ☐ _____'
MOTOR SHAFT:	416 SS	POWER CORD:	#12-4 SO*
RPM:	3450	STATOR & LEAD WIRES INSULATION:	Class F
MOTOR TYPE:	Submersible	MAXIMUM STATOR TEMPERATURE:	311 °F (155 °C)

SHAFT SEAL CONSTRUCTION:	STANDARD	UPPER - CARBON CERAMIC LOWER - SILICON CARBIDE/SILICON CARBIDE
	OPTIONAL UPPER	☐ SILICON CARBIDE/SILICON CARBIDE ☐ SILICON CARBIDE/SILICON CARBIDE VITON
	OPTIONAL LOWER	☐ SILICON CARBIDE/SILICON CARBIDE VITON
O-RING ELASTOMERS	STANDARD	BUNA-N
	OPTIONAL	☐ VITON
STANDARD SENSING DEVICES**	MOTOR THERMAL SHUTOFF MOISTURE DETECTION	THERMAL SENSORS WITH AUTOMATIC RESET MOISTURE SENSING PROBES
IMPELLER TRIM:	☐ OPTIONAL	DESIGN POINT: ____ GPM (LPM) @ ____ TDH, IMPELLER DIA. _____
MAXIMUM WATER TEMPERATURE:		104 °F (40 °C)

* Units with FLA greater than 20 amps use a #6 4-gauge power cord.
** Requires a circuit in control panel to function.

MODEL	HP	SERVICE FACTOR	230V / 1 PHASE		208V / 3 PHASE		230V / 3 PHASE		460V / 3 PHASE		575V / 3 PHASE	
			FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA	FLA	LRA
7110	3.0	1.2	23.6	132.0	17.3	66.0	15.1	57.0	7.5	28.5	6.0	25.2
7111	5.0	1.2	28.0	132.0	20.7	94.0	18.0	82.0	9.0	41.0	--	--
7112	7.5	1.2	--	--	25.3	94.0	22.0	82.0	11.0	41.0	--	--

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Remove legs from 71HD grinder pump before placing on rail system.

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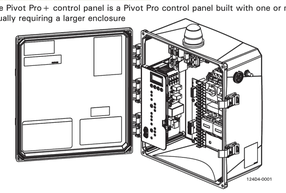
ZOELLER PUMP COMPANY

SECTION: 2.50.056
FM3391
0322
Supersedes
0122

TECHNICAL DATA SHEET
Pivot Pro Series Control Panels

- ☐ Pivot — 1Ph control panel, highly featured
- ☑ Pivot Pro — 1Ph or 3Ph control panel with advanced features such as a user-friendly LCD interface and support for pump sensors and Z Control[®]
- ☐ Pivot Pro+ — The Pivot Pro+ control panel is a Pivot Pro control panel built with one or more options and usually requiring a larger enclosure



SPECIFICATIONS
Certifications
- cCSAus certified to standard UL508
- FCC Class-B certification to ISED Canada ICES-003, Issue 6
- For outdoor or indoor use,-40 °F to +140 °F (-40 °C to +60 °C)

Components
- Red alarm beacon with 360° visibility
- Audible alarm buzzer rated 95 db at 2' (0.6 m)
- SILENCE/RESET/TEST toggle switch with weatherproof rubber boot
- HAND/OFF/AUTO control are included for each pump
- RS-485 (12VDC, 2W) powered serial port for optional Z Control® Gateway connectivity
- Auxiliary output dry contacts (NO-COM-NC) terminals, Form C, 5A resistive load
- PUMP RUN dry contact, (NO-COM)
- NEMA 4X 14"x12"x6" enclosure with lockable latch

Power
- Control circuit powered by 120VAC, 60 Hz
- Alarm circuit can be powered by separate power feed, if needed
- Alarm and control circuits individually fused, 3A, fast-acting, 120VAC
- Circuit breaker protection on 1Ph models
- Multi-tap 200/230/460V transformer on 3Ph models
- Max alarm and control circuit power consumption: Simplex models 32W, Duplex models 40W
- Max standby power consumption: 5W
- Terminals for 120VAC control power, 120VAC alarm power, up to 4 float switches (duplex), pump input power
- 1Ph IEC motor contactors, models 120/208/240 VAC, 50/60Hz, up to 50A maximum
- 3PH IEC motor contactors, models 208/230/380/460/575 VAC, 60Hz

Field Wiring & Maintenance
- 4 enclosure mounting brackets are included
- 2 sets of wiring schematics and installation instructions are included along with an inside door mounted QR code for easy access to additional support material online
- All wires and terminal locations thoroughly labeled for easy identification
- All components are serviceable (See FM3364 for available replacement parts)

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN



(AS NOTED)
NORTH

JOB NO. 2600.41E

SHEET TITLE
UTILITY DETAILS

SHEET NO.
C4.6

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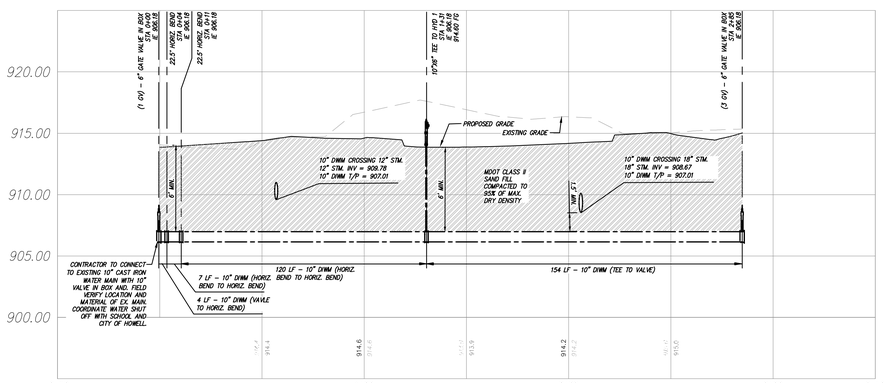
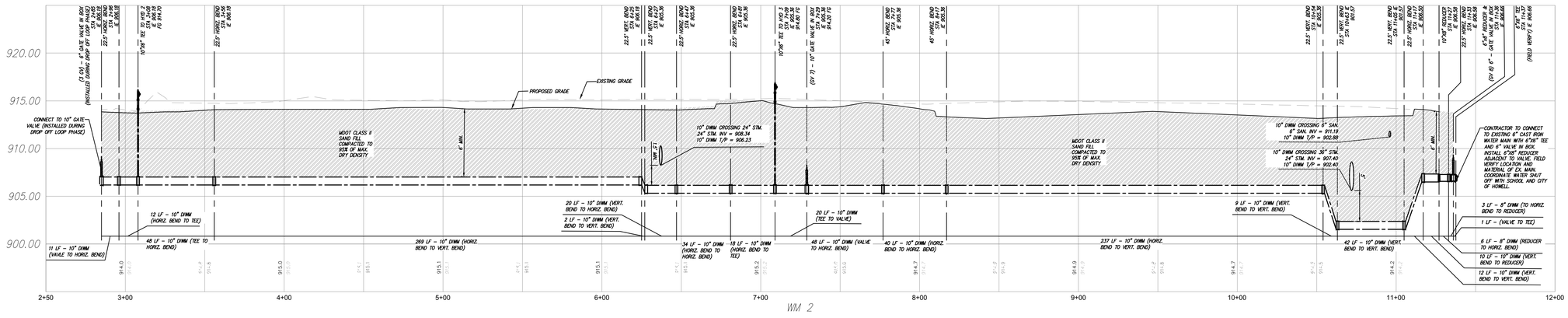


WATER MAIN PROFILE (DROP OFF LOOP PHASE)

SCALE: 1" = 30' H
1" = 5' V



WM 2

WATER MAIN PROFILE (COMMUNITY CENTER BUILDING PHASE)

SCALE: 1" = 30' H
1" = 5' V

EGLE Quantity Table	QTY.
Water Main	
hydrant	5 EA
10"X6" tee	3 EA
6"x6" tee	3 EA
10" gate valve in box	2 EA
6" gate valve in box	7 EA
4" gate valve in box	1 EA
10" CL-54 DIWM	1127 LF
8" CL-54 DIWM	12 LF
6" CL-54 DIWM	272 LF
4" CL-54 DIWM	33 LF
10" horizontal bend	6 EA
10" vertical bend	6 EA
8" horizontal bend	1 EA
8" vertical bend	0 EA
6" horizontal bend	2 EA
4" horizontal bend	1 EA
8" to 6" reducer	1 EA
10" to 8" reducer	1 EA

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201094447
PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
WATER MAIN PROFILES

SHEET NO.
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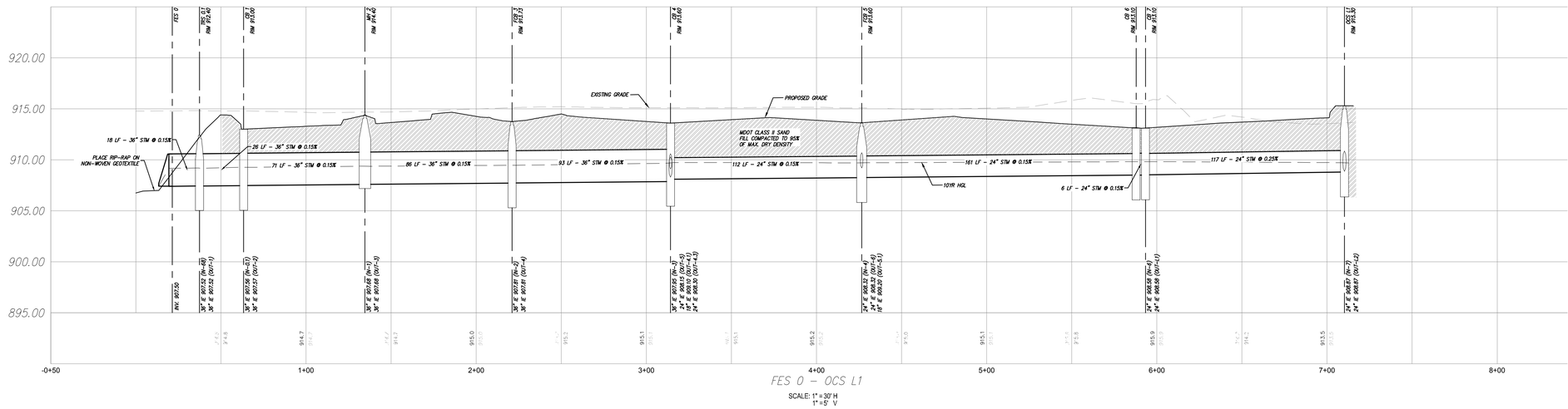
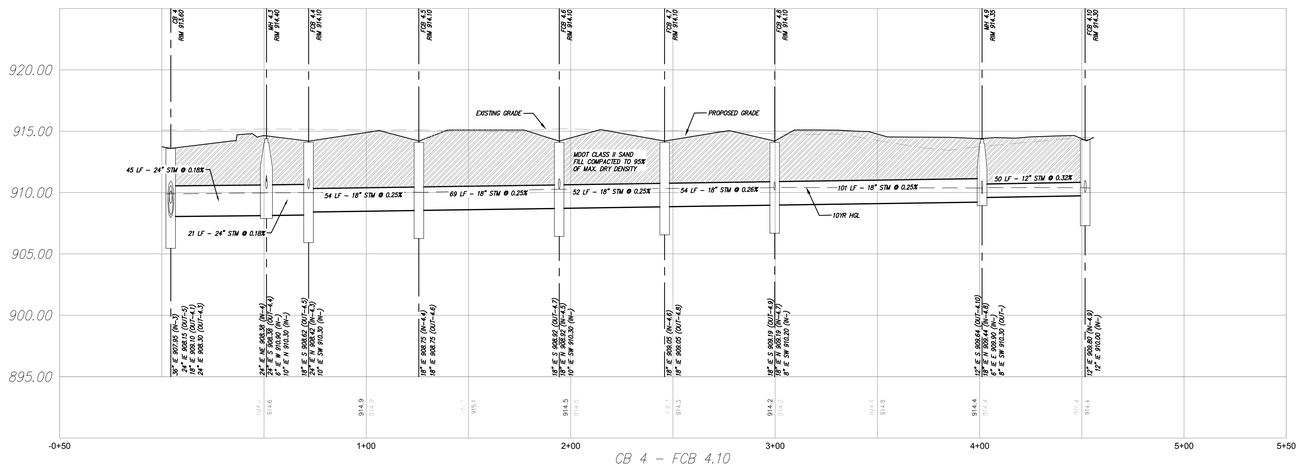


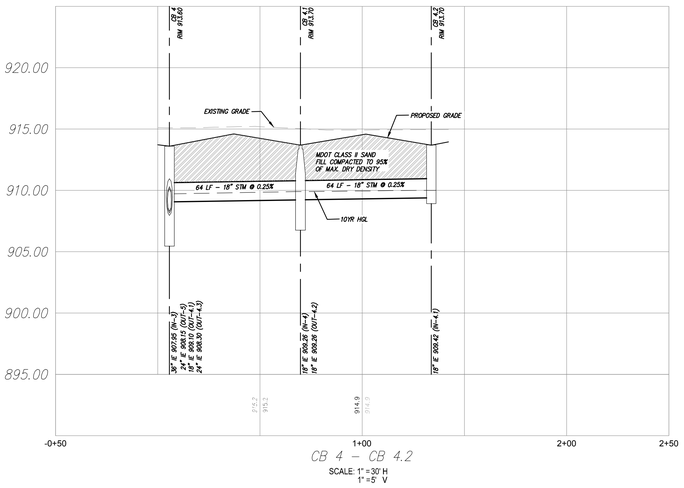
FES 0 – OCS L1

SCALE: 1" = 30' H
1" = 5' V



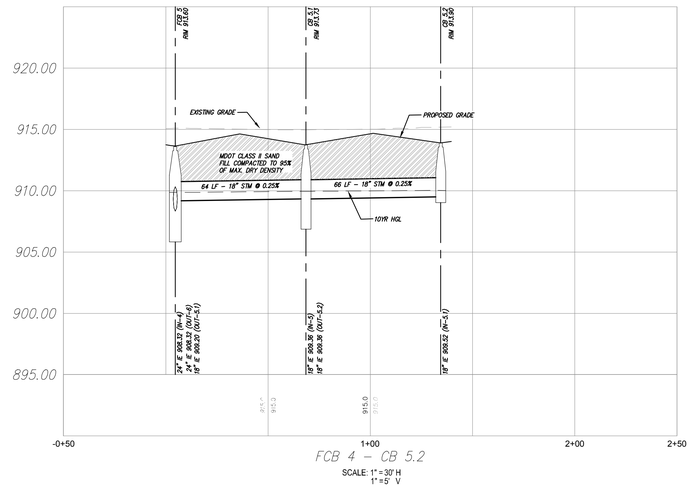
CB 4 – FCB 4.10

SCALE: 1" = 30' H
1" = 5' V



CB 4 – CB 4.2

SCALE: 1" = 30' H
1" = 5' V



FCB 4 – CB 5.2

SCALE: 1" = 30' H
1" = 5' V

KINGSCOTT
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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL
PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
License No. 6201064447
LICENSED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
STORM SEWER PROFILES

SHEET NO.
C4.8

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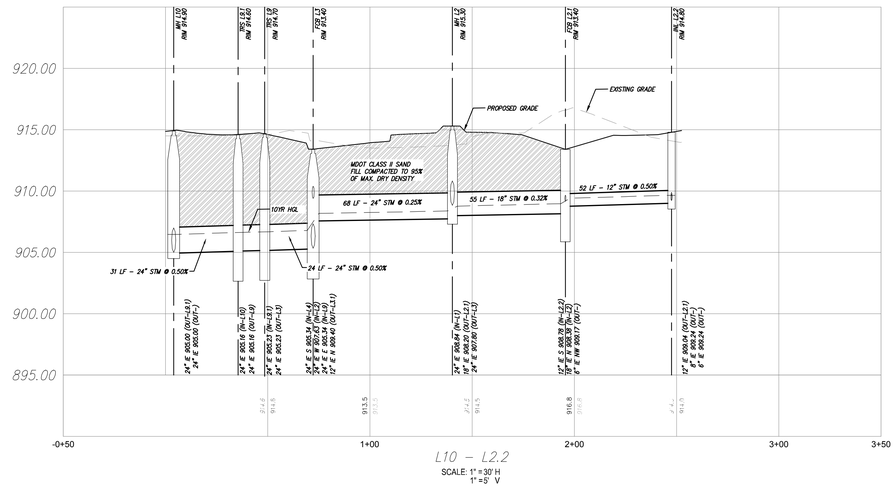
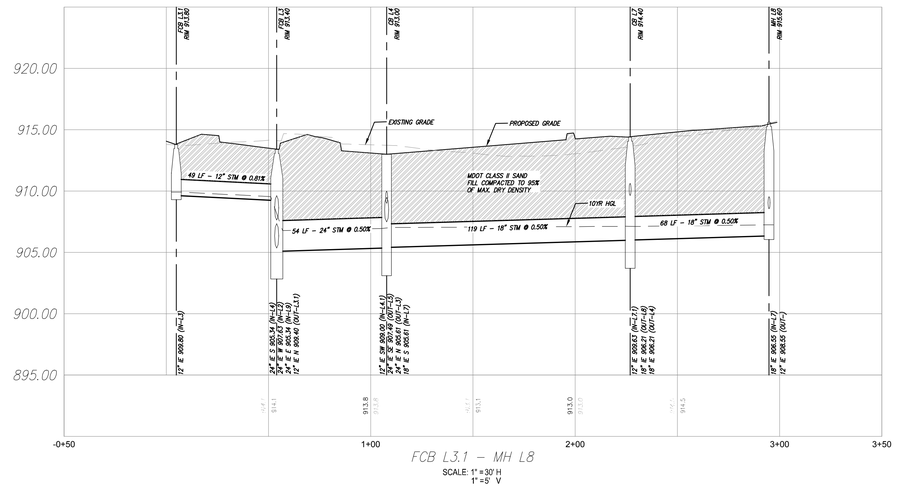
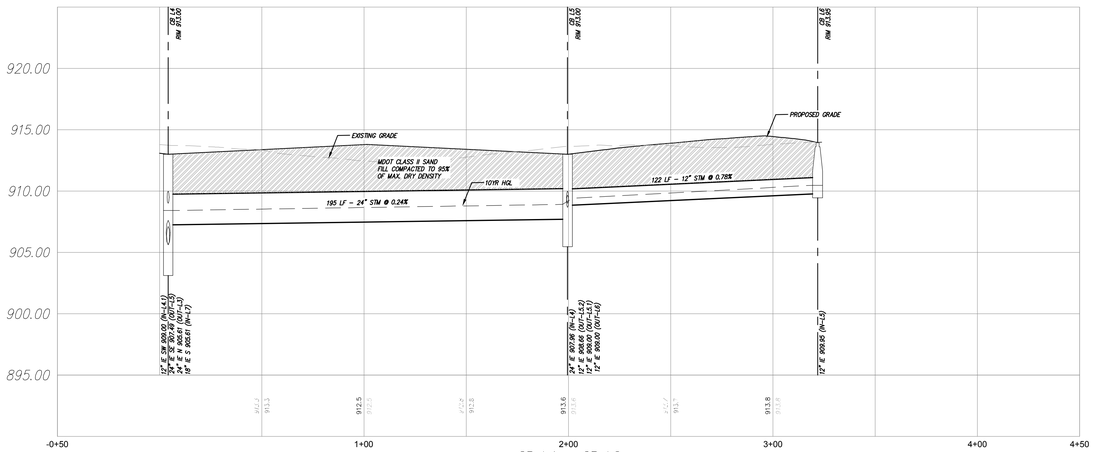


L10 – L2.2
SCALE: 1" = 30' H
1" = 5' V



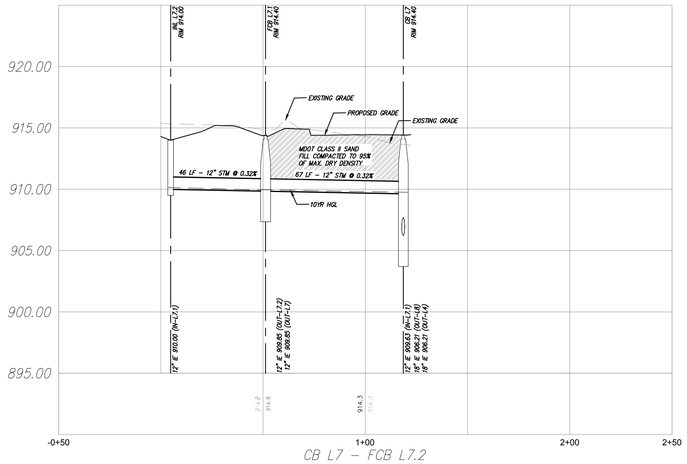
FCB L3.1 – MH L8
SCALE: 1" = 30' H
1" = 5' V



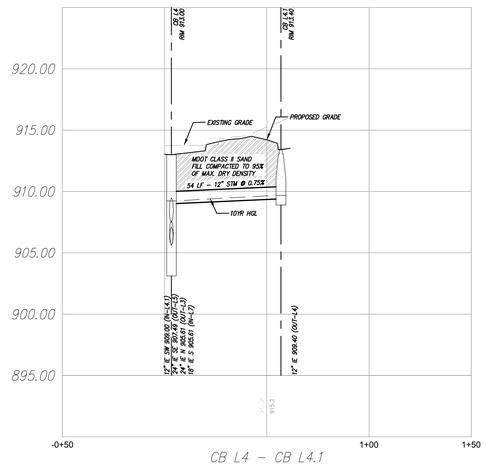
CB L4 – CB L6
SCALE: 1" = 30' H
1" = 5' V



CB L5.2 – CB L5.1
SCALE: 1" = 30' H
1" = 5' V



CB L7 – FCB L7.2
SCALE: 1" = 30' H
1" = 5' V



CB L4 – CB L4.1
SCALE: 1" = 30' H
1" = 5' V

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL
PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201054643
PROFESSIONAL ENGINEER

JOB NO. 2600.41E
NORTH

SHEET TITLE
STORM SEWER PROFILES

SHEET NO.
C4.9

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN

STATE OF MICHIGAN — CRAIG ALAN GENGLER — 6201064447 — LICENSED PROFESSIONAL ENGINEER

JOB NO. 2600.41E
NORTH

SHEET TITLE
STORM SEWER PROFILES

SHEET NO.
C4.10

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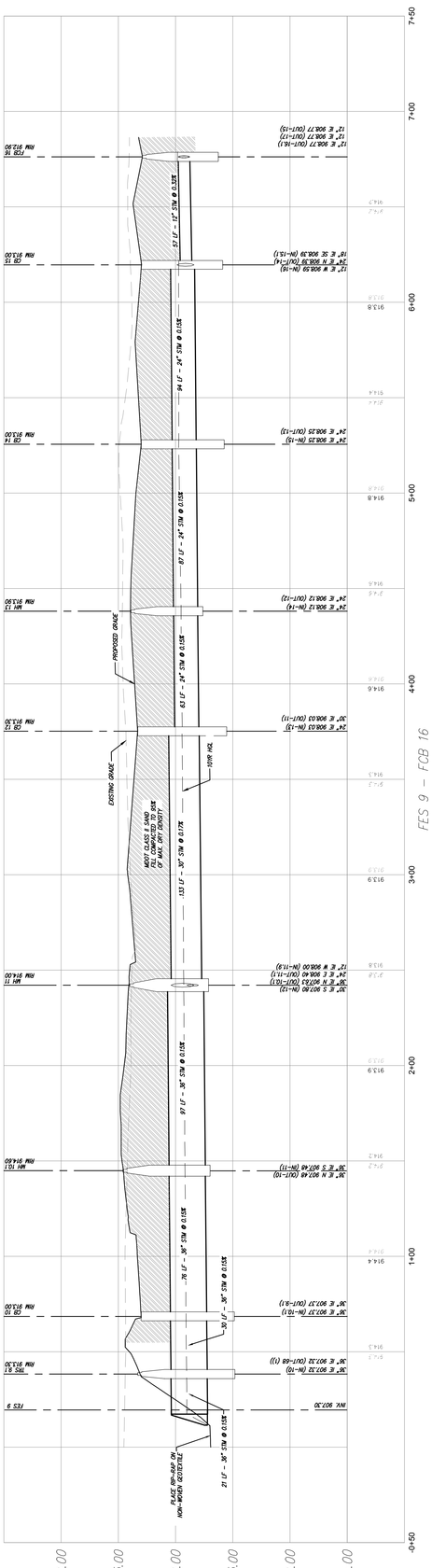

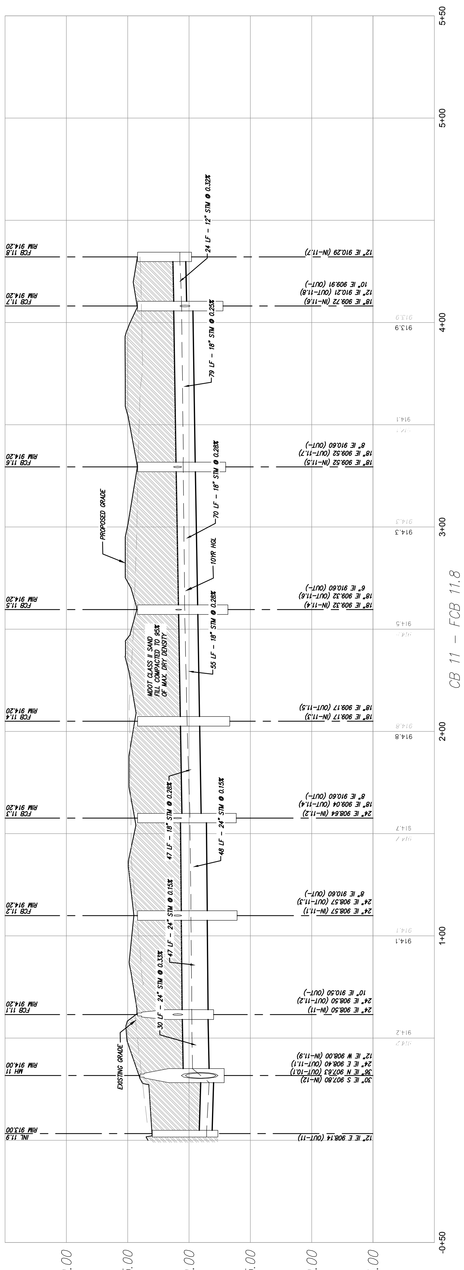

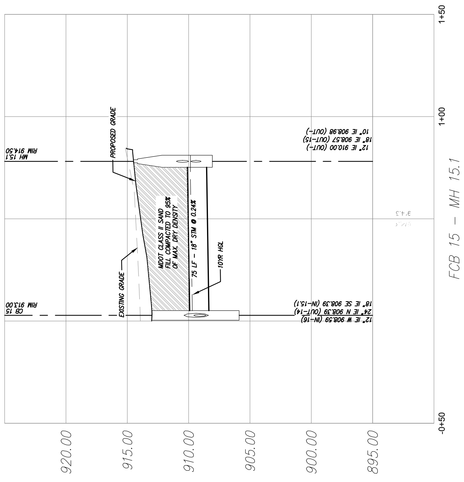

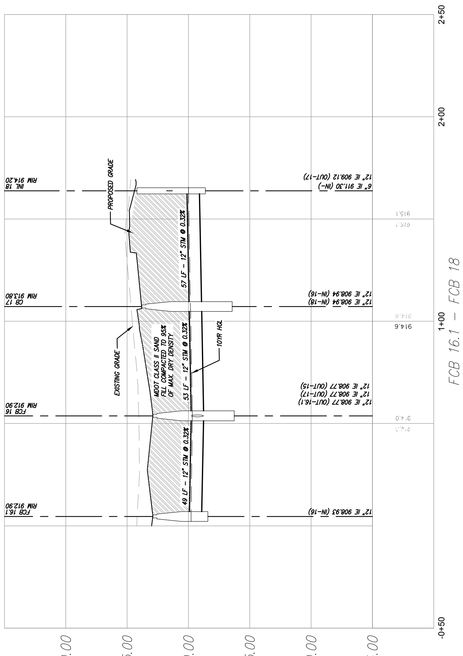

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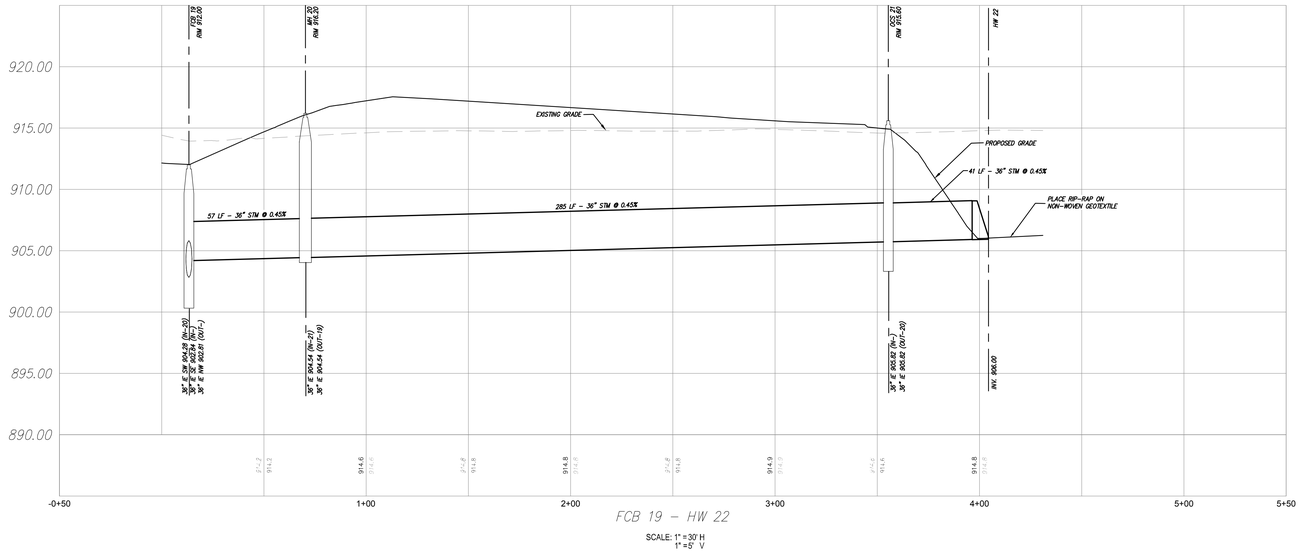
PLEASE RECYCLE



FCB 19 – HW 22

SCALE: 1" = 30' H
1" = 5' V

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GEINGLER
LICENSED PROFESSIONAL ENGINEER
License No. 6201054437

JOB NO. **2600.41E**

NORTH

SHEET TITLE
STORM SEWER PROFILES

SHEET NO.
C4.11

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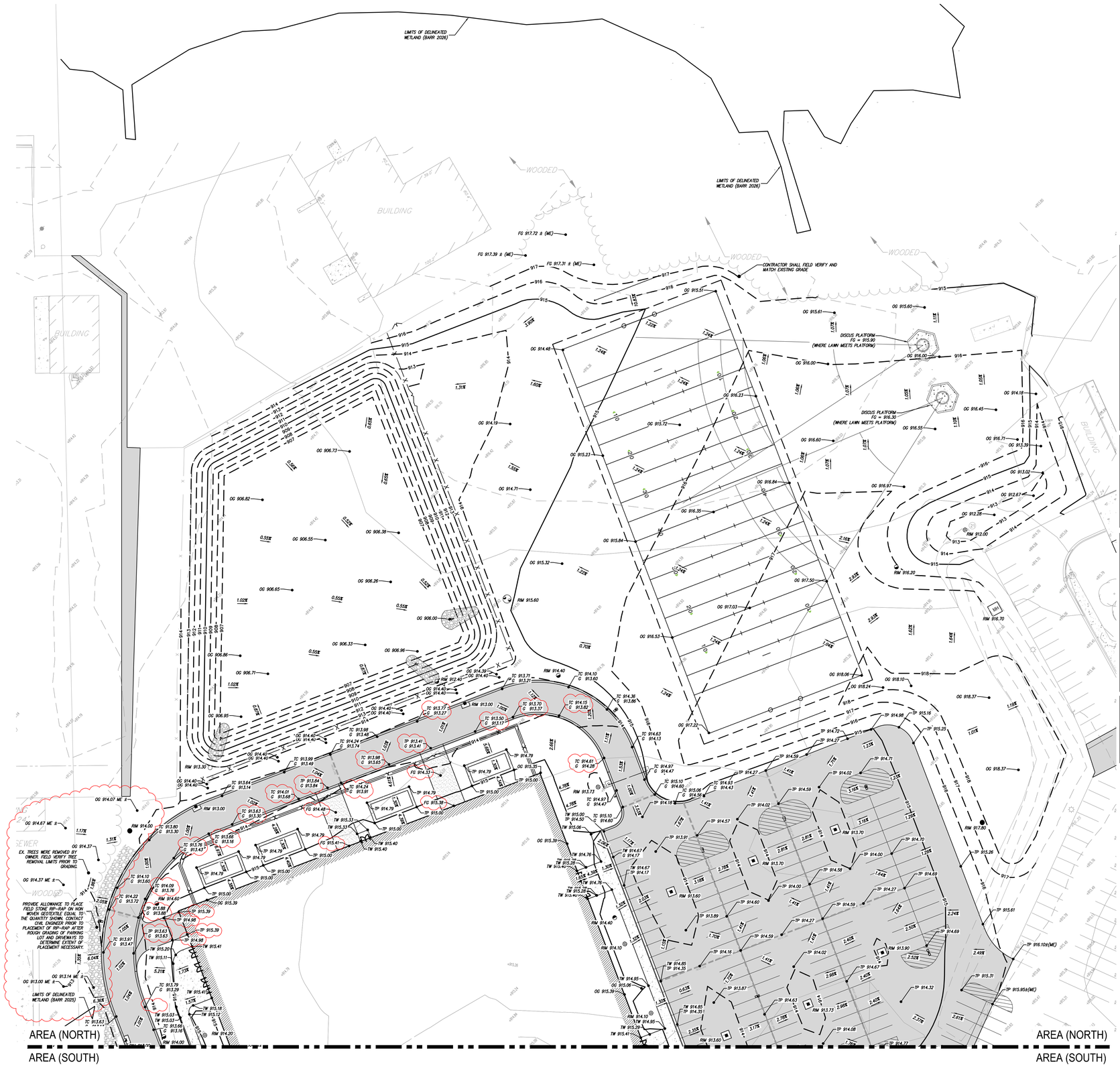

GRAPHIC SCALE
0 15 30 60
(IN FEET)
1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (TYZE) W/RECEIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB-2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

GRADING LEGEND

- EXISTING ELEVATION
- TC 000.00 / G 000.00 — PROPOSED TOP OF CURB ELEVATION / PROPOSED GUTTER ELEVATION
- 11.50 / 11.31 — EXISTING CONTOURS
- 11.50 — PROPOSED CONTOURS
- TP 000.00 — TOP OF PAVEMENT ELEVATION
- TW 000.00 — TOP OF WALK ELEVATION
- FG 000.00 — FINISH GRADE ELEVATION
- T/WALL 000.00 — TOP OF WALL ELEVATION
- ME 000.00 — MATCH EXISTING ELEVATION
- OG 000.00 — FINISHED GRADE (OUTSIDE OF PAVEMENT)
- FLOW ARROW

GRADING NOTES

1. CONTRACTOR TO PLACE ALL NEW PAVEMENT TO THE GRADES INDICATED, OR MATCH ORIGINAL GRADES IF NEW GRADES ARE NOT SHOWN. CONTRACTOR SHALL CONFIRM MINIMUM 1% PAVEMENT SLOPES ARE ATTAINED IN ALL AREAS.
2. PROPOSED GRADES MAY BE BASED ON AN INTERPOLATION OF DATA SHOWN ON THE TOPOGRAPHIC SURVEY. THIS INTERPOLATED DATA IS APPROXIMATE AND COULD DIFFER SLIGHTLY BASED ON THE ACCURACY OF THE SURVEY. CONTRACTOR SHALL CONFIRM THAT THE PROPOSED GRADES SHOWN ON THIS PLAN WILL NOT CREATE A STANDING WATER CONDITION (I.E. A LOW SPOT OR PAVEMENT SLOPES LESS THAN 1%) OR AN UNSAFE CONDITION WITH SLOPES IN EXCESS OF 3%. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF THEY BELIEVE THAT ONE OF THESE SITUATIONS WILL OCCUR BASED ON THE PROPOSED GRADES.
3. ALL PAVEMENT PLACED WITHIN BARRIER FREE PARKING AREAS (STALLS AND ACCESS AISLES) SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION, INCLUDING MEASURED DIAGONALLY ACROSS THE AREAS. CONTRACTOR SHALL ADJUST SLOPES AS NECESSARY TO PROVIDE ADA COMPLIANT SLOPES AS WELL AS PROVIDING RE-GRADED TRANSITION SLOPES OUTSIDE OF THE BARRIER FREE PARKING AREAS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF TRANSITION ZONES WILL EXCEED MAXIMUM 5% SLOPES. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE PATTERNS WITH ALL NECESSARY PAVEMENT RE-GRADING.
4. ALL BARRIER FREE RAMPS AND ADA ACCESSIBLE ROUTES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF MDOT DETAIL R-28 "SIDEWALK RAMP AND DETECTABLE WARNING DETAILS".
5. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER RUNOFF DURING CONSTRUCTION OPERATIONS. OF PARTICULAR CONCERN WILL BE THE TIME PERIOD AFTER THE SITE HAS BEEN STRIPPED AND NOT YET RESTORED, BUILT UPON, OR PAVED. CONTRACTOR MUST INSTALL OR CONSTRUCT APPROPRIATE TEMPORARY MEASURES TO PROTECT ADJACENT PROPERTIES.

TREE PROTECTION

1. KEEP CONSTRUCTION TRAFFIC AND MATERIAL STORAGE AWAY FROM TREE ROOT AREAS. SET UP STURDY FENCING AROUND EACH TREE THAT IS TO REMAIN WITHIN SITE LIMITATIONS. THE FENCING SHOULD BE EQUAL TO OR LARGER THAN THE TREE'S CANOPY ABOVE. SEE C7.3 FOR DETAILS.
2. IF A TREE IS LOCATED TO REMAIN WITHIN A HEAVY CONSTRUCTION TRAFFIC AREA AND A STURDY FENCE IS NOT APPLICABLE, THEN A 4"-6" THICK RING OF WOOD CHIPS IS TO BE APPLIED AROUND THE TREE BASE TO HELP REDUCE ROOT COMPACTION. THIS RING SHOULD BE ONE FOOT FROM THE TRUNK FOR EACH INCH OF TRUNK DIAMETER.

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026
ADDENDUM 001	09.08.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
1201054044
LICENSED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
NORTH GRADING PLAN

SHEET NO.
C5.0

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AREA (NORTH)

AREA (SOUTHWEST)

AREA (NORTH)

AREA (SOUTHWEST)

AREA (SOUTHEAST)

PROVIDE ALLOWANCE TO PLACE FIELD STONE RIP-RAP ON NON WOVEN GEOTEXTILE EQUAL TO THE QUANTITY SHOWN. CONTACT CIVIL ENGINEER PRIOR TO PLACEMENT OF RIP-RAP AFTER ROUGH GRADING OF PARKING LOT AND DRIVEWAYS TO DETERMINE EXTENT OF PLACEMENT NECESSARY.

LIMITS OF DELINEATED WETLAND (BARR 2025)

RIP-RAP AND PROPOSED GRADING SHALL NOT EXTEND INTO WETLAND

WOODED

EQUIPMENT PAD(S) FG = 915.30

FIELD VERIFY FFE OF EX. DOORS

HOWELL COMMUNITY CENTER
166,000 SF
X STORY
FFE = 915.41

HOWELL HIGH SCHOOL
1200 W. GRAND RIVER AVE.

PLACE 2" R-10" EXTERIOR RATED RIGID INSULATION AT 12" BELOW FINISHED GRADE AND EXTENDING A MINIMUM OF 4' AWAY FROM FACE OF BUILDING FOR FROST PROTECTION OF EX. FOUNDATION WHERE FINISHED GRADE IS CUT BELOW EX. GRADE (SEE DASHED LINE FOR LOCATION). SLOPE RIGID INSULATION AWAY FROM BUILDING AT 0.5IE MINIMUM SLOPE.

PROPOSED LIMITS OF DISTURBANCE

GRAPHIC SCALE
0 15 30 60
(IN FEET)
1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FSB) W/BEEHIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- (2) UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

GRADING LEGEND

- EXISTING ELEVATION — + TP 000.00 TOP OF PAVEMENT ELEVATION
- TC 000.00 / G 000.00 PROPOSED TOP OF CURB ELEVATION / PROPOSED GUTTER ELEVATION — + TW 000.00 TOP OF WALK ELEVATION
- EXISTING CONTOURS — + FG 000.00 FINISH GRADE ELEVATION
- PROPOSED CONTOURS — + T/WALL 000.00 TOP OF WALL ELEVATION
- + ME 000.00 MATCH EXISTING ELEVATION
- + OG 000.00 FINISHED GRADE (OUTSIDE OF PAVEMENT)
- FLOW ARROW

GRADING NOTES

1. CONTRACTOR TO PLACE ALL NEW PAVEMENT TO THE GRADES INDICATED, OR MATCH ORIGINAL GRADES IF NEW GRADES ARE NOT SHOWN. CONTRACTOR SHALL CONFIRM MINIMUM 1% PAVEMENT SLOPES ARE ATTAINED IN ALL AREAS.
2. PROPOSED GRADES MAY BE BASED ON AN INTERPOLATION OF DATA SHOWN ON THE TOPOGRAPHIC SURVEY. THIS INTERPOLATED DATA IS APPROXIMATE AND COULD DIFFER SLIGHTLY BASED ON THE ACCURACY OF THE SURVEY. CONTRACTOR SHALL CONFIRM THAT THE PROPOSED GRADES SHOWN ON THIS PLAN WILL NOT CREATE A STANDING WATER CONDITION (I.E. A LOW SPOT OR PAVEMENT SLOPES LESS THAN 1%) OR AN UNSAFE CONDITION WITH SLOPES IN EXCESS OF 5%. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF THEY BELIEVE THAT ONE OF THESE SITUATIONS WILL OCCUR BASED ON THE PROPOSED GRADES.
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4. ALL BARRIER FREE RAMPS AND ADA ACCESSIBLE ROUTES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF MDOT DETAIL R-28 "SIDEWALK RAMP AND DETECTABLE WARNING DETAILS".
5. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER RUNOFF DURING CONSTRUCTION OPERATIONS. IF PARTICULAR CONCERN WILL BE THE TIME PERIOD AFTER THE SITE HAS BEEN STRIPPED AND NOT YET RESTORED, BUILT UPON, OR PAVED. CONTRACTOR MUST INSTALL OR CONSTRUCT APPROPRIATE TEMPORARY MEASURES TO PROTECT ADJACENT PROPERTIES.

TREE PROTECTION

1. KEEP CONSTRUCTION TRAFFIC AND MATERIAL STORAGE AWAY FROM TREE ROOT AREAS. SET UP STURDY FENCING AROUND EACH TREE THAT IS TO REMAIN WITHIN SITE LIMITATIONS. THE FENCING SHOULD BE EQUAL TO OR LARGER THAN THE TREE'S CANOPY ABOVE. SEE C7.3 FOR DETAILS.
2. IF A TREE IS LOCATED TO REMAIN WITHIN A HEAVY CONSTRUCTION TRAFFIC AREA AND A STURDY FENCE IS NOT APPLICABLE, THEN A 4"-6" THICK RING OF WOOD CHIPS IS TO BE APPLIED AROUND THE TREE BASE TO HELP REDUCE ROOT COMPACTION. THIS RING SHOULD BE ONE FOOT FROM THE TRUNK FOR EACH INCH OF TRUNK DIAMETER.

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026
ADDENDUM 001	09.08.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201054447
LICENSED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
SOUTHWEST GRADING PLAN

SHEET NO.
C5.1

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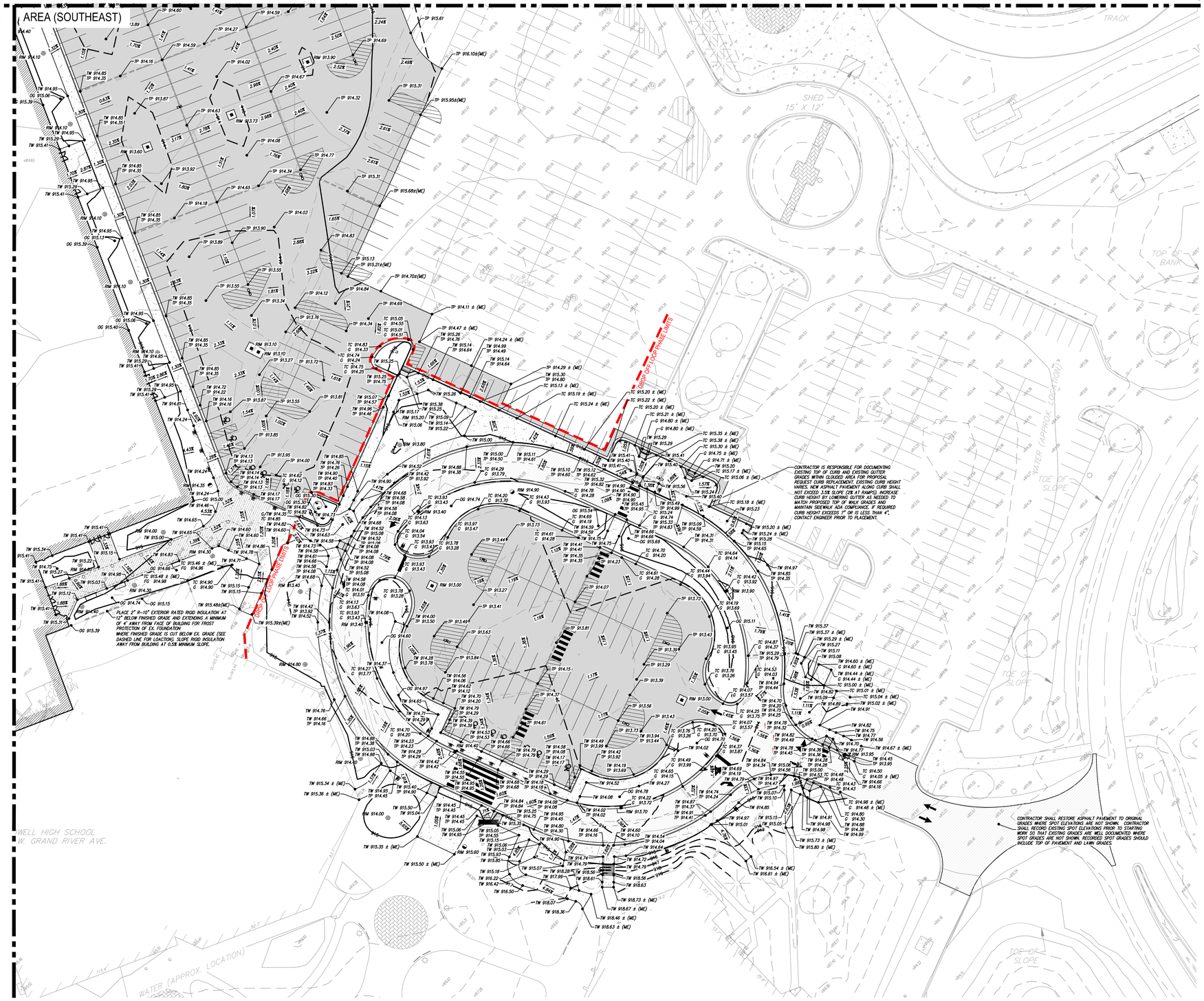
AREA (NORTH)

AREA (SOUTHWEST)

AREA (SOUTHEAST)

AREA (NORTH)



GRAPHIC SCALE

0 15 30 60

(IN FEET)

1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FSB) W/RESTHVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB = STRUCT. TYPE, 2 = STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 = STRUCT. NO., XXX = STRUCT. TYPE

GRADING LEGEND

- EXISTING ELEVATION
- PROPOSED TOP OF CURB ELEVATION (TC 000.00)
- PROPOSED GUTTER ELEVATION (G 000.00)
- EXISTING CONTOURS
- PROPOSED CONTOURS
- TP 000.00 — TOP OF PAVEMENT ELEVATION
- TW 000.00 — TOP OF WALK ELEVATION
- FG 000.00 — FINISH GRADE ELEVATION
- T/WALL 000.00 — TOP OF WALL ELEVATION
- ME 000.00 — MATCH EXISTING ELEVATION
- OG 000.00 — FINISHED GRADE (OUTSIDE OF PAVEMENT)
- FLOW ARROW

GRADING NOTES

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3. ALL PAVEMENT PLACED WITHIN BARRIER FREE PARKING AREAS (STALLS AND ACCESS AISLES) SHALL HAVE A MAXIMUM SLOPE OF 2% IN ANY DIRECTION, INCLUDING MEASURED DIAGONALLY ACROSS THE AREAS. CONTRACTOR SHALL ADJUST SLOPES AS NECESSARY TO PROVIDE ADA COMPLIANT SLOPES AS WELL AS PROVIDING RE-GRADED TRANSITION SLOPES OUTSIDE OF THE BARRIER FREE PARKING AREAS. CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF TRANSITION ZONES WILL EXCEED MAXIMUM 5% SLOPES. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE PATTERNS WITH ALL NECESSARY PAVEMENT RE-GRADING.
4. ALL BARRIER FREE RAMPS AND ADA ACCESSIBLE ROUTES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF MDOT DETAIL R-28 "SIDEWALK RAMP AND DETECTABLE WARNING DETAILS".
5. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING STORM WATER RUNOFF DURING CONSTRUCTION OPERATIONS. OF PARTICULAR CONCERN WILL BE THE TIME PERIOD AFTER THE SITE HAS BEEN STRIPPED AND NOT YET RESTORED, BUILT UPON, OR PAVED. CONTRACTOR MUST INSTALL OR CONSTRUCT APPROPRIATE TEMPORARY MEASURES TO PROTECT ADJACENT PROPERTIES.

TREE PROTECTION

1. KEEP CONSTRUCTION TRAFFIC AND MATERIAL STORAGE AWAY FROM TREE ROOT AREAS. SET UP STURDY FENCING AROUND EACH TREE THAT IS TO REMAIN WITHIN SITE LIMITATIONS. THE FENCING SHOULD BE EQUAL TO OR LARGER THAN THE TREE'S CANOPY ABOVE. SEE C7.3 FOR DETAILS.
2. IF A TREE IS LOCATED TO REMAIN WITHIN A HEAVY CONSTRUCTION TRAFFIC AREA AND A STURDY FENCE IS NOT APPLICABLE, THEN A 4"-6" THICK RING OF WOOD CHIPS IS TO BE APPLIED AROUND THE TREE BASE TO HELP REDUCE ROOT COMPACTION. THIS RING SHOULD BE ONE FOOT FROM THE TRUNK FOR EACH INCH OF TRUNK DIAMETER.

KINGSCOTT
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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE

CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201064447
LICENSED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
SOUTHEAST GRADING PLAN

SHEET NO.
C5.2

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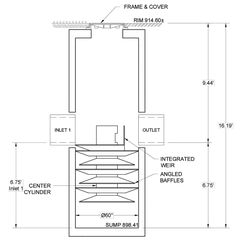
ARCADIA AR5PC			TRS L9.1
TREATMENT RATE (OK-110 80% REMOVAL)			4.30 CFS
BYPASS RATE			17.90 CFS
	DIAMETER	PIPE MATERIAL	INVERT
INLET 1	24"	HP	905.16
INLET 2			
INLET 3			
INLET 4			
OUTLET	24"	HP	905.16

PRODUCT SPECIFICATIONS

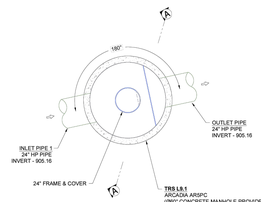
- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW. IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE, THE UNIT SHALL BE INSTALLED OFFLINE.
- THE ARCADIA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS ON AN ANNUAL AGGREGATE REMOVAL BASIS. SAID REMOVAL SHALL BE BASED ON FULL-SCALE THIRD PARTY VERIFIED TESTING USING OK-110 MEDIA GRADATION OR EQUIVALENT AND 300 MG/L INFLUENT CONCENTRATION. FULL SCALE TESTING SHALL HAVE INCLUDED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT.

-OR -

THE ARCADIA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS USING A MEDIA MIX WITH D50=75 MICRON AND 200 MG/L INFLUENT CONCENTRATION PER CURRENT NJDEP/NJCAT HDS PROTOCOL.



PROFILE VIEW
NTS



SITE SPECIFIC PLAN VIEW
SCALE : 1/4"=1'

HOWELL COMMUNITY CENTER
HOWELL, MI
DATE: 03-16-2023 DRAWN: MDV
PROJECT #: 5300232 CHECKED:

DATE	DWN	CHK

ARCADIA Stormwater Separator

4645 TRUEMAN BLVD HILLIARD, OH 43026

AS NOTED

ADS

SHEET 2 OF 3

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5' DIA. ARCADIA TREATMENT STRUCTURE (TRS L9.1)

ARCADIA AR6PC			TRS L9
TREATMENT RATE (OK-110 80% REMOVAL)			6.19 CFS
BYPASS RATE			17.39 CFS
	DIAMETER	PIPE MATERIAL	INVERT
INLET 1	24"	HP	905.23
INLET 2			
INLET 3			
INLET 4			
OUTLET	24"	HP	905.23

PRODUCT SPECIFICATIONS

- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW. IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE, THE UNIT SHALL BE INSTALLED OFFLINE.
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-OR -

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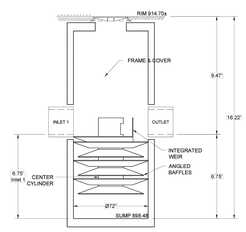
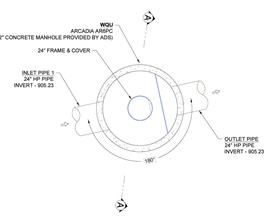


PROFILE VIEW
NTS



SITE SPECIFIC PLAN VIEW
SCALE : 1/4"=1'

HOWELL COMMUNITY CENTER
HOWELL, MI
DATE: 03-16-2023 DRAWN: MDV
PROJECT #: 5300232 CHECKED:

DATE	DWN	CHK

ARCADIA Stormwater Separator

4645 TRUEMAN BLVD HILLIARD, OH 43026

AS NOTED

ADS

SHEET 3 OF 3

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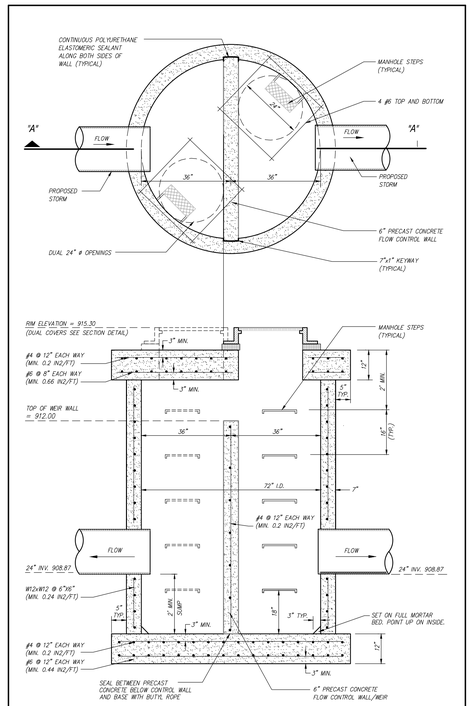
6' DIA. ARCADIA TREATMENT STRUCTURE (TRS L9)



SECTION A:A

NOTE: THE PRECAST REINFORCED OUTLET CONTROL STRUCTURE SHALL BE MANUFACTURED TO ASTM C-478 SPECIFICATIONS.

OUTLET CONTROL STRUCTURE 'OCS L1' DETAIL

N.T.S.

ARCADIA AR8PC			TRS 9.1	
OK-110 MAX. TREATMENT RATE			11 CFS	
24" COVER RAISED RIM ELEVATION =			913.3'	
	DIAMETER	ANGLE	TYPE	INVERT
INLET 1	36"	180°	HDPE	907.32'
INLET 2				
INLET 3				
OUTLET	36"	0°	HDPE	907.32'
SUMP ELEVATION = 896.32'				

PRODUCT SPECIFICATIONS

- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW. IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE, THE UNIT SHALL BE INSTALLED OFFLINE.
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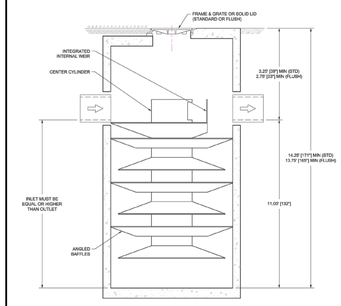
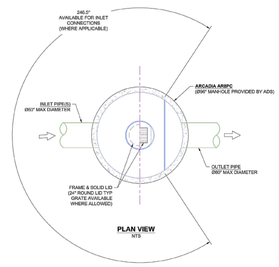
-OR -

THE ARCADIA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS USING A MEDIA MIX WITH D50=75 MICRON AND 200 MG/L INFLUENT CONCENTRATION.



PROFILE VIEW
NTS



PLAN VIEW
NTS

NOTES:
- ENGINEER / CONTRACTOR TO CONFIRM PIPE MATERIALS AND APPLICABLE ADAPTERS.
- CONTRACTOR IS RESPONSIBLE FOR MATERIAL AND LABOR TO BRING CASTINGS TO FINISHED GRADE.
- CONTRACTOR TO MEASURE HEIGHT OF STRUCTURE TO ENSURE THAT DEPTH OF EXCAVATION IS CORRECT.
- UNIT SHALL CONFORM TO H20-44 LOAD RATINGS

HOWELL COMMUNITY CENTER
HOWELL, MI
DATE: 4/2/26 DRAWN:
DRAWING# CHECKED:

DATE	DWN	CHK

ARCADIA Stormwater Separator

4645 TRUEMAN BLVD HILLIARD, OH 43026

ADS

1 Sheet OF 1

8' DIA. ARCADIA TREATMENT STRUCTURE (TRS 9.1)

ARCADIA AR8PC			TRS 0.1	
OK-110 MAX. TREATMENT RATE			11 CFS	
24" COVER RAISED RIM ELEVATION =			913.4'	
	DIAMETER	ANGLE	TYPE	INVERT
INLET 1	36"	180°	HDPE	907.52'
INLET 2				
INLET 3				
OUTLET	36"	0°	HDPE	907.52'
SUMP ELEVATION = 896.52'				

PRODUCT SPECIFICATIONS

- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW. IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE, THE UNIT SHALL BE INSTALLED OFFLINE.
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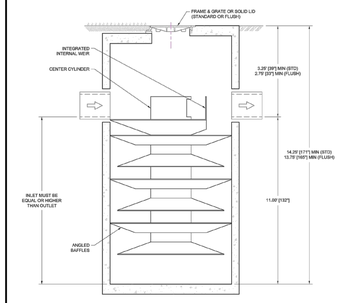
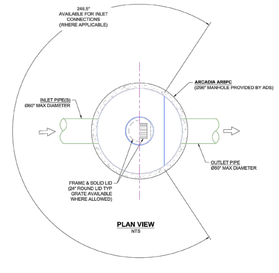


PROFILE VIEW
NTS



PLAN VIEW
NTS

NOTES:
- ENGINEER / CONTRACTOR TO CONFIRM PIPE MATERIALS AND APPLICABLE ADAPTERS.
- CONTRACTOR IS RESPONSIBLE FOR MATERIAL AND LABOR TO BRING CASTINGS TO FINISHED GRADE.
- CONTRACTOR TO MEASURE HEIGHT OF STRUCTURE TO ENSURE THAT DEPTH OF EXCAVATION IS CORRECT.
- UNIT SHALL CONFORM TO H20-44 LOAD RATINGS

HOWELL COMMUNITY CENTER
HOWELL, MI
DATE: 4/2/26 DRAWN:
DRAWING# CHECKED:

DATE	DWN	CHK

ARCADIA Stormwater Separator

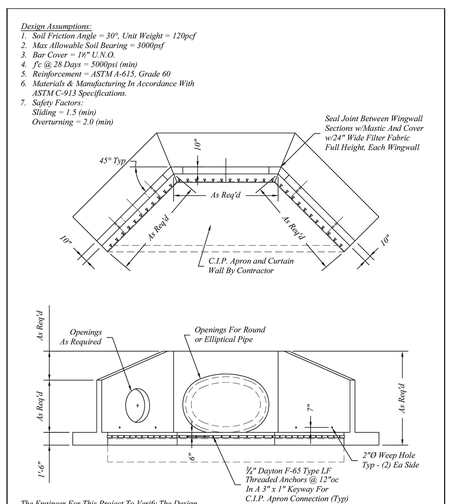
4645 TRUEMAN BLVD HILLIARD, OH 43026

ADS

1 Sheet OF 1

8' DIA. ARCADIA TREATMENT STRUCTURE (TRS 0.1)

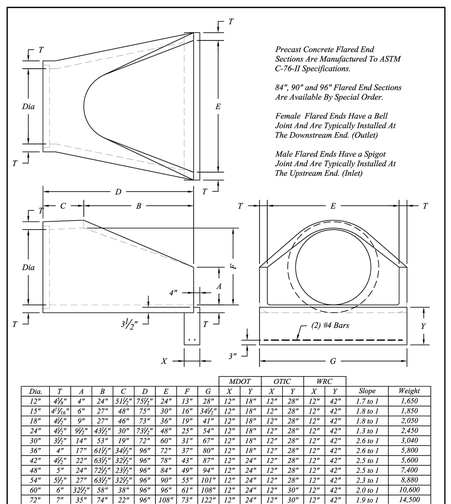
Design Assumptions:
1. *Soil Friction Angle = 30°, Unit Weight = 120pcf*
2. *Max Allowable Soil Bearing = 3000psf*
3. *Bar Cover = 1½" U.N.O.*
4. *f'c @ 28 Days = 5000psi (min)*
5. *Reinforcement = ASTM A-615, Grade 60*
6. *Materials & Manufacturing In Accordance With ASTM C-913 Specifications.*
7. *Safety Factors:*
   Sliding = 1.5 (min)
   Overturning = 2.0 (min)



The Engineer For This Project To Verify The Design Assumptions Are Adequate For This Specific Site.

HARTHERN CONCRETE PIPE	401 Kelton St Bay City, MI 48706	Precast Concrete Headwall / Wingwalls			
	5281 Lansing Rd Charlotte, MI 48813	2701 Chicago Dr SW Wyoming, MI 49519			
	4950 White Lake Rd Clarkston, MI 48346	3756 Centennial Rd Sylvania, OH 43560	Date 11 May 16	Revised	Rev. No.	Drawn By BmG	Scale NTS	01.14

HEADWALL (FOR 36" ADS HP PIPE)



Dia.	T	A	B	C	D	E	F	G	MDOT X	MDOT Y	OTIC X	OTIC Y	WRC X	WRC Y	Slope	Weight
12"	4½"	4"	24"	5⅛"	7⅝"	24"	13"	28"	12"	18"	12"	28"	12"	42"	1.7 to 1	1,650
15"	4 9/16"	6"	27"	48"	7⅝"	30"	16"	34⅝"	12"	18"	12"	28"	12"	42"	1.8 to 1	1,850
18"	4½"	9"	27"	46"	7⅝"	36"	19"	41"	12"	18"	12"	28"	12"	42"	1.8 to 1	2,050
24"	4½"	9½"	43½"	30"	7⅝"	48"	25"	54"	12"	18"	12"	28"	12"	42"	1.3 to 1	2,450
30"	5½"	14"	53"	19"	7⅝"	60"	31"	67"	12"	18"	12"	28"	12"	42"	2.6 to 1	3,040
36"	4"	17"	61½"	34½"	96"	72"	37"	80"	12"	18"	12"	28"	12"	42"	2.6 to 1	5,800
42"	4½"	22"	63½"	32½"	96"	78"	43"	87"	12"	24"	12"	28"	12"	42"	2.5 to 1	5,600
48"	5"	24"	72½"	33½"	96"	84"	49"	94"	12"	24"	12"	28"	12"	42"	2.3 to 1	7,400
54"	5½"	27"	63½"	32½"	96"	90"	55"	101"	12"	24"	12"	28"	12"	42"	2.3 to 1	8,880
60"	6"	32½"	58"	38"	96"	96"	61"	108"	12"	24"	12"	30"	12"	42"	2.0 to 1	10,600
72"	7"	35"	74"	22"	96"	108"	73"	122"	12"	24"	12"	30"	12"	42"	1.9 to 1	14,500

HARTHERN CONCRETE PIPE	401 Kelton St Bay City, MI 48706	12" to 72" Precast Concrete Round Flared End Sections			
	5281 Lansing Rd Charlotte, MI 48813	2701 Chicago Dr SW Wyoming, MI 49519			
	4950 White Lake Rd Clarkston, MI 48346	3756 Centennial Rd Sylvania, OH 43560	Date 14 Mar 18	Revised 07 Jun 22	Rev. No. 1	Drawn By BmG	Scale NTS	01.11

36" FLARED END SECTION (FOR 36" ADS HP PIPE)

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

CRAIG ALAN GENGLER — LICENSED PROFESSIONAL ENGINEER — STATE OF MICHIGAN — 6201064443

(AS NOTED)

JOB NO. 2600.41E

NORTH

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET NO.
C6.0

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PIPE RUN		HYDROLOGY							HYDRAULICS											H.G. ELEVATION		F.G. ELEVATION		INVERT ELEV.	
FROM STR	TO STR	INCRE-MENT AREA ACRES (A)	RUNOFF COEFF. (C)	EQUIV. AREA 100% (CA)	TOTAL AREA 100% ACRES SUM (CA)	TIME (T) MIN.	10 YR INTEN-SITY (I) INCHES PER HOUR	10-YR FLOW (C.F.S.) Q=CIA	CAPACITY OF SEWER (C.F.S.)	DIAM. OF PIPE (IN)	LENGTH OF LINE (FEET)	PIPE MATERIAL	SLOPE OF PIPE (%)	ENERGY GRADE SLOPE	HG BASED ON "Q" (%)	HG FOR 3 FPS GIVEN "D" (%)	ACTUAL HG	VEL. FULL (FT./ SEC.)	TIME OF FLOW (MIN)	UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END
FCB 5.2	FCB 5.1	0.35	0.89	0.31	0.31	10.00	4.58	1.43	6.21	18	66.0	HDPP	0.25	0.128%	0.013	0.18	0.128%	3.5	0.3	910.04	909.96	913.90	913.70	909.53	909.36
FCB 5.1	FCB 5	0.16	0.95	0.15	0.46	10.30	4.53	2.10	6.21	18	64.0	HDPP	0.25	0.276%	0.029	0.18	0.250%	3.5	0.3	909.96	909.80	913.70	913.60	909.36	909.20
FCB 4.10	MH 4.9	0.00	0.00	0.00	0.00	10.00	4.58	0.00	2.38	12	50.0	SDR	0.32	0.000%	0.000	0.31	0.000%	3.0	0.3	910.40	910.40	914.40	914.50	910.00	909.84
MH 4.9	FCB 4.8	0.36	0.79	0.28	0.28	10.60	4.47	1.27	5.25	18	101.0	RCP CL-V	0.25	0.025%	0.015	0.25	0.025%	3.0	0.6	910.40	910.38	914.50	914.40	909.64	909.39
FCB 4.8	FCB 4.7	0.42	0.93	0.39	0.68	10.90	4.42	2.98	5.25	18	54.0	RCP CL-V	0.25	0.115%	0.080	0.25	0.115%	3.0	0.3	910.38	910.32	914.40	914.40	909.39	909.25
FCB 4.7	FCB 4.6	0.03	0.35	0.01	0.69	11.20	4.36	2.99	5.25	18	52.0	RCP CL-V	0.25	0.095%	0.081	0.25	0.095%	3.0	0.3	910.32	910.27	914.40	914.40	909.25	909.12
FCB 4.6	FCB 4.5	0.43	0.93	0.40	1.09	11.60	4.29	4.66	5.25	18	69.0	RCP CL-V	0.25	0.223%	0.197	0.25	0.223%	3.0	0.4	910.27	910.11	914.40	914.40	909.12	908.95
FCB 4.5	FCB 4.4	0.02	0.35	0.01	1.09	11.90	4.24	4.64	5.25	18	54.0	RCP CL-V	0.25	0.209%	0.195	0.25	0.209%	3.0	0.3	910.11	910.00	914.40	914.20	908.95	908.81
FCB 4.4	FCB 4.3	0.36	0.90	0.32	1.42	12.00	4.23	5.99	9.33	24	22.0	RCP CL-V	0.17	0.104%	0.070	0.17	0.104%	3.0	0.1	910.00	909.98	914.20	914.60	908.61	908.58
FCB 4.3	FCB 4	0.49	0.95	0.47	1.88	12.30	4.18	7.87	9.33	24	45.0	RCP CL-V	0.17	0.173%	0.121	0.17	0.170%	3.0	0.3	909.98	909.90	914.60	913.60	908.58	908.50
FCB 4.2	FCB 4.1	0.65	0.62	0.40	0.40	10.00	4.58	1.85	6.21	18	64.0	HDPP	0.25	0.138%	0.022	0.18	0.138%	3.5	0.3	910.02	909.93	913.70	913.70	909.42	909.26
FCB 4.1	FCB 4	0.20	0.86	0.17	0.58	10.30	4.53	2.60	6.21	18	64.0	HDPP	0.25	0.275%	0.044	0.18	0.250%	3.5	0.3	909.93	909.77	913.70	913.60	909.26	909.10
FCB 7	FCB 6	0.00	0.00	0.00	0.00	10.00	4.58	0.00	10.35	24	6.0	HDPP	0.15	0.000%	0.000	0.12	0.000%	3.3	0.0	909.71	909.71	913.10	913.10	908.56	908.55
FCB 6	FCB 5	0.83	0.93	0.77	0.77	10.80	4.43	3.42	10.35	24	161.0	HDPP	0.15	0.025%	0.016	0.12	0.025%	3.3	0.8	909.71	909.67	913.10	913.60	908.55	908.31
FCB 5	FCB 4	0.18	0.95	0.17	1.41	11.40	4.33	6.09	10.35	24	112.0	HDPP	0.15	0.069%	0.052	0.12	0.069%	3.3	0.6	909.67	909.60	913.60	913.60	908.31	908.14
FCB 4	FCB 3	0.23	0.91	0.21	4.07	11.80	4.26	17.35	30.53	36	93.0	HDPP	0.15	0.141%	0.048	0.07	0.141%	4.3	0.4	909.60	909.46	913.60	913.70	907.94	907.80
FCB 3	MH 2	0.08	0.35	0.03	4.10	12.10	4.21	17.27	30.53	36	86.0	HDPP	0.15	0.140%	0.048	0.07	0.140%	4.3	0.3	909.46	909.34	913.70	914.30	907.80	907.67
MH 2	CB 1	0.00	0.00	0.00	4.10	12.40	4.16	17.08	30.53	36	71.0	HDPP	0.15	0.129%	0.047	0.07	0.129%	4.3	0.3	909.34	909.25	914.30	912.90	907.67	907.56
CB 1	TRS 0.1	0.40	0.58	0.23	4.33	12.20	4.20	18.18	30.53	36	24.0	HDPP	0.15	0.146%	0.053	0.07	0.146%	4.3	0.1	909.25	909.22	912.90	914.90	907.56	907.53
TRS 0.1	FES 0	0.00	0.00	0.00	4.33	12.50	4.15	17.98	30.53	36	18.0	HDPP	0.15	0.152%	0.052	0.07	0.150%	4.3	0.1	909.20	909.17	913.30	914.90	907.53	907.50
FCB 11.8	FCB 11.7	0.02	0.35	0.01	0.01	10.00	4.58	0.03	2.02	12	24.0	RCP CL-V	0.32	0.000%	0.000	0.44	0.000%	2.6	0.2	910.74	910.74	914.30	914.30	910.19	910.11
FCB 11.7	FCB 11.6	0.84	0.92	0.77	0.78	10.50	4.49	3.50	5.15	18	79.0	RCP CL-V	0.24	0.143%	0.111	0.25	0.143%	2.9	0.5	910.74	910.63	914.30	914.40	909.71	909.52
FCB 11.6	FCB 11.5	0.27	0.90	0.24	1.02	10.90	4.42	4.52	5.56	18	70.0	RCP CL-V	0.28	0.216%	0.185	0.25	0.216%	3.1	0.4	910.63	910.48	914.40	914.40	909.52	909.33
FCB 11.5	FCB 11.4	0.18	0.90	0.16	1.18	11.20	4.36	5.17	5.56	18	55.0	RCP CL-V	0.28	0.283%	0.242	0.25	0.280%	3.1	0.3	910.48	910.32	914.40	914.40	909.33	909.17
FCB 11.4	FCB 11.3	0.03	0.35	0.01	1.20	11.40	4.33	5.17	5.56	18	47.0	RCP CL-V	0.28	0.283%	0.243	0.25	0.280%	3.1	0.2	910.32	910.19	914.40	914.40	909.17	909.04
FCB 11.3	FCB 11.2	0.26	0.92	0.24	1.43	11.70	4.28	6.14	8.76	24	48.0	RCP CL-V	0.15	0.129%	0.074	0.17	0.129%	2.8	0.3	909.94	909.88	914.40	914.40	908.64	908.57
FCB 11.2	FCB 11.1	0.19	0.72	0.14	1.57	11.70	4.28	6.72	8.76	24	47.0	RCP CL-V	0.15	0.154%	0.088	0.17	0.150%	2.8	0.3	909.88	909.80	914.40	914.90	908.57	908.50
FCB 11.1	FCB 11	0.00	0.00	0.00	1.57	11.90	4.24	6.67	10.37	24	48.0	RCP CL-V	0.21	0.214%	0.087	0.17	0.210%	3.3	0.2	909.67	909.57	914.40	914.90	908.50	908.40
CB 16.1	CB 16	0.00	0.07	0.35	0.02	10.00	4.58	0.11	2.38	12	49.0	HDPP	0.32	0.001%	0.001	0.31	0.001%	3.0	0.3	909.71	909.71	912.90	912.90	909.10	908.94
CB 15.1	CB 15	1.29	0.95	1.23	1.23	10.00	4.58	5.62	6.21	18	78.0	HDPP	0.25	0.187%	0.205	0.18	0.187%	3.5	0.4	909.84	909.70	914.50	913.00	908.59	908.39
MH 11	INL 11.9	0.21	0.72	0.15	0.15	10.00	4.58	0.69	2.98	12	47.0	HDPP	0.50	0.490%	0.027	0.31	0.490%	3.8	0.2	908.57	908.33	913.00	914.00	908.24	908.00
FCB 18	FCB 17	0.03	0.53	0.02	0.02	10.30	4.53	0.07	2.38	12	47.0	HDPP	0.32	0.000%	0.000	0.31	0.000%	3.0	0.3	909.72	909.72	914.30	913.80	909.09	908.94
FCB 17	FCB 16	0.07	0.95	0.07	0.08	10.60	4.47	0.37	2.38	12	53.0	HDPP	0.32	0.007%	0.008	0.31	0.007%	3.0	0.3	909.72	909.71	913.80	912.90	908.94	908.77
FCB 16	CB 15	0.12	0.42	0.05	0.16	10.60	4.47	0.70	2.38	12	57.0	HDPP	0.32	0.028%	0.028	0.31	0.028%	3.0	0.3	909.71	909.70	912.90	913.00	908.77	908.59
CB 15	CB 14	0.41	0.93	0.38	1.76	10.50	4.49	7.92	10.35	24	94.0	HDPP	0.15	0.153%	0.088	0.12	0.150%	3.3	0.5	909.70	909.56	913.00	913.00	908.39	908.25
CB 14	MH 13	0.40	0.94	0.38	2.14	10.90	4.42	9.45	18.77	30	87.0	HDPP	0.15	0.152%	0.038	0.09	0.150%	3.8	0.4	909.50	909.37	913.00	913.90	908.25	908.12
MH 13	CB 12	0.00	0.00	0.00	2.14	11.20	4.36	9.34	18.77	30	63.0	HDPP	0.15	0.148%	0.037	0.09	0.148%	3.8	0.3	909.37	909.28	913.90	913.30	908.12	908.03
CB 12	MH 11	0.28	0.85	0.24	2.38	11.70	4.28	10.17	19.99	30	133.0	HDPP	0.17	0.176%	0.044	0.09	0.170%	4.1	0.5	909.28	908.90	913.30	914.00	908.03	907.80
MH 11	CB 10.1	0.00	0.00	0.00	2.53	12.10	4.21	10.65	30.53	36	96.0	HDPP	0.15	0.124%	0.018	0.07	0.124%	4.3	0.4	908.90	908.78	913.00	913.00	907.62	907.48
CB 10.1	CB 10	0.25	0.60	0.15	2.68	11.50	4.31	11.55	30.53	36	76.0	HDPP	0.15	0.146%	0.021	0.07	0.146%	4.3	0.3	908.78	908.67	913.00	914.90	907.48	907.37
CB 10	TRS 9.1	0.25	0.60	0.15	2.83	11.80	4.26	12.06	30.53	36	30.0	HDPP	0.15	0.159%	0.023	0.07	0.150%	4.3	0.1	908.67	908.62	913.00	914.90	907.37	907.32
TRS 9.1	FES 9	0.00	0.00	0.00	2.83	12.20	4.20	11.87	30.53	36	21.0	HDPP	0.15	0.167%	0.023	0.07	0.150%	4.3	0.1	908.61	908.57	913.30	914.90	907.32	907.29
FES 22	OCS 21	0.00	0.00	7.16	7.16	12.30	4.18	29.94	43.17	36	37.0	HDPP	0.30	0.320%	0.144	0.07	0.300%	6.1	0.1	908.83	908.72	915.00	914.90	907.01	906.90
OCS 21	MH 20	0.00	0.00	0.00	7.16	13.10	4.06	29.07	43.17	36	299.0	HDPP	0.30	0.317%	0.136	0.07	0.300%	6.1	0.8	908.69	907.80	914.40	914.90	906.90	906.00
MH 20	FCB 19	0.00	0.00	0.00	7.16	13.30	4.03	28.86	43.17	36	57.0	HDPP	0.30	0.313%	0.134	0.07	0.300%	6.1	0.2	906.28	906.11	913.90	914.90	904.50	904.33

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KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW DATE
CONSTRUCTION DOCUMENTS 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201054441
PROFESSIONAL ENGINEER

(AS NOTED)
JOB NO. 2600.41E
NORTH

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET NO.
C6.1

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PIPE RUN		HYDROLOGY							HYDRAULICS										H.G. ELEVATION		F.G. ELEVATION		INVERT ELEV.	
FROM STR	TO STR	INCRE-MENT AREA ACRES (A)	RUNOFF COEFF. (C)	EQUIV. AREA 100% (CA)	TOTAL AREA 100% ACRES SUM (CA)	TIME (T) MIN.	10 YR INTEN-SITY (I) INCHES PER HOUR	10-YR FLOW (C.F.S.) Q=CIA	CAPACITY OF SEWER (C.F.S.)	DIAM. OF PIPE (IN)	LENGTH OF LINE (FEET)	PIPE MATERIAL	SLOPE OF PIPE (%)	ENERGY GRADE SLOPE	HG BASED ON "Q" (%)	HG FOR 3 FPS GIVEN "D" (%)	ACTUAL HG	VEL. FULL (FT./ SEC.)	TIME OF FLOW (MIN)	UPPER END	LOWER END	UPPER END	LOWER END	UPPER END	LOWER END
FCB L5.3	FCB L5.2	0.04	0.35	0.01	0.01	10.00	4.58	0.06	2.38	12	52.0	HDPP	0.32	0.008%	0.000	0.31	0.008%	3.0	0.3	909.22	909.21	914.10	913.90	909.10	908.93
FCB L5.2	CB L5	0.15	0.54	0.08	0.10	10.50	4.49	0.43	2.38	12	84.0	HDPP	0.32	0.350%	0.010	0.31	0.320%	3.0	0.5	909.21	908.94	913.90	913.00	908.93	908.66
FCB L5.1	CB L5	0.32	0.67	0.21	0.21	10.00	4.58	0.98	3.77	12	88.0	HDPP	0.80	0.785%	0.054	0.31	0.785%	4.8	0.3	910.06	909.35	913.70	913.00	909.70	909.00
FCB L7.2	FCB L7.1	0.05	0.35	0.02	0.02	10.00	4.58	0.08	2.38	12	67.0	HDPP	0.32	2.143%	0.000	0.31	0.320%	3.0	0.4	910.15	909.93	914.00	914.30	910.06	909.84
FCB L7.1	CB L7	0.02	0.35	0.01	0.02	10.40	4.51	0.11	2.38	12	67.0	HDPP	0.32	4.062%	0.001	0.31	0.320%	3.0	0.4	909.93	909.72	914.30	914.40	909.84	909.63
MH L8	CB L7	0.58	0.95	0.55	0.55	10.00	4.58	2.52	8.78	18	68.0	HDPP	0.50	0.538%	0.041	0.18	0.500%	5.0	0.2	907.28	906.94	915.60	914.40	906.74	906.40
FCB L7	CB L4	0.06	0.95	0.06	0.63	10.40	4.51	2.85	8.78	18	119.0	HDPP	0.50	0.046%	0.053	0.18	0.046%	5.0	0.4	907.04	906.98	914.40	913.00	906.21	905.61
FCB L4.1	CB L4	0.14	0.89	0.12	0.12	10.00	4.58	0.57	3.65	12	54.0	HDPP	0.75	0.840%	0.018	0.31	0.750%	4.6	0.2	909.67	909.27	913.40	913.00	909.41	909.00
FCB L3.1	CB L3	0.08	0.53	0.04	0.04	10.00	4.58	0.19	3.79	12	49.0	HDPP	0.81	3.283%	0.002	0.31	0.810%	4.8	0.2	909.91	909.51	913.80	913.40	909.80	909.40
INL 2.2	FCB L2.1	0.50	0.95	0.48	0.48	10.00	4.58	2.18	2.98	12	52.0	HDPP	0.50	0.513%	0.267	0.31	0.500%	3.8	0.2	909.67	909.41	914.30	913.40	909.04	908.78
FCB L2.1	MH L2	0.10	0.35	0.04	0.51	10.20	4.54	2.32	7.02	18	55.0	HDPP	0.32	0.337%	0.035	0.18	0.320%	4.0	0.2	908.97	908.80	913.40	915.30	908.38	908.20
MH L2	CB L3	0.00	0.00	0.00	0.51	10.50	4.49	2.29	13.37	24	68.0	HDPP	0.25	0.250%	0.007	0.12	0.250%	4.3	0.3	908.37	908.20	915.30	913.40	907.80	907.63
CB L6	CB L5	0.66	0.56	0.37	0.37	10.00	4.58	1.69	3.72	12	122.0	HDPP	0.78	0.802%	0.162	0.31	0.780%	4.7	0.4	910.43	909.48	913.95	913.00	909.96	909.01
CB L5	CB L4	0.84	0.79	0.66	1.34	10.80	4.43	5.95	13.10	24	195.0	HDPP	0.24	0.246%	0.050	0.12	0.240%	4.2	0.8	908.90	908.43	913.00	913.00	907.96	907.49
CB L4	CB L3	0.53	0.89	0.47	3.12	10.90	4.42	13.79	18.90	24	54.0	HDPP	0.50	0.342%	0.266	0.12	0.342%	6.0	0.1	906.98	906.80	913.00	913.40	905.61	905.34
CB L3	MH L9	0.23	0.85	0.20	3.87	11.00	4.40	17.02	18.90	24	24.0	HDPP	0.50	0.521%	0.405	0.12	0.500%	6.0	0.1	906.80	906.68	913.40	914.60	905.34	905.22
MH L9	MH L9.1	0.00	0.00	0.00	3.87	10.90	4.42	17.09	18.90	24	13.0	HDPP	0.50	0.525%	0.409	0.12	0.500%	6.0	0.0	906.68	906.62	914.60	914.90	905.22	905.16
MH L9.1	MH L10	0.00	0.00	0.00	3.87	11.10	4.38	16.95	18.90	24	31.0	HDPP	0.50	0.535%	0.402	0.12	0.500%	6.0	0.1	906.61	906.45	914.60	914.90	905.16	905.00

Note* Detention storage has been calculated based on all new impervious area within re-graded areas.

Land Use Summary

Area, A (ac)	15.87
Proposed Impervious Area (ac)	9.33
Proposed Pervious Area (ac)	6.54
Runoff Coefficient, C (Weighted)	0.70
100-yr peak intensity, in/hr	6.60

Pervious Area Land Use Data

Characteristic	Existing Conditions	Proposed Conditions
Total Development Area (ac)	15.87	15.87
Impervious Area (ac)	3.02	9.33
Total Pervious Area (ac)	12.85	6.54
Pervious Area Breakdown by Cover Type		
Meadow/fallow/natural areas (non-cultivated)	0	0 acres
Predominant NRCS Soil Type (A, B, C, or D)	N/A	N/A
Improved areas (turf grass, landscape, row crops)	12.85	6.54 acres
Predominant NRCS Soil Type (A, B, C, or D)	C/D	C/D
Wooded Areas	0.00	0 acres
Predominant NRCS Soil Type (A, B, C, or D)	N/A	N/A
Calculated CPVC Volume (cubic feet)		41,827
CPVC Volume Provided (cubic feet)		0
CPRC Volume Provided (cubic feet)		61,132

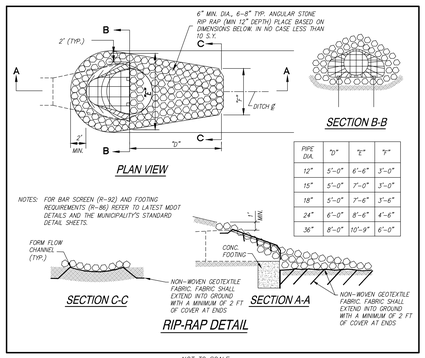
The Professional Engineer who signs and seals this site plan certifies that the values in this table reflect the WRC stormwater calculations required for this development and that geotechnical investigations were performed that provide conclusive documentation that demonstrates whether infiltration (i.e., CPVC Volume Control) is practicable.

STORMWATER MANAGEMENT NARRATIVE

A NEW COMMUNITY CENTER, PARKING LOTS, AND A DROP OFF LOOP ARE PROPOSED ADJACENT TO HOWELL HIGH SCHOOL AND AQUATIC CENTER. DETENTION STORAGE IS PROVIDED IN A BASIN ON THE NORTH SIDE OF THE SITE FOR ALL ADDED IMPERVIOUS AND FOR ANY RE-GRADED AND REPLACED IMPERVIOUS AREA. THE WATER QUALITY VOLUME IS TREATED BY ADS BARRACUDA HYDRODYNAMIC SEPARATORS, DUE TO GROUNDWATER FOUND IN SOIL BORINGS BENEATH THE BASIN, EXTENDED DETENTION IS PROVIDED AND RELEASED OVER 44 HOURS. FLOOD CONTROL VOLUME IS RELEASED AT RATE NOT TO EXCEED 0.15CFS/ACRE. AN OVERFLOW WEIR WALL IS PROVIDED AT OCS L1 NEAR THE NEW DROP OFF LOOP. IN THE EVENT OF SURCHARGE OF THE STORM SEWER IN THE DROP OFF LOOP AREA, STORMWATER WILL OVERFLOW OVER THIS WEIR WALL AND WILL BE DIRECTED TOWARDS THE DETENTION BASIN.

Detention Basin Storage Volume

Elevation (feet)	Area (square feet)	Average Area (square feet)	Stage Volume (cubic feet)	Total Storage Volume (cubic feet)
913.00	46,811	45,148	45,148	178,014
912.00	43,484	41,871	41,871	132,867
911.00	40,257	38,694	38,694	90,996
910.00	37,131	35,618	35,618	52,302
909.00	34,105	33,368	16,684	16,684
908.50	32,631	16,316	0	0



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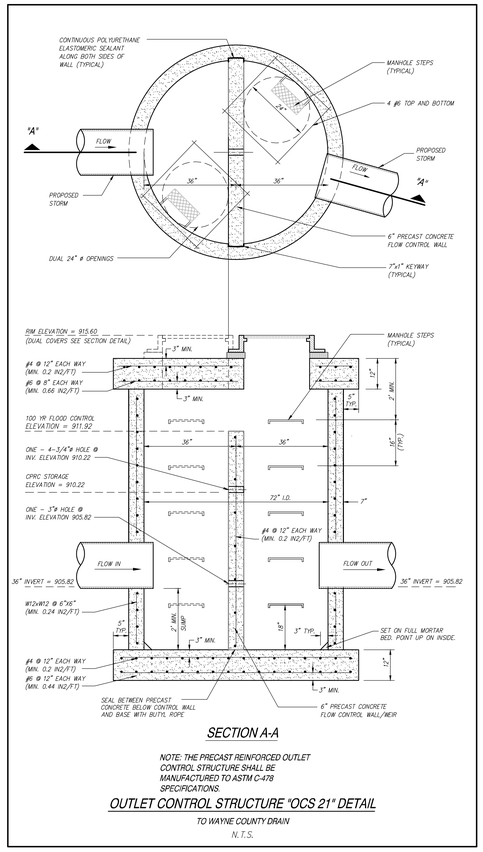

STORM WATER MANAGEMENT CALCULATIONS

Design Basis: Livingston County Procedures and Design Criteria for Stormwater Management Systems, March 2022

Detention storage is provided for added impervious area.

I. Required Storage Volume and Release Rate

1) **Proposed Added Impervious Area** = 9.33 acres

Surface	Area (sf)	C factor	A x C
New Roof	149,921	0.95	142,424.95
New Pavement (re-graded areas only)	256,690	0.95	243,855.50
Sum:	406,611		386,280.5

Proposed Weighted Runoff Coefficient (Cw) = ($\sum$A x C) / $\sum$A = 0.95

3) Water Quality Volume (WQ)
VWQ = A*C*(1/12)ft*(43560 ft^2/acre) = 32,174.51 ft^3
A =Total Proposed Impervious Area
(Provided by treatment with ADS Barracuda and forebay in basin.)
Required forebay volume = 0.15 * WQV = = 4,826.18 ft^3

4) Channel Protection Volume (CPVC)
VCPVC = 4,719 * C * A = 41,827 ft^3
A = Increased impervious area
(Provided for information purposes only. Site has perched groundwater with clay soil below the basin.)

5) Channel Protection Rate Control (CPRC/VED)
VCPRC = 6,897 * C *A = 61,131.56 ft^3
A = Increased impervious area
(Volume required to detain for 48 hours.)

6) Flood Control

A = Total drainage area tributary to basin
QVRR = 0.15 ft^3/s
Q100p = QVRR * A = 1.40 ft^3/s

V100R = 18985 * C * A = 168,273.55 ft^3

Q100IN = C * I100 * A (see storm sewer design spreadsheet for C*A) = 60.89 ft^3/s
Note: actual 100yr inlet rate to basin limited by pipe inlet capacity.

I100 = 83.3 / (Tc+9.17)^.81 = 6.87 in/hr
Tc = 12.6 min (from storm sewer design spreadsheet)

R = [0.206-0.15*ln(Q100p/Q100IN)] = 0.77

100 yr detention volume
V100D = (V100R * R) -VCPVC = 129,570.63 ft^3

Total storage volume required = 100 yr detention volume

Basin storage is limited to highest groundwater elevation found in basin soil borings = 908.50 ft

Bottom of Basin (Storage Elevation): $Z_{bottom\ of\ basin\ storage}$ = 908.50 ft
Water Quality: 32,175 ft^3
Channel Protection: 61,132 ft^3 Z_{CPRC} = 910.22 ft
Flood Control: 129,571 ft^3 Z_{FC} = 911.92 ft

IIA. Orifice Restrictor Sizing for 48 Hour Release of Extended Detention
Extended detention of channel protection volume is
V_{CPRC} = A x C x 6,897
t = 48 hrs
Q_{avg} = Vcprc / 172,800 Q_{avg} = 0.354 cfs
$d_{orifice}$ = assume one 3in orifice $d_{orifice}$ = 3.000 in
$Z_{orifice}$ = $Z_{orifice}$ = 905.95 ft
$Z_{orifice}$ INV. = $Z_{orifice}$ INV. = 905.82 ft
Z_{CPRC} = 910.22 ft
havg = (Z_{CPRC} - $Z_{orifice}$)*(1/2) h_{avg} = 2.13 ft
Half of the total depth of CPRC vol. $A_{orifice}$ = 0.049 ft^2

h_{max} = (Z_{FC} - $Z_{orifice}$) h_{max} = 5.97 ft
(100 year storm condition)

Average Release Rate (CPRC Volume)
$Q_{avg} = 0.62 \times A_{Orifice} \times (2 \times g \times h_{avg})^{1/2}$ Q_{avg} = 0.356 cfs

Maximum Release Rate
$Q_{max} = 0.62 \times A_{Orifice} \times (2 \times g \times h_{max})^{1/2}$ Q_{max} = 0.596 cfs

Release Time Qt = 47.70 hrs
Qt = (Vcprc / Qavg) / 3600s/hr

IIB. Orifice Restrictor Sizing for Allowable Discharge Rate

$d_{orifice}$ = assume one 4.75in orifice $d_{orifice}$ = 0.41 ft
$Z_{orifice}$ = $Z_{orifice}$ = 910.43 ft
$Z_{orifice}$ INV. = $Z_{orifice}$ INV. = 910.22 ft
Z_{FC} = flood control elevation Z_{FC} = 911.92 ft
h_{max} = (Z_{FC} - $Z_{orifice}$) h_{max} = 1.49 ft
$A_{orifice}$ = 0.132 ft^2

Maximum Release Rate (FC Orifice)
$Q_{max} = 0.62 \times A_{orifice} \times (2 \times g \times h_{max})^{1/2}$ Q_{max} = 0.80 cfs

Maximum Release Rate = Q_{max}(CPRC Orifice) + Q_{max}(FC Orifice) = 1.40 cfs
Q_{max} < = Q_{allow} Q_{allow} = 1.40 cfs

Mechanical Treatment Requirements
See storm sewer design spreadsheet for details
Treatment Structure **TRS L9 & L9.1**
Q = C*I*A
I = 97/(Tc+30) I = 2.37 in/h
Tc = 11.1 min C*A= 3.87 acres
Required treatment rate provided by ADS AR5 & AR6 Treatment structures Q = 9.17 ft^3/s

Treatment Structure **TRS 0.1**
Q = C*I*A
I = 97/(Tc+30) I = 2.37 in/h
Tc = 12.2 min C*A= 4.33 acres
Q = 10.26 ft^3/s

Treatment Structure **TRS 9.1**
Q = C*I*A
I = 97/(Tc+30) I = 2.37 in/h
Tc = 12 min C*A= 4.25 acres
Q = 10.07 ft^3/s

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW DATE
CONSTRUCTION DOCUMENTS 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201064447
REGISTERED PROFESSIONAL ENGINEER

(AS NOTED)
NORTH

JOB NO. 2600.41E

SHEET TITLE
STORMWATER MANAGEMENT PLAN

SHEET NO.
C6.2

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Drainage Area Summary

Drainage Area (FCB L2.1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	21,780	0.95	20,691
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	4,356	0.35	1,525
			Total = ∑(C)(Area) =		22,216
			Area Total = ∑sf =		4,356
			Weighted C = ∑ (C)(Area)/∑sf =		**5.10**

Drainage Area (CB L3)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	8,360	0.95	7,942
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,659	0.35	581
			Total = ∑(C)(Area) =		8,522
			Area Total = ∑sf =		10,019
			Weighted C = ∑ (C)(Area)/∑sf =		**0.85**

Drainage Area (CB L3.1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	1,025	0.95	974
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	2,460	0.35	861
			Total = ∑(C)(Area) =		1,835
			Area Total = ∑sf =		3,485
			Weighted C = ∑ (C)(Area)/∑sf =		**0.53**

Drainage Area (CB L4)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	20,760	0.95	19,722
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	2,327	0.35	814
			Total = ∑(C)(Area) =		20,536
			Area Total = ∑sf =		23,087
			Weighted C = ∑ (C)(Area)/∑sf =		**0.89**

Drainage Area (CB L4.1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	5,455	0.95	5,183
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	643	0.35	225
			Total = ∑(C)(Area) =		5,408
			Area Total = ∑sf =		6,098
			Weighted C = ∑ (C)(Area)/∑sf =		**0.89**

Drainage Area (CB L5)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	26,530	0.95	25,204
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	10,060	0.35	3,521
			Total = ∑(C)(Area) =		28,725
			Area Total = ∑sf =		36,590
			Weighted C = ∑ (C)(Area)/∑sf =		**0.79**

Drainage Area (CB L5.1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	7,956	0.95	7,558
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	5,983	0.30	1,795
			Total = ∑(C)(Area) =		9,353
			Area Total = ∑sf =		13,939
			Weighted C = ∑ (C)(Area)/∑sf =		**0.67**

Drainage Area (CB L5.2)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	5,442	0.95	5,170
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,092	0.30	328
			Total = ∑(C)(Area) =		5,498
			Area Total = ∑sf =		6,534
			Weighted C = ∑ (C)(Area)/∑sf =		**0.84**

Drainage Area (FCB L5.3)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,514	0.35	530
			Total = ∑(C)(Area) =		530
			Area Total = ∑sf =		14,375
			Weighted C = ∑ (C)(Area)/∑sf =		**0.04**

Drainage Area (CB L6)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	10,030	0.95	9,528
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	18,720	0.35	6,552
			Total = ∑(C)(Area) =		16,080
			Area Total = ∑sf =		28,750
			Weighted C = ∑ (C)(Area)/∑sf =		**0.56**

Drainage Area (CB L7)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	2,614	0.95	2,483
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	0	0.35	0
			Total = ∑(C)(Area) =		2,483
			Area Total = ∑sf =		2,614
			Weighted C = ∑ (C)(Area)/∑sf =		**0.95**

Drainage Area (FCB 7.1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Pond Surface	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	871	0.35	305
			Total = ∑(C)(Area) =		305
			Area Total = ∑sf =		871
			Weighted C = ∑ (C)(Area)/∑sf =		**0.35**

Drainage Area (FCB 7.2)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	2,178	0.35	762
			Total = ∑(C)(Area) =		762
			Area Total = ∑sf =		2,178
			Weighted C = ∑ (C)(Area)/∑sf =		**0.35**

Drainage Area (CB 1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	6,679	0.95	6,345
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	10,745	0.35	3,761
			Total = ∑(C)(Area) =		10,106
			Area Total = ∑sf =		17,424
			Weighted C = ∑ (C)(Area)/∑sf =		**0.58**

Drainage Area (FCB 3)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	3,485	0.35	1,220
			Total = ∑(C)(Area) =		1,220
			Area Total = ∑sf =		3,485
			Weighted C = ∑ (C)(Area)/∑sf =		**0.35**

Drainage Area (FCB 4)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	9,387	0.95	8,918
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	632	0.35	221
			Total = ∑(C)(Area) =		9,139
			Area Total = ∑sf =		10,019
			Weighted C = ∑ (C)(Area)/∑sf =		**0.91**

Drainage Area (FCB 4.1)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	7,356	0.95	6,988
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,356	0.35	475
			Total = ∑(C)(Area) =		7,463
			Area Total = ∑sf =		8,712
			Weighted C = ∑ (C)(Area)/∑sf =		**0.86**

Drainage Area (FCB 4.2)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	12,560	0.95	11,932
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	15,754	0.35	5,514
			Total = ∑(C)(Area) =		17,446
			Area Total = ∑sf =		28,314
			Weighted C = ∑ (C)(Area)/∑sf =		**0.62**

Drainage Area (MH 4.3)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	21,344	0.95	20,277
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	0	0.35	0
			Total = ∑(C)(Area) =		20,277
			Area Total = ∑sf =		21,344
			Weighted C = ∑ (C)(Area)/∑sf =		**0.95**

Drainage Area (FCB 4.4)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	14,260	0.95	13,547
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,422	0.35	498
			Total = ∑(C)(Area) =		14,045
			Area Total = ∑sf =		15,682
			Weighted C = ∑ (C)(Area)/∑sf =		**0.90**

Drainage Area (FCB 4.5)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt, Concrete Pavements, stone	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	871	0.35	305
			Total = ∑(C)(Area) =		305
			Area Total = ∑sf =		871
			Weighted C = ∑ (C)(Area)/∑sf =		**0.35**

Drainage Area (FCB 4.6)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	714	0.35	250
			Total = ∑(C)(Area) =		17,366
			Area Total = ∑sf =		18,731
			Weighted C = ∑ (C)(Area)/∑sf =		**0.93**

Drainage Area (FCB 4.7)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,307	0.35	457
			Total = ∑(C)(Area) =		457
			Area Total = ∑sf =		1,307
			Weighted C = ∑ (C)(Area)/∑sf =		**0.35**

Drainage Area (FCB 4.8)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt, Concrete Pavements, Stone, Roof	< 4%	C/D	17,825	0.95	16,934
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	470	0.35	165
			Total = ∑(C)(Area) =		17,098
			Area Total = ∑sf =		18,295
			Weighted C = ∑ (C)(Area)/∑sf =		**0.93**

Drainage Area (FCB 4.5)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt, Concrete Pavements, stone	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	871	0.35	305
			Total = ∑(C)(Area) =		305
			Area Total = ∑sf =		871
			Weighted C = ∑ (C)(Area)/∑sf =		**0.35**

Drainage Area (FCB 4.6)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	17,825	0.95	16,934
			Total = ∑(C)(Area) =		17,098
			Area Total = ∑sf =		18,295
			Weighted C = ∑ (C)(Area)/∑sf =		**0.93**

Drainage Area (FCB 4.7)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,307	0.35	457
			Total = ∑(C)(Area) =		457
			Area Total = ∑sf =		1,307
			Weighted C = ∑ (C)(Area)/∑sf =		**0.35**

Drainage Area (FCB 4.8)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt, Concrete Pavements, Stone, Roof	< 4%	C/D	17,825	0.95	16,934
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	470	0.35	165
			Total = ∑(C)(Area) =		17,098
			Area Total = ∑sf =		18,295
			Weighted C = ∑ (C)(Area)/∑sf =		**0.93**

Drainage Area (FCB 4.5)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt, Concrete Pavements, stone	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	871	0.35	305
			Total = ∑(C)(Area) =		305
			Area Total = ∑sf =		871
			Weighted C = ∑ (C)(Area)/∑sf =		**0.35**

Drainage Area (FCB 4.6)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	18,017	0.95	17,116
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	714	0.35	250
			Total = ∑(C)(Area) =		17,366
			Area Total = ∑sf =		18,731
			Weighted C = ∑ (C)(Area)/∑sf =		**0.93**

Drainage Area (FCB 4.7)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	457	0.35	457
			Total = ∑(C)(Area) =		457
			Area Total = ∑sf =		1,307
			Weighted C = ∑ (C)(Area)/∑sf =		**0.35**

Drainage Area (FCB 4.8)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt, Concrete Pavements, Stone, Roof	< 4%	C/D	17,825	0.95	16,934
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	470	0.35	165
			Total = ∑(C)(Area) =		17,098
			Area Total = ∑sf =		18,295
			Weighted C = ∑ (C)(Area)/∑sf =		**0.93**

Drainage Area (FCB 4.5)

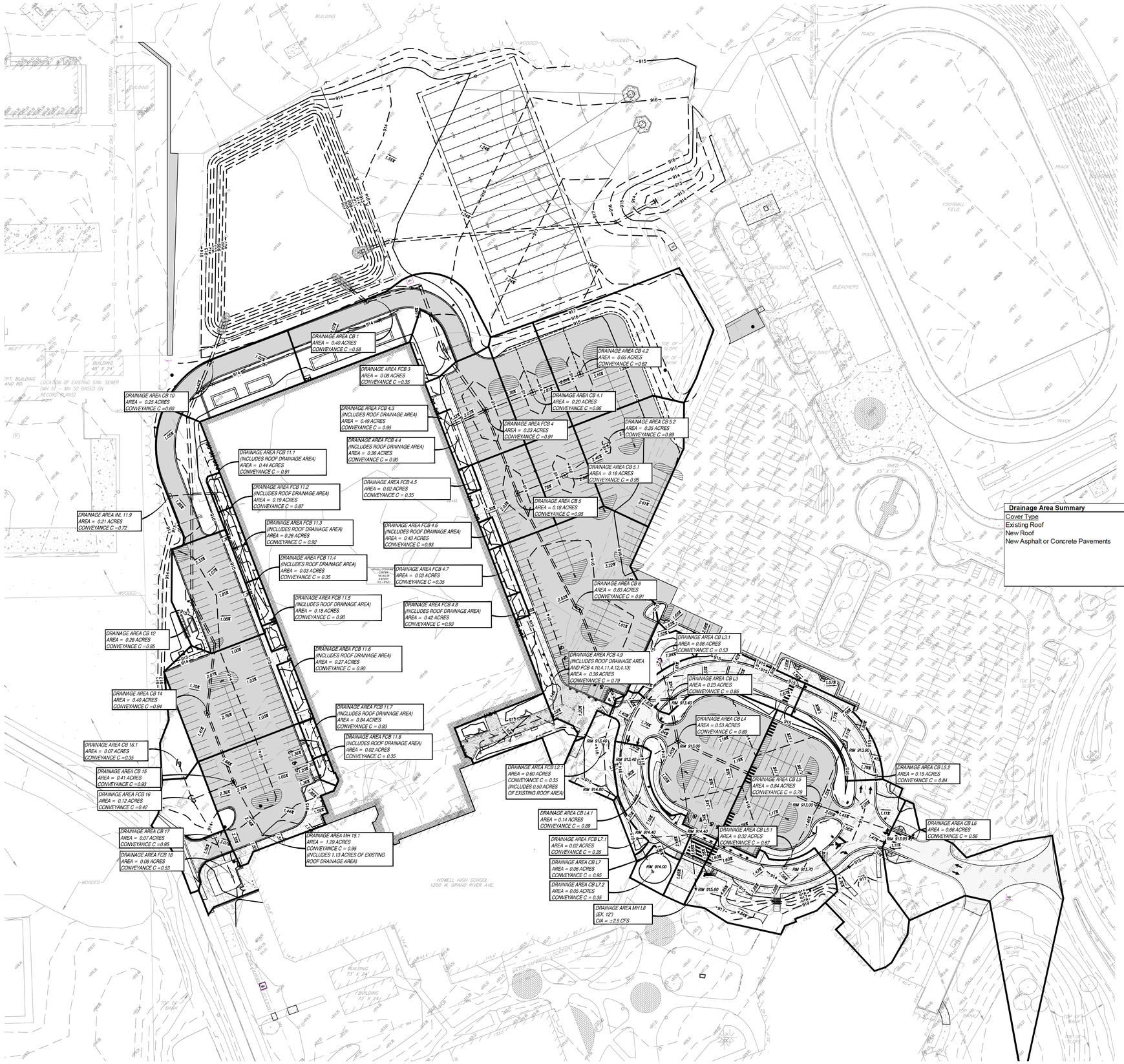
Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt, Concrete Pavements, stone	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	871	0.35	305
			Total = ∑(C)(Area) =		305
			Area Total = ∑sf =		871
			Weighted C = ∑ (C)(Area)/∑sf =		**0.35**

Drainage Area (FCB 4.6)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	18,017	0.95	17,116
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	714	0.35	250
			Total = ∑(C)(Area) =		17,366
			Area Total = ∑sf =		18,731
			Weighted C = ∑ (C)(Area)/∑sf =		**0.93**

Drainage Area (FCB 4.7)

Cover Type	Slope	Soil Group	Area (sq. ft)	C factor	(C) x (Area)
Roofs	< 4%	C/D	0	0.95	0
Asphalt or Concrete Pavements	< 4%	C/D	0	0.95	0
Semi-pervious; Lawns, Parks, Playgrounds	< 4%	C/D	1,307



GRAPHIC SCALE

0 25 50 100

(IN FEET)
1 inch = 50 ft.

GRADING LEGEND

	EXISTING ELEVATION	• TP 000.00	TOP OF PAVEMENT ELEVATION
• TC 000.00	PROPOSED TOP OF CURB ELEVATION	• TW 000.00	TOP OF WALK ELEVATION
• G 000.00	PROPOSED GUTTER ELEVATION	• FG 000.00	FINISH GRADE ELEVATION
11.50	EXISTING CONTOURS	• T/WALL 000.00	TOP OF WALL ELEVATION
11.51		• ME 000.00	MATCH EXISTING ELEVATION
11.50	PROPOSED CONTOURS		FLOW ARROW

Drainage Area Summary

Cover Type	Slope	Soil Group	Area (Acres)	C factor
Existing Roof	< 4%	C/D	1.63	0.95
New Roof	< 4%	C/D	3.44	0.95
New Asphalt or Concrete Pavements	< 4%	C/D	5.89	0.95

Proposed Drainage Area	9.33 Acres
Existing Roof Drainage Area (included in conveyance calculations, but excluded from detention volume requirements).	1.63 Acres

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL
PUBLIC SCHOOLS

REVISIONS/REVIEW	DATE
CONSTRUCTION DOCUMENTS	07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
6201054447
REGISTERED PROFESSIONAL ENGINEER

JOB NO. 2600.41E

NORTH

SHEET TITLE
DRAINAGE AREA MAP

SHEET NO.
C6.4

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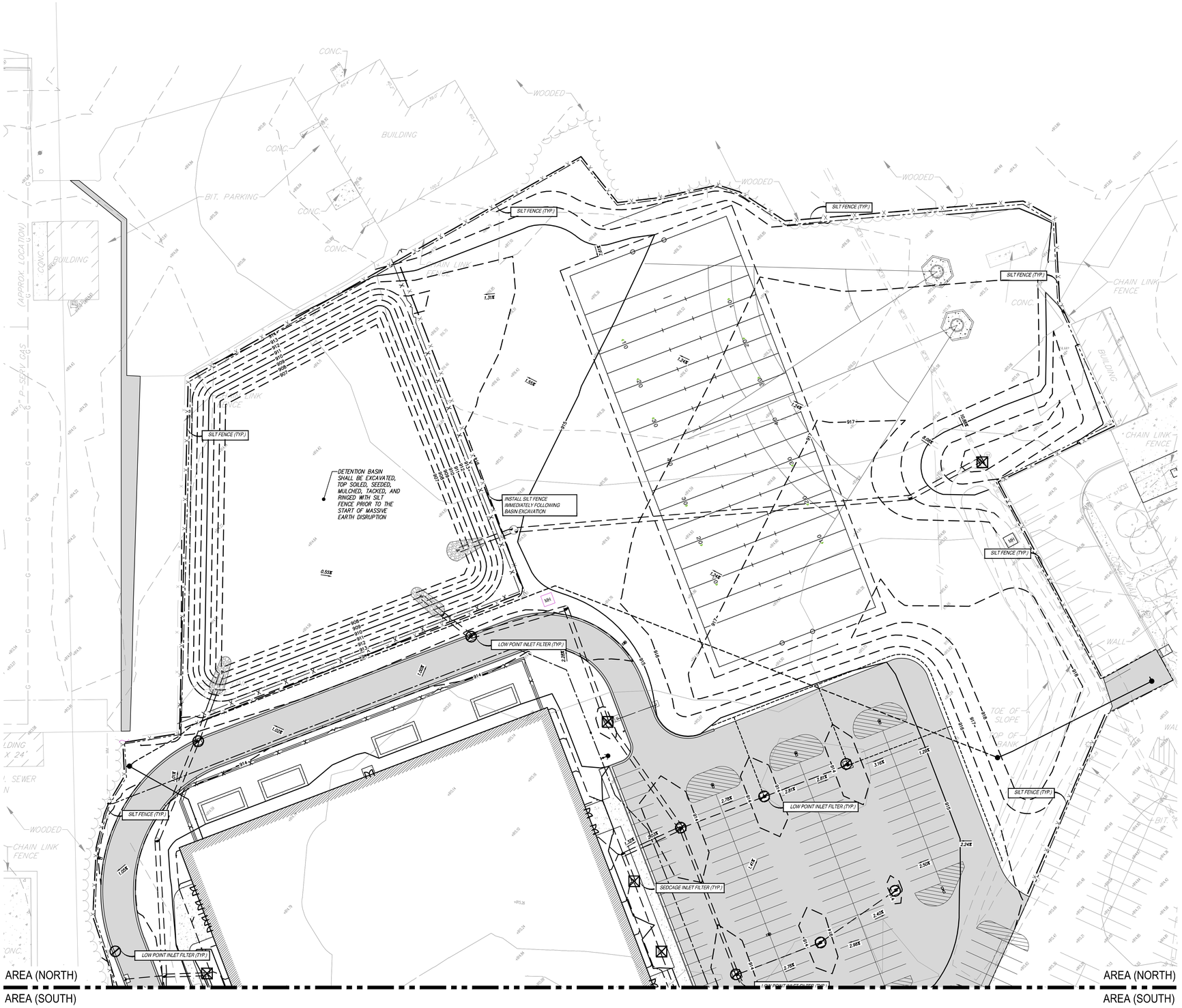

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
- PROPOSED STORM MANHOLE (MH)
- PROPOSED CATCH BASIN (CB)
- PROPOSED INLET (INL)
- PROPOSED END SECTION (ES)
- PROPOSED FIELD CATCH BASIN (FCB) W/SEDIVE COVER OR STANDPIPE (SP) W/ BAR GRATE COVER
- STANDARD BITUMINOUS PAVEMENT
- HEAVY-DUTY BITUMINOUS PAVEMENT
- DEEP-STRENGTH BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 / XXX — STRUCT. NO. / STRUCT. TYPE

GRADING LEGEND

- EXISTING ELEVATION
- TC 000.00 / C 000.00 — PROPOSED TOP OF CURB ELEVATION / PROPOSED GUTTER ELEVATION
- EXISTING CONTOURS
- PROPOSED CONTOURS
- TP 000.00 — TOP OF PAVEMENT ELEVATION
- TW 000.00 — TOP OF WALK ELEVATION
- FG 000.00 — FINISH GRADE ELEVATION
- T/WALL 000.00 — TOP OF WALL ELEVATION
- ME 000.00 — MATCH EXISTING ELEVATION
- FLOW ARROW

SOIL EROSION CONTROL DEVICES

- SEDCAGE YARD INLET FILTER
- SILTSACK INLET FILTER
- 36" SILT FENCE
- LIMITS OF DISTURBANCE
- CONSTRUCTION ENTRANCE

RESTORATION NOTE

RESTORE ALL NON-PAVED AREAS WITH 4" OF CLEAN TOPSOIL AND SEED MIX (29.75% ORACLE CREEPING RED FESCUE, 14.94% SHANNON KENTUCKY BLUE GRASS, 14.93% LUNAR KENTUCKY BLUE GRASS, 19.83% SOX FAN PERENNIAL BLUE GRASS, 19.81% SHOWTIME PERENNIAL RYGRASS), SEE NATURAL TURF SPEC FOR MORE SEEDING AND FERTILIZING DETAILS.

GRASS SEED – 210 LBS. PER ACRE
FERTILIZER – 150 LBS. PER ACRE.
STRAW MULCH – 3 INCHES IN DEPTH, 1.5 TO 2 TONS PER ACRE (ALL MULCH MUST HAVE A TIE-DOWN, SUCH AS TACKIFIER, NET BINDING, ETC.)
HYDRO-SEEDING IS NOT ACCEPTABLE FOR SLOPES EXCEEDING 1% ON SLOPES OVER 1%, STABILIZATION SHALL BE DONE WITH SEED AND STRAW MULCH WITH A TACKIFIER, OR STRAW BLANKETS PEGGED IN PLACE.

SOIL EROSION/SEDIMENTATION CONTROL NOTES

1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE COUNTY OF LIVINGSTON.
2. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR TO DETERMINE EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL DEVICES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
3. EROSION AND ANY SEDIMENT FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATER WAYS. WATERWAYS INCLUDE BOTH NATURAL AND MANMADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
4. EROSION AND SEDIMENT CONTROL DEVICES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CONSTRUCTION. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
5. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL DEVICES AS REQUIRED AND AS DIRECTED ON THESE PLANS. HE SHALL REMOVE TEMPORARY DEVICES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGES HAVE BEEN ACCOMPLISHED AND APPROVED BY THE COUNTY.
6. DEBRIS FROM PROJECT WILL BE LEFT ON THE SITE BY DELIVERY OR CONSTRUCTION VEHICLES THROUGH THE USE OF CLEAN STONE EXITS. SHOULD THE STONE BECOME LESS EFFECTIVE IT WILL BE REPLACED. ALL CONSTRUCTION TRAFFIC WILL USE THE CLEAN STONE EXIT.
7. DUST CONTROL WILL BE EXERCISED AT ALL TIMES WITHIN THE PROJECT BY THE CONTRACTORS. SPRINKLING TANK TRUCKS WILL BE AVAILABLE AT ALL TIMES TO BE USED ON HAUL ROUTES OR OTHER PLACES WHERE DUST BECOMES A PROBLEM.
8. IMMEDIATELY AFTER SEEDING, MULCH ALL SEEDED AREAS WITH UNWEATHERED SMALL GRAIN STRAW OR HAY. SPREAD UNIFORMLY AT A RATE OF 1 1/2 TO 2 TONS PER ACRE OR 100 POUNDS PER SQUARE FOOT. ANCHOR MULCH WITH DISC TYPE MULCH ANCHORING TOOL.
9. ALL MUD, DIRT, AND DEBRIS TRACKED ONTO EXISTING ROADS FROM THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR OR BUILDER. ALL MUD, DIRT, AND DEBRIS TRACKED OR SPILLED ONTO PAVED SURFACES WITHIN THIS SITE SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
10. PERMANENT SOIL EROSION CONTROL DEVICES FOR ALL SLOPES, CHANNELS, DITCHES OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 15 CALENDAR DAYS AFTER FINAL GRADING OR FINAL EARTH CHANGES HAVE BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL DEVICES SHALL BE IMPLEMENTED WITHIN 30 CALENDAR DAYS. ALL TEMPORARY SOIL EROSION CONTROL DEVICES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION DEVICES ARE IMPLEMENTED AND/OR ESTABLISHED. ALL PERMANENT SOIL EROSION CONTROL DEVICES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF COMPLIANCE IS ISSUED.
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13. ANY DEWATERING REQUIRED SHALL HAVE A DEWATERING PLAN SUBMITTED PRIOR TO STARTING THE ACTIVITY AND MAY REQUIRE EGLE APPROVAL.
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15. NEW DRAINAGE INFRASTRUCTURE SHALL BE COMPLETED PRIOR TO OR IN CONCURRENCE WITH MASS GRADING.

GROSS ACREAGE DISTURBED (TOTAL SITE) = ±10 ACRES
DROP OFF LOOP PROJECT DISTURBED AREA = ±2.91 ACRES (INCLUDED IN OVERALL SITE)
DISTANCE TO NEAREST BODY OF WATER = ±250 LF WEST (UNNAMED BASIN)

SOIL TYPES (BASED ON USDA WEB SOIL SURVEY):
BOYER LOAMY SAND, 2 TO 6 PERCENT SLOPES NRCS SOIL GROUP B
CONOVER LOAM, 0 TO 4 PERCENT SLOPES NRCS SOIL GROUP C/D
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THIS PROJECT SHALL BE CONSTRUCTED IN COMPLIANCE WITH PART 91 OF ACT 451 OF 1994, AS AMENDED, THE SOIL EROSION AND SEDIMENT CONTROL ACT.

KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSED PROFESSIONAL ENGINEER
6201064447

JOB NO. 2600.41E
NORTH

SHEET TITLE
S.E.S.C. PLAN NORTH

SHEET NO.
C7.0

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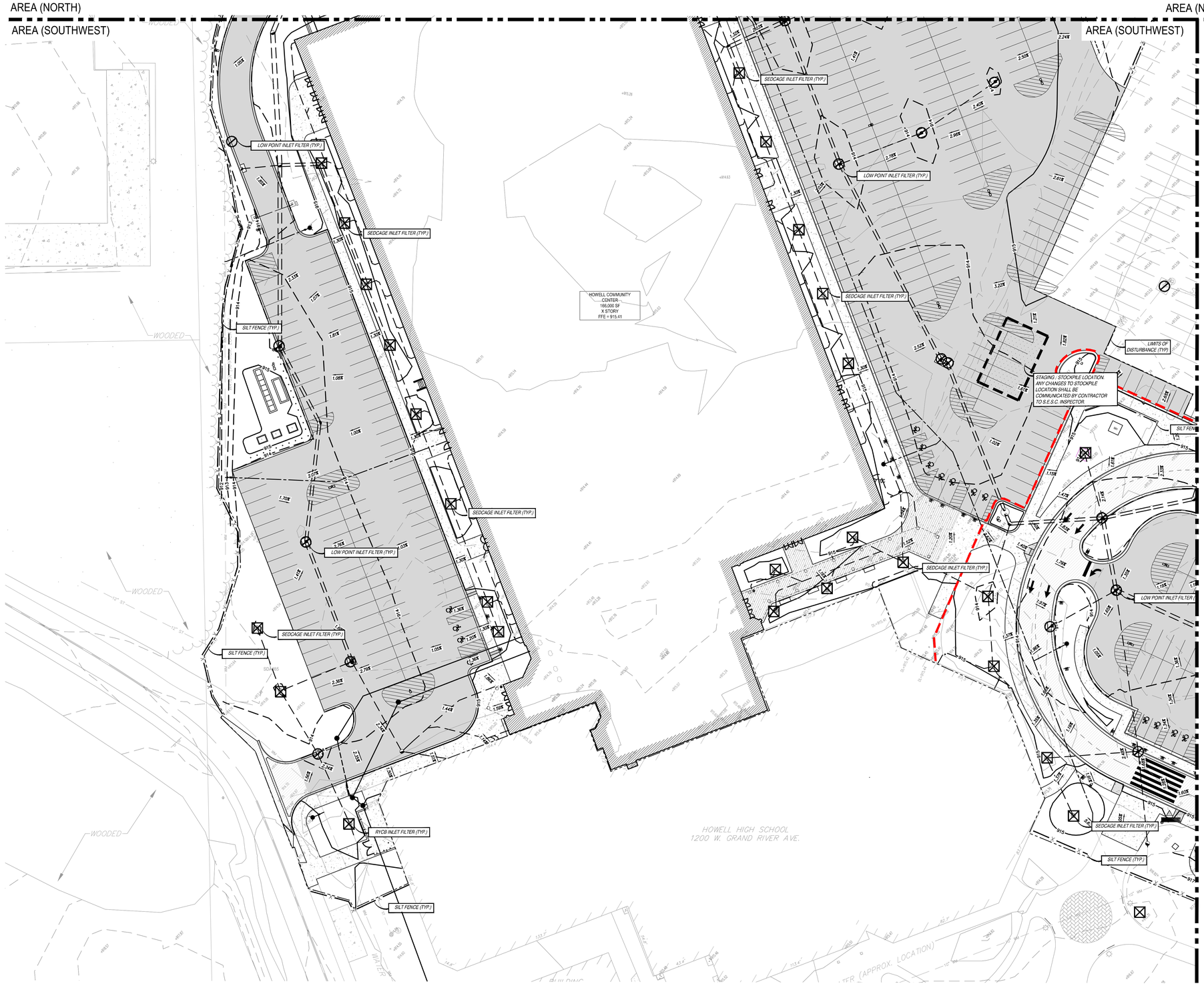
AREA (NORTH)

AREA (SOUTHWEST)

AREA (NORTH)

AREA (SOUTHWEST)

AREA (SOUTHEAST)



GRAPHIC SCALE

0 15 30 60

(IN FEET)

1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
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- MILL PAVEMENT
- UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB = STRUCT. TYPE; 2 = STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
- WATERMAIN STRUCTURE: 10 = STRUCT. NO.; XXX = STRUCT. TYPE

GRADING LEGEND

- EXISTING ELEVATION
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- 36" SILT FENCE
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DROP OFF LOOP PROJECT DISTURBED AREA = ±2.81 ACRES (INCLUDED IN OVERALL SITE)
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SOIL TYPES (BASED ON USGS WEB SOIL SURVEY):
BOYER LOAMY SAND, 2 TO 6 PERCENT SLOPES NRCS SOIL GROUP B
CONOVER LOAM, 0 TO 4 PERCENT SLOPES NRCS SOIL GROUP C/D
CONOVER–MIAMI LOAMS, 0 TO 2 PERCENT SLOPES NRCS SOIL GROUP C/D
METAMORA SANDY LOAM, 0 TO 4 PERCENT SLOPES NRCS SOIL GROUP C/D

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KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN



JOB NO. 2600.41E

NORTH

SHEET TITLE
S.E.S.C. PLAN SOUTHWEST

SHEET NO.
C7.1

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AREA (NORTH)

AREA (SOUTHEAST)

AREA (NORTH)

AREA (SOUTHEAST)

SEDCAGE INLET FILTER (TYP.)

LOW POINT INLET FILTER (TYP.)

SEDCAGE INLET FILTER (TYP.)

DROP OFF LOOP PHASE LIMITS

LIMITS OF DISTURBANCE (TYP.)

STAGING / STOCKPILE LOCATION. ANY CHANGES TO STOCKPILE LOCATION SHALL BE COMMUNICATED BY CONTRACTOR TO S.E.S.C. INSPECTOR.

SILT FENCE (TYP.)

SEDCAGE INLET FILTER (TYP.)

LOW POINT INLET FILTER (TYP.)

SILT FENCE (TYP.)

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

LIMITS OF DISTURBANCE (TYP.)

DROP OFF LOOP PHASE LIMITS

SEDCAGE INLET FILTER (TYP.)

SILT FENCE (TYP.)

LIMITS OF DISTURBANCE (TYP.)

WELL HIGH SCHOOL
W. GRAND RIVER AVE.

WATER (APPROX. LOCATION)

TOE OF SLOPE

TOP OF BANK

SHED
15' X 12'

TRACK

GRAPHIC SCALE
0 15 30 60
(IN FEET)
1 inch = 30 ft.

LEGEND

- PROPOSED WATERMAIN
- PROPOSED SANITARY
- PROPOSED STORM SEWER
- PROPOSED GAS MAIN
- PROPOSED ELECTRIC
- PROPOSED HYDRANT
- PROPOSED GATE VALVE & WELL (GVW)
- PROPOSED TAPPING SLEEVE, VALVE & WELL (TSVW)
- PROPOSED SAN MANHOLE (SAN)
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- CONCRETE PAVEMENT
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- (2) UTILITY CROSSING (SEE DATA TABLE)
- STORM SEWER STRUCTURE: CB 2 — STRUCT. TYPE / STRUCT. NO.
- SANITARY SEWER STRUCTURE: 20
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GRADING LEGEND

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- TC 000.00 / TG 000.00 — PROPOSED TOP OF CURB ELEVATION / PROPOSED GUTTER ELEVATION
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GRASS SEED – 210 LBS. PER ACRE
FERTILIZER – 150 LBS. PER ACRE.
STRAW MULCH – 2 INCHES IN DEPTH, 1.5 TO 2 TONS PER ACRE (ALL MULCH MUST HAVE A TIE-DOWN, SUCH AS TACKIFIER, NET BINDING, ETC.)
HYDRO-SEEDING IS NOT ACCEPTABLE FOR SLOPES EXCEEDING 1:3. ON SLOPES OVER 1:3, STABILIZATION SHALL BE DONE WITH SEED AND STRAW MULCH WITH A TACKIFIER, OR STRAW BLANKETS PEGGED IN PLACE.

SOIL EROSION/SEDIMENTATION CONTROL NOTES

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KINGSCOTT
KALAMAZOO | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOL
HOWELL, MICHIGAN

HOWELL PUBLIC SCHOOLS

REVISIONS/REVIEW — DATE
CONSTRUCTION DOCUMENTS — 07.15.2026

KEY PLAN

STATE OF MICHIGAN
CRAIG ALAN GENGLER
LICENSED PROFESSIONAL ENGINEER
6201054447

JOB NO. 2600.41E

NORTH

SHEET TITLE:
S.E.S.C. PLAN SOUTHEAST

SHEET NO.
C7.2

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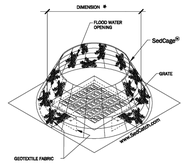
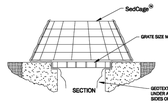
SedCatch® SedCage® - Yard Inlet Protection

LEGEND

SC	SedCage®





SIZING INSTRUCTIONS:

MEASURE THE DIAGONAL DIMENSION OF THE GRATE. SELECT A CAGE THAT IS AT LEAST 1" LARGER.

COMPATIBLE GRATES:

A SedCage® IS COMPATIBLE WITH ALL GRATES IN WHICH THE EDGES OF THE GRATE ARE SUPPORTED BY A LEDGE.

SIZES:

32" SedCage®
FITS SQUARE GRATES FROM 13" X 13" THROUGH 23" X 23"
FITS SQUARE GRATES FROM 8" DIA. THROUGH 24" DIA.
FITS RECTANGULAR GRATES WITH A DIAGONAL BETWEEN 17" AND 33" (√ 289 to √ 2)

42" SedCage®
FITS SQUARE GRATES FROM 18" X 18" THROUGH 29" X 29"
FITS SQUARE GRATES FROM 12" DIA. THROUGH 30" DIA.
FITS RECTANGULAR GRATES WITH A DIAGONAL BETWEEN 26" AND 41" (√ 676 to √ 2)

54" SedCage®
FITS SQUARE GRATES FROM 24" X 24" THROUGH 36" X 36"
FITS SQUARE GRATES FROM 18" DIA. THROUGH 40" DIA.
FITS RECTANGULAR GRATES WITH A DIAGONAL BETWEEN 33" AND 53" (√ 1,156 to √ 2)

67" SedCage®
FITS SQUARE GRATES FROM 27" X 27" THROUGH 43" X 43"
FITS SQUARE GRATES FROM 28" DIA. THROUGH 48" DIA.
FITS RECTANGULAR GRATES WITH A DIAGONAL BETWEEN 44" AND 67" (√ 1,936 to √ 2)
CUSTOM SIZES AVAILABLE

FLOOD WATER CLEAR OPENING:

32" SedCage	330 sq.in.
42" SedCage	515 sq.in.
54" SedCage	1075 sq.in.
67" SedCage	1320 sq.in.

SedCatch® Environmental Products
www.SedCatch.com

US PATENT D 820,999, OTHER PATENTS PENDING

1. INLET PROTECTION SHALL BE INSTALLED AT THE TIME THE STRUCTURE IS SET.
2. TO INSTALL TUCK FABRIC UNDER GRATE.
3. REMOVE SEDIMENT IF IT ACCUMULATES TO ONE HALF THE HEIGHT OF THE SedCage®
4. THE SURFACE AREA AROUND THE SedCage® SHOULD BE AS FLAT AS POSSIBLE TO INCREASE EFFECTIVENESS AND REDUCE MAINTENANCE REQUIREMENTS.
5. AS WITH ALL INLET PROTECTION DEVICES, CHECK TO SEE HOW DEEP THE WATER COULD RISE IF THE INLET WERE BLOCKED ENTIRELY. DO NOT INSTALL IN LOCATIONS THAT COULD CAUSE PROPERTY DAMAGE OR POSE A SAFETY HAZARD TO TRAFFIC.

PROPOSED CONSTRUCTION SCHEDULE (DROP OFF LOOP)

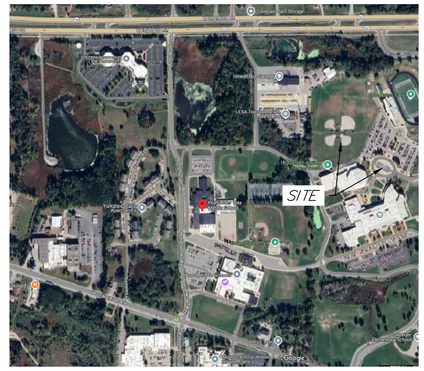
ACTIVITY	2026 JUNE	JULY	AUGUST	SEPT.	OCTOBER	NOVEMBER	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUGUST
INSTALL CONTROLS	→														
DEMOLITION		→													
ROUGH GRADING		→													
UTILITIES		→	→												
INSTALL CONTROLS			→												
FINE GRADING / PAVING			→												
RESTORE				→											

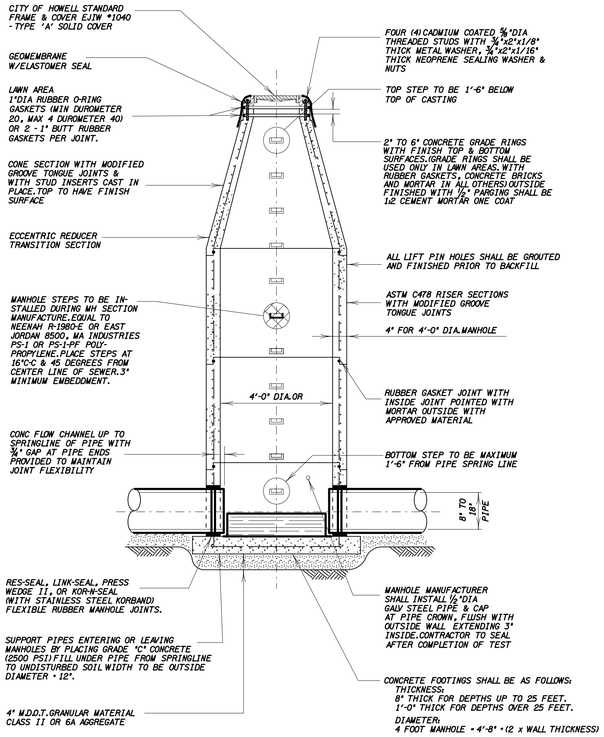
*NOTE : CONSTRUCTION SCHEDULE MAY VARY BASED ON CONTRACTOR'S SCHEDULE. CONTRACTOR SHALL UPDATE THE CITY OF KENTWOOD IF CONSTRUCTION SCHEDULE VARIES FROM ABOVE.

PROPOSED CONSTRUCTION SCHEDULE (OVERALL SITE NOT INCLUDING DROP OFF LOOP)

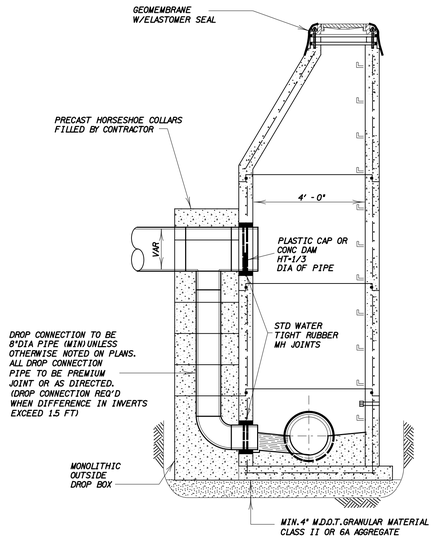
ACTIVITY	2026 AUGUST	SEPT.	OCTOBER	NOVEMBER	DEC.	JAN.	FEB.	2027 MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER
INSTALL CONTROLS	→															
DEMOLITION	→															
BASIN EXCAVATION AND SESC		→														
ROUGH GRADING		→														
UTILITIES		→														
INSTALL CONTROLS			→													
BUILDING			→													→
FINE GRADING / PAVING											→					
RESTORE													→			

*NOTE : CONSTRUCTION SCHEDULE MAY VARY BASED ON CONTRACTOR'S SCHEDULE. CONTRACTOR SHALL UPDATE THE CITY OF KENTWOOD IF CONSTRUCTION SCHEDULE VARIES FROM ABOVE.

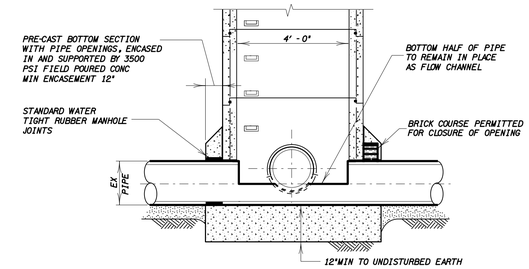

SITE
Howell High School
Howell Middle School
Howell Nature Center
Howell Public Schools Service Center
Howell Public Schools Transportation
Howell Public Schools Early Childhood Center
Howell Public Schools Academy
Howell Public Schools Technical Center
Howell Public Schools Administration Building
Howell Public Schools Maintenance Building
Howell Public Schools Storage
Howell Public Schools Athletic Complex
Howell Public Schools Athletic Complex
Howell Public Schools Athletic Complex



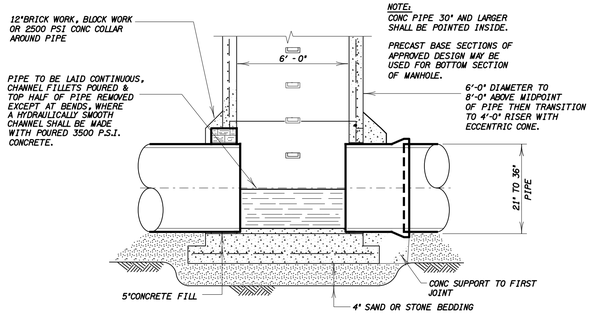
SANITARY MANHOLE



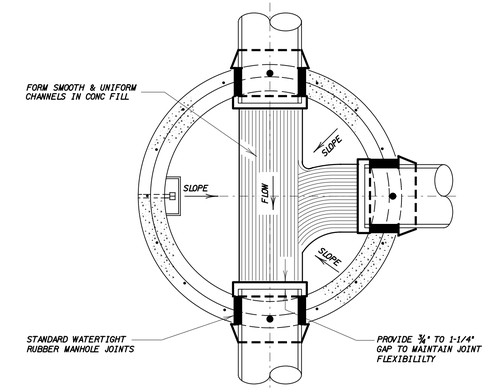
DROP MANHOLE CONNECTION

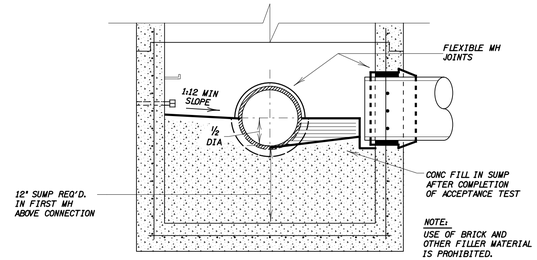


MANHOLE CONSTRUCTION OVER EXISTING SANITARY SEWER

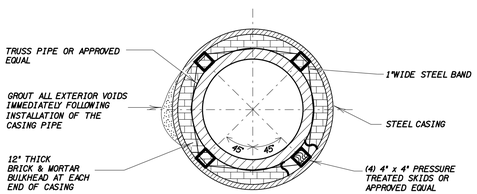


MANHOLE CONSTRUCTION FOR 21" TO 36" DIAMETER SANITARY SEWER





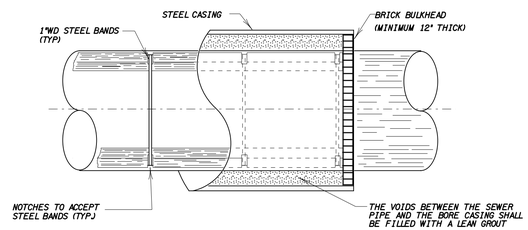
SANITARY SUMP MANHOLE



SPACING OF STEEL BANDS	NOMINAL SIZE	MIN WALL THICKNESS
5 BANDS EQUALLY SPACED PER LENGTH OF PIPE	12" - 20"	0.250"
	24" - 36"	0.375"
	42"	0.500"
	48" - 60"	0.625"

CASING PIPE SHALL BE NEW OR UNUSED ASTM A-139 GRADE "B" & WALL THICKNESS AS NOTED.

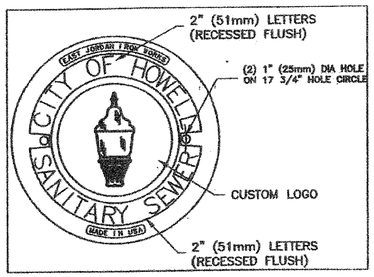
THE JOINTS OF THE STEEL CASING WILL BE BUTT WELDED AROUND THEIR CIRCUMFERENCE



NOTE:

1. THE CONTRACTOR SHALL SUBMIT IN WRITING TO THE CITY DPW, THE APPROPRIATE PIPE CASING INSTALLATION DETAILS FOR REVIEW & APPROVAL BEFORE CONSTRUCTION BEGINS.
2. THE DIAMETER OF THE BORE CASING SHALL BE A MINIMUM OF 8" LARGER THAN THE SEWER TO ACCOMODATE THE 4" SKIDS.

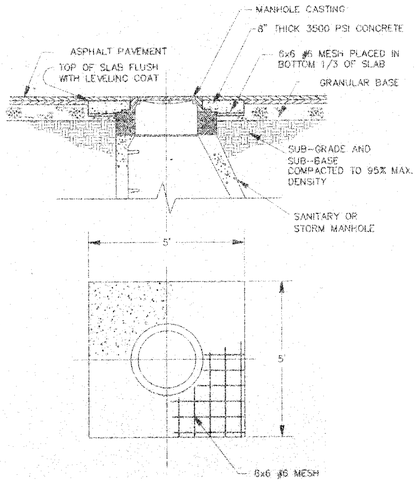
SEWER MAIN BORE



SANITARY MANHOLE COVER

SANITARY FRAME & COVER EJIW *1040 WT. TYPE 'A' WITH BOLT DOWN COVER AND RAISED LETTERS.

MAXIMUM TRENCH WIDTH TABLE	
PIPE I.D.	TRENCH WIDTH
4" - 12"	32"
15"	36"
18"	39"
21"	43"
24"	46"
27"	50"
30"	53"
36"	68"
42"	75"



RIM ADJUSTMENT WITHIN PAVEMENT

SANITARY SEWER STANDARDS

SHEET C8.1

CITY OF HOWELL
LIVINGSTON COUNTY, MICHIGAN
STANDARD CONSTRUCTION DETAIL SHEET

HOWELL MICHIGAN

HRC 100 YEARS CONSULTING ENGINEERS SINCE 1915

DATE	REVISION
3-23-15	APPROVED BY CITY COUNCIL

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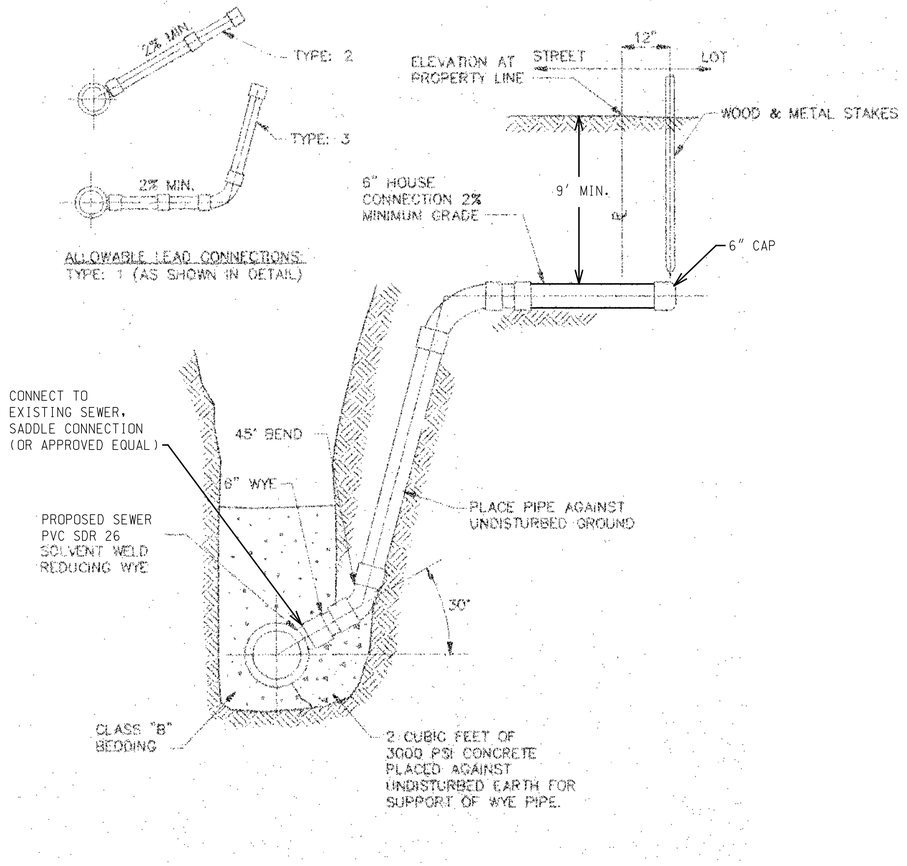


6" HOUSE LEAD CONSTRUCTION

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS & SPECIFICATIONS OF THE CITY OF HOWELL DPW. SANITARY SEWER CONSTRUCTION SHALL HAVE FULL TIME INSPECTION SUPERVISED BY A LICENSED PROFESSIONAL ENGINEER PROVIDED BY OR CAUSED TO BE PROVIDED BY THE CITY OF HOWELL.

2. BEFORE THE START OF CONSTRUCTION, THE CONTRACTOR MUST REQUEST AND HAVE IN THEIR POSSESSION AN APPROVED CONNECTION PERMIT ISSUED BY CITY OF HOWELL DPW. REQUEST FOR APPLICATION FOR PERMIT MUST BE ACCOMPANIED BY AN INSPECTION FEE. THE CONTRACTOR SHALL NOTIFY THE CITY OF HOWELL DPW SERVICES 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION.

3. NO SEWER INSTALLATION SHALL HAVE AN INFILTRATION EXCEEDING 100 GALLONS PER INCH DIA PER MILE OF PIPE PER 24 HOUR PERIOD AND NO SINGLE RUN OF SEWER BETWEEN MANHOLES SHALL EXCEED 100 GALLONS PER INCH DIA PER MILE. IF MDEQ INFILTRATION LIMITS ARE MORE CONSERVATIVE, THEN THEY SHALL APPLY. AIR TEST IN LIEU OF INFILTRATION TESTS SHALL BE ALLOWED SUBJECT TO APPROVAL OF THE CITY OF HOWELL.

4. MODIFIED GROOVE TONGUE, ASTM C-425, ASTM C-443, O-RING, UNILOC, STRE-TITE, RING -TITE, OR EQUAL, AS APPROVED BY THE CITY OF HOWELL DPW MAY BE USED FOR SEWER JOINTS.

5. A WATER TIGHT BULKHEAD WITH A CAPPED 1-INCH DIA PIPE TO PERMIT MEASURING INFILTRATION SHALL BE PROVIDED. A TEMPORARY 12-INCH DEEP SUMP SHALL ALSO BE PROVIDED IN THE FIRST MANHOLE ABOVE THE CONNECTION WHICH WILL BE FILLED IN AFTER SUCCESSFUL COMPLETION OF ANY INFILTRATION TEST UP TO THE STANDARD FILET PROVIDED FOR THE FLOW CHANNEL.

6. BUILDING LEADS AND RISERS SHALL BE 6-INCH DIA, SDR 23.5 OR SCHEDULE 40 BUILDING LEADS TO BE FURNISHED WITH MANUFACTURER APPROVED REMOVABLE AIR-TIGHT AND WATER-TIGHT STOPPERS.

7. SEWER PIPE SHALL BE INSTALLED IN STANDARD BEDDING OR BETTER.

8. NEW MANHOLES SHALL HAVE HOWELL APPROVED FLEXIBLE, WATER-TIGHT SEALS WHERE PIPES PASS THROUGH WALLS. MANHOLES SHALL BE OF PRECAST SECTIONS WITH MODIFIED GROOVE TONGUE AND RUBBER GASKET TYPE JOINTS. PRECAST MANHOLE CONE SECTIONS SHALL BE CITY OF HOWELL DPW APPROVED ECCENTRIC CONE TYPE. ALL MANHOLES SHALL BE PROVIDED WITH CITY OF HOWELL BOLTED, WATER-TIGHT COVERS.

9. DROP CONNECTIONS WILL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS 18 INCHES. ONLY PRE-CAST OUTSIDE DROP CONNECTIONS ARE ALLOWED.

10. WHEREVER EXISTING MANHOLES OR SEWER PIPE ARE TO BE TAPPED, HOLES SHALL BE DRILLED AT 4-INCH CENTER TO CENTER AROUND PERIPHERY OF OPENING TO CREATE A PLANE OF WEAKNESS BEFORE BREAKING OUT SECTION. NON-SHRINK GROUT SHALL BE USED TO SEAL THE OPENING AND A CONC COLLAR SHALL BE POURED 12 INCHES THICK AROUND THE PIPE AND EXTENDED 12 INCHES BEYOND THE OPENING.

11. NEW MANHOLES CONSTRUCTED DIRECTLY ON CITY OF HOWELL SEWERS SHALL BE PROVIDED WITH COVERS READING "CITY OF HOWELL -SANITARY" IN RAISED LETTERS ONLY. NEW MANHOLES BUILT OVER ANY EXISTING SANITARY SEWERS SHALL HAVE MONOLITHIC POURED BOTTOMS.

12. NO GROUND WATER, STORM WATER OR CONSTRUCTION WATER, DOWNSPOUT DRAINAGE SHALL BE ALLOWED TO ENTER ANY SANITARY SEWER.

13. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL TELEPHONE MISS DIG FOR THE LOCATION OF UNDERGROUND GAS, ELECTRIC, TELEPHONE AND CABLE FACILITIES, AND SHALL ALSO NOTIFY REPRESENTATIVES OF OTHER UTILITIES LOCATED IN THE VICINITY OF THE WORK.

14. A MINIMUM VERTICAL CLEARANCE OF 18-INCHES SHALL BE MAINTAINED BETWEEN SANITARY SEWER AND ALL OTHER UTILITIES.

15. IT SHALL BE THE OWNER'S ENGINEERS AND CONTRACTOR'S RESPONSIBILITY TO VERIFY AND/OR OBTAIN ANY INFORMATION NECESSARY REGARDING THE PRESENCE OF UNDERGROUND UTILITIES WHICH MIGHT AFFECT THE INSTALLATION OF THE UTILITY.

16. THE MINIMUM ALLOWABLE SIZE OF A PUBLIC SANITARY SEWER IS 8" DIA. THE LAST UPSTREAM RUN OF SEWER MUST BE AT A GRADE OF 1.00% OR GREATER.

17. ONE SEWER LEAD PER UNIT MUST BE PROVIDED. MULTI UNITS SERVICED FROM A SINGLE LEAD WILL NOT BE PERMITTED.

18. SEWER LEADS OF LONGER THAN 200 FT. IN LENGTH WILL REQUIRE THE CONSTRUCTION OF A SEWER LATERAL.

19. ALL NECESSARY EASEMENTS SHALL BE PROVIDED IN THE NAME OF THE CITY OF HOWELL AND/OR ITS AGENT FOR THE INSTALLATION, OPERATION, AND MAINTENANCE OF THE PROVIDED WATER MAINS BEFORE ACCEPTANCE OF THE WATER DISTRIBUTION SYSTEM.

20. THE DESIGN ENGINEER SHALL FURNISH THE CITY OF HOWELL WITH "AS BUILT" WATER MAIN PLANS PER THE CITY STANDARDS, UPON JOB COMPLETION. PLANS SHALL LOCATE ALL WATER MAINS, HYDRANTS, AND GATE VALVES AND WELLS/PER CITY "AS BUILT" STANDARDS.

SPECIFICATIONS FOR TRUSS PIPE SANITARY SEWER

MATERIALS AND CERTIFICATIONS

ARMCO TRUSS PIPE AND FITTINGS SHALL BE A DESCRIBED UNDER ASTM DESIGNATION D2680-85a, STANDARD SPECIFICATION FOR POLYVINYL CHORIDE (PVC) COMPOSITE SEWER PIPING. APPENDIX X1 OF SAID SPECIFICATION SHALL BE MODIFIED BY THE BEDDING REQUIREMENTS OUTLINED BELOW.

SOLID WALL PVC PIPE FOR 6" HOUSE CONNECTION SEWERS SHALL BE SCH.40 OR SDR 23.5 CONFORMING TO ASTM DESIGNATION D2751-83a SOLID WALL PIPE SHALL BE INSTALLED IN ACCORDANCE WITH BEDDING REQUIREMENTS OUTLINED BELOW.

ALL PIPE SHALL BE CERTIFIED BY THE MANUFACTURER TO MEET THE APPLICABLE ASTM SPECIFICATION REQUIREMENTS. CERTIFICATION FORMS, TOGETHER WITH A REPORT OF THE TEST RESULTS, SHALL BE PROVIDED TO THE INSPECTOR WITH PIPE DELIVERIES AND COPIES SHALL BE FORWARDED TO THE ENGINEER OR THE OWNER. CERTIFICATION FORMS SHALL INCLUDE PROJECT NAME, LOCATION, CONTRACTOR, AND TEST LOT NUMBER. LOT SIZES SHALL BE ACCEPTABLE TO THE ENGINEER.

ALL PIPE AND FITTINGS SHALL BE SUITABLY MARKED TO PROVIDE MANUFACTURER'S NAME, LOT OR PRODUCTION NUMBER, ASTM DESIGNATION, PVC, NOMINAL DIAMETER, AND SDR NUMBER, WHERE APPLICABLE. FITTINGS, HOWEVER, NEED NOT CONTAIN LOT OR PRODUCTION NUMBER. PIPE SHALL HAVE A "HOME" MARK. TRUSS PIPE WITH AN ABSENCE OF FILLER MATERIAL AT THE ENDS GREATER THAN ¼" DEEP SHALL BE SUBJECT TO REJECTION OR ACCEPTABLE REPAIR.

BEDDING

BEDDING FOR TRUSS PIPE SHALL BE IN ACCORDANCE WITH ASTM D 2321-83a, EXCEPT, (1) ONLY CLASS I AND CLASS II MATERIALS MAY BE USED, (2) BEDDING SHALL EXTEND TO MINIMUM 12" ABOVE TOP OF PIPE, AND (3) FLOODING OR PUDDLING SHALL NOT BE USED TO ACHIEVE COMPACTION. IT IS ESSENTIAL THAT IT BE RECOGNIZED THAT THE SUCCESSFUL USE OF FLEXIBLE AND SEMI-FLEXIBLE PIPE REQUIRES BEDDING THAT PROVIDES UNYIELDING SIDE SUPPORT AND COMPLETE BEDDING CONTACT UNDER PIPE HAUNCHES.

WHERE UNSTABLE BOTTOMS ARE ENCOUNTERED, THE CONTRACTOR SHALL PROVIDE A RECOMMENDATION FOR FOUNDATION SUPPORT PREPARED BY A LICENSED PROFESSIONAL ENGINEER WITH GEO-TECHNICAL EXPERIENCE FOR THIS FOUNDATION WHICH MAY CONSIST OF AN APPROVED GRADED AND PROCESSED ANGULAR STONE OR GRAVEL TO ACT AS AN IMPERVIOUS MAT TO PREVENT MIGRATION OR VERTICAL MOVEMENT OF UNSTABLE SOILS OR BEDDING MATERIALS. WHERE TRENCH SHEETING, PLATES, OR A TRENCH BOX ARE USED DUE TO SEVERE GROUND CONDITIONS, ALL VOIDS TO THE SIDE AND BELOW THE TOP OF THE PIPE CAUSED BY THE SHEETING, PLATES, OR BOX WITHDRAWAL SHALL BE COMPLETELY FILLED OR THE SUPPORTS LEFT IN PLACES BELOW THE TOP OF THE PIPE.

CONCRETE CRADLE BEDDING SHALL NOT BE USED WHERE ALLOWABLE TRENCH WIDTHS ARE EXCEEDED. IN LIEU OF CONCRETE CRADLE BEDDING, STANDARD PIPE BEDDING SHOWN SHALL BE PROVIDED TO THE FULL WIDTH BETWEEN UNDISTURBED TRENCH WALLS OR AT LEAST 2.5 PIPE DIAMETERS ON BOTH SIDES OF THE PIPE.

DUE TO POTENTIAL DAMAGE TO EXTERIOR WALLS OF TRUSS PIPE, PARTICULARLY UNDER COLD WEATHER CONDITIONS, THE CONTRACTOR SHALL CAREFULLY AVOID DUMPING ANY MATERIALS OTHER THAN APPROVED BEDDING SAND OR STONE ON THE PIPE UNTIL 12" COVER IS PLACED OVER THE PIPE. PIPE WALLS AND ENDS SHALL ALSO BE PROTECTED FROM ABRASION AND DAMAGE DURING HANDLING, AND SHALL BE FULLY INSPECTED JUST PRIOR TO PLACING IN THE TRENCH.

CARE SHALL BE TAKEN DURING BEDDING COMPACTION TO AVOID DISTORTING THE SHAPE OF THE PIPE OR DAMAGES ITS EXTERIOR WALL. MOBILE EQUIPMENT SHALL NOT BE USED OVER THE PIPE TRENCHES UNTIL 48" OF COVER HAS BEEN PLACED.

HOUSE CONNECTIONS SHALL BE MADE TO WYE FITTINGS. BEDDING FOR HOUSE CONNECTION SEWERS SHALL BE EQUAL TO THAT OF THE MAIN SEWER BEDDING. RISERS IN DEEP AND UNSTABLE TRENCHES SHOULD BE BEDDED IN ANGULAR STONE TO AVOID SETTLEMENT. CONCRETE SHALL NOT BE USED FOR BEDDING. END CAPS OR PLUGS SHALL BE BRACED OR ANCHORED TO WITHSTAND AIR TEST PRESSURES. CAPS OR PLUGS SHALL NOT BE CHEMICALLY WELDED IN PLACE.

JOINTS

JOINTS FOR PIPE AND FITTINGS SHALL BE OF THE ELASTOMERIC GASKET PUSH-ON TYPE. SUCH JOINTS SHALL CONFORM TO ASTM DESIGNATION D 3212-81 AND THE PIPE MANUFACTURER SHALL FILE WITH THE CITY OF HOWELL A COPY OF CERTIFIED TEST RESULTS OF ITS JOINTING SYSTEM PRIOR TO USE. GASKET JOINTS SHALL BE INSTALLED IN ACCORDANCE WITH PROCEDURES SPECIFIED BY THE PIPE MANUFACTURER. CASE SHALL BE TAKEN TO INSURE ALL JOINTS BEING PUSHED TO THE FULL "HOME" POSITION AND HELD TIGHTLY IN THE "HOME" POSITION DURING ANY GRADE OR LINE ADJUSTMENTS. JOINTS FOR SEWER LEAD PIPE SHALL BE CHEMICALLY WELDED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. ADDITIONALLY, CARE SHALL BE TAKEN TO INSURE ALL JOINTS BEING PUSHED TO THE FULL "HOME" POSITION DURING ANY GRADE OR LINE ADJUSTMENTS. PIPE SHALL BE ROTATED DURING JOINT INSERTION TO INSURE A COMPLETE SPREAD OF JOINTING CEMENT. PLASTIC CEMENT PRIMER AND PLASTIC PIPE CEMENT SHALL ARRIVE AT THE JOB SITE IN SEALED AND LABELED CONTAINERS. "JOHNNY MOPS" OR SIMILAR SWAB TYPE APPLICATIONS SHALL BE USED TO APPLY PRIMER AND CEMENT. OPENED CONTAINERS IN THE TRENCH SHALL BE PROTECTED FROM DIRT, WATER, AND OTHER CONTAMINANTS.

CUTTING AND HANDLING

CUTTING OF PIPE LENGTHS, WHERE REQUIRED, SHALL BE PERFORMED BY THE USE OF TOOLS OR EQUIPMENT THAT WILL PROVIDE A NEAT, PERPENDICULAR CUT WITHOUT DAMAGE TO THE PLASTIC OR THE FILLER MATERIAL. BOWING OR WARPING OF PIPE CAN OCCUR WITH TEMPERATURE FLUCTUATIONS. THE CONTRACTOR SHALL STORE AND PROTECT THE PIPE TO MINIMIZE BOWING. NOMINAL 12.5FT LENGTHS HAVING DEVIATIONS FROM STRAIGHT GREATER THAN 1" SHALL NOT BE USED.

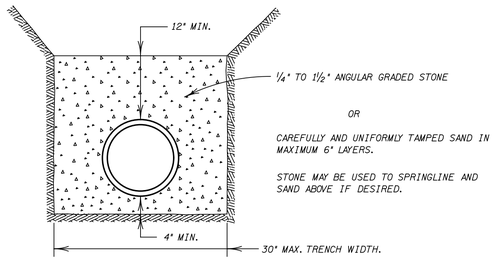
SPECIAL CONDITIONS

THE COMPLETED INSTALLATION SHALL AT NO POINT HAVE OUT-OF-ROUND PIPE DEFLECTIONS GREATER THAN 5%. THE ENGINEER SHALL HAVE THE OPTION OF REQUIRING DEFLECTOMETER OR GO NO-GO GAUGING TEST RUN PRIOR TO ACCEPTANCE ON PIPELINES WHERE HIGH DEFLECTIONS ARE SUSPECTED.

AS-BUILT PLANS SHALL BE PROVIDED TO THE CITY OF HOWELL DPW BY THE ENGINEER AND AS-BUILT PLANS SHALL SPECIFICALLY DESIGNATE THE TYPE OF SEWER PIPE INSTALLED AT ALL LOCATIONS.

TELEVISING OF NEW SANITARY SEWER

NO SOONER THAN 30 DAYS AFTER THE INSTALLATION OF NEW SANITARY SEWER MAINS, THE PIPE SHALL BE INTERNALLY INSPECTED VIA VIDEO CAMERA. THE VIDEO EQUIPMENT SHALL BE SPECIFICALLY DESIGNED FOR THE INTERNAL INSPECTION OF THE PIPE. THE DEVELOPER SHALL PROVIDE THE CITY WITH 2 COPIES OF BOTH A COLOR DVD AND A WRITTEN LOG DESCRIBING THE CONTENT OF THE DISC FOR THE ENTIRE LENGTH OF THE NEW SEWER. THE VIDEO WILL BE REVIEWED BY THE CITY OR ITS AGENTS PRIOR TO ISSUANCE OF FINAL ACCEPTANCE. IF DEFECTS ARE DISCOVERED, THE DEVELOPER SHALL MAKE THE NECESSARY REPAIRS AT THEIR COST PRIOR TO FINAL ACCEPTANCE OF THE SEWER BY THE CITY. A FOLLOW UP VIDEO INSPECTION WILL BE REQUIRED TO BE SUPPLIED BY THE CONTRACTOR TO ENSURE THE REPAIRS HAVE BEEN COMPLETED.



TRUSS & SOLID WALL DETAIL

SANITARY SEWER STANDARDS

SHEET C8.2

CITY OF HOWELL
LIVINGSTON COUNTY, MICHIGAN
STANDARD CONSTRUCTION DETAIL SHEET

HOWELL MICHIGAN

HRC 100 YEARS
CONSULTING ENGINEERS SINCE 1915

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3-23-15	APPROVED BY CITY COUNCIL

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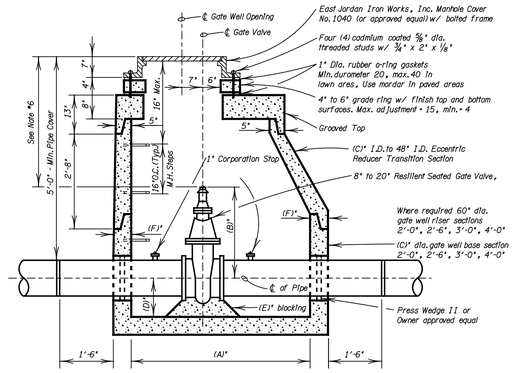
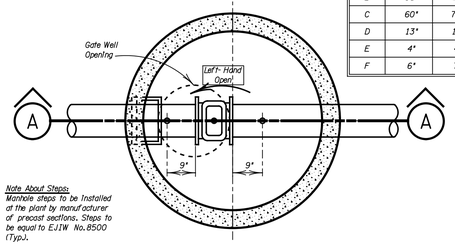


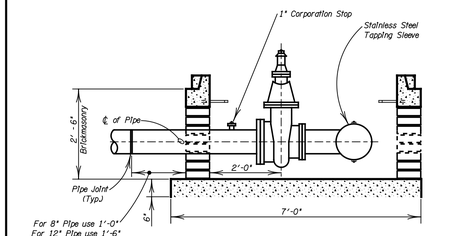
GATE WELL
(A - A)

Gate Well Dimensions - Inches			
Dim.	Gate Well Sizes		
	12"	16"	20"
A	5'-0"	6'-0"	6'-0"
B	31"	40"	43"
C	60"	72"	72"
D	13"	15"	17"
E	4"	4"	4"
F	6"	7"	7"

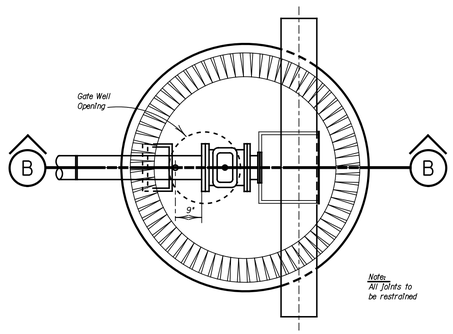


Note About Steps:
Manhole steps to be installed at the plant by manufacturer of precast sections. Steps to be equal to EJIW No.8500 (Typ.).

PLAN OF GATE WELL

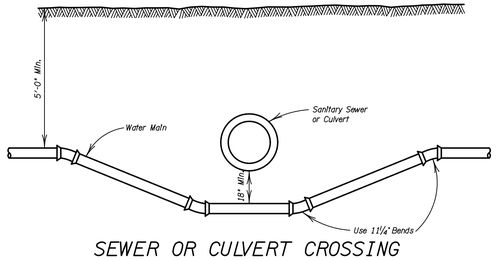


TAPPING SLEEVE, VALVE & WELL
(B - B)

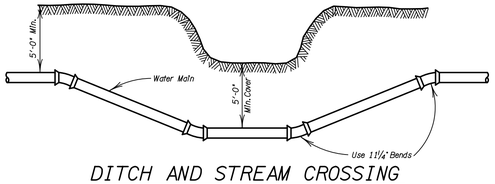


Note:
All Joints to be restrained

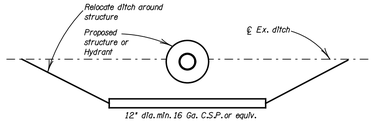
PLAN OF TAPPING SLEEVE, VALVE & WELL

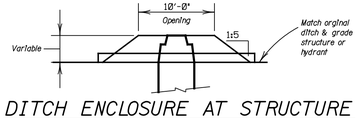


SEWER OR CULVERT CROSSING

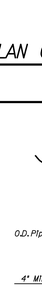


DITCH AND STREAM CROSSING

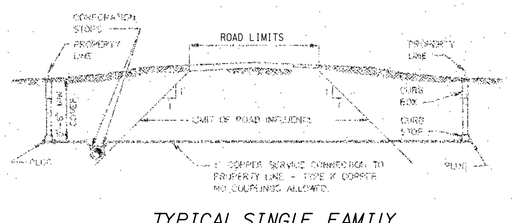




DITCH ENCLOSURE AT STRUCTURE OR HYDRANT



STANDARD BEDDING FOR WATER MAIN

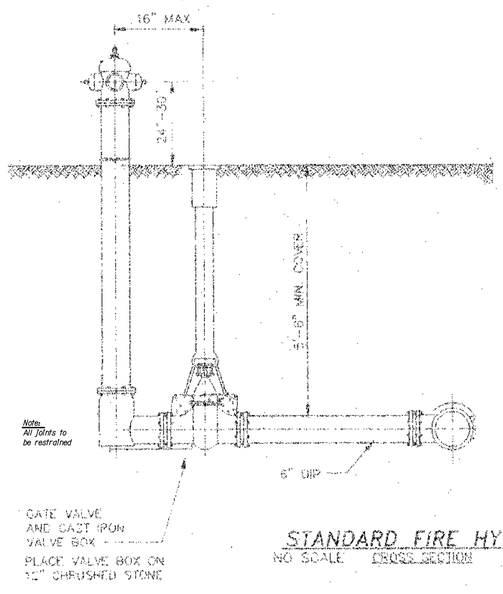


Note:
If the Water Stop Box falls within pavement or sidewalk, it shall be placed inside of a Tyler Cast Iron 5¼" Valve Box Assembly.

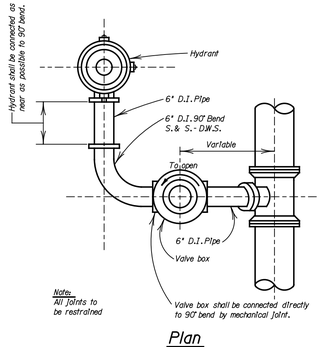
TYPICAL SINGLE FAMILY WATER SERVICE CONNECTION

GENERAL NOTES:

1. ALL CONSTRUCTION PROCEDURES AND MATERIALS USED SHALL CONFORM TO THE CITY OF HOWELL CURRENT STANDARDS AND SPECIFICATIONS.
2. ALL HYDRANTS SHALL BE, EJ 5-BR TRAFFIC MODEL WITH 1 - 5" STORZ CONNECTION 2 - 2½" HOSE FITTINGS, AND CHAIN. SELF DRAINING HYDRANTS SHALL NOT BE USED.
3. ALL HYDRANTS SHALL BE PAINTED RED ABOVE GROUND AND BLACK BELOW, WITH A FINISH COAT OF GLAMORTEX 501 ENAMEL, COLOR 314 VERMILLION, OR APPROVED EQUAL.
4. ALL GATE VALVES WITH OPERATING NUTS AT A DISTANCE GREATER THAN 5' BELOW GROUND SURFACE SHALL BE PROVIDED WITH AN EXTENSION STEM. THE LENGTH OF THE STEM SHALL BE SUCH THAT IT WILL BE WITHIN 5' OF THE GROUND SURFACE WHEN AN EXTENSION STEM IS USED. IT SHALL BE HELD IN PLACE BY AN EXTENSION STEM GUIDE SUITABLY FASTENED TO THE WALL OF THE GATE WELL. THE EXTENSION STEM SHALL BE MECHANICALLY ATTACHED TO THE OPERATING NUT. DETAILS OF THE EXTENSION STEM AND METHOD OF INSTALLATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
5. FOR PIPE DIAMETERS 20" OR SMALLER DUCTILE IRON PIPE SHALL BE CLASS 52 DOUBLE CEMENT LINED WITH TWO BRASS WEDGES PER JOINT, MINIMUM DEPTH OF COVER IS 5'-0" BELOW FINISHED GRADE.
6. ALL PRECAST CONCRETE GATEWELL SECTIONS SHALL BE MANUFACTURED TO CONFORM WITH A.S.T.M.C478, STANDARD SPECIFICATION FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS, EXCEPT, WALL THICKNESS SHALL BE SHOWN ON THESE DETAILS. ALL JOINTS FOR PRECAST CONCRETE GATEWELL SECTIONS SHALL BE "MODIFIED GROOVED TONGUE" WITH GASKET MANUFACTURED TO CONFORM WITH A.S.T.M.C443, STANDARD SPECIFICATIONS FOR JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE USING RUBBER GASKETS.
7. THE CONTRACTOR SHALL NOTIFY THE CITY OF HOWELL DPW FOR TAP INSPECTION TO THE EXISTING WATER MAIN, PRESSURE TEST WITNESS, BACTERIOLOGICAL SAMPLING, AND FOR FINAL INSPECTION. (MINIMUM 24 HOURS PRIOR NOTICE IS REQUIRED)
8. ALL NECESSARY EASEMENTS SHALL BE PROVIDED IN THE NAME OF THE CITY OF HOWELL AND/OR ITS AGENT FOR THE INSTALLATION, OPERATION, AND MAINTENANCE OF THE PROVIDED WATER MAINS BEFORE ACCEPTANCE OF THE WATER DISTRIBUTION SYSTEM.
9. THE DESIGN ENGINEER SHALL FURNISH THE CITY OF HOWELL WITH "AS BUILT" WATER MAIN PLANS PER THE CITY STANDARDS, UPON JOB COMPLETION. PLANS SHALL LOCATE ALL WATER MAINS, HYDRANTS, AND GATE VALVES AND WELLS/PER CITY "AS BUILT" STANDARDS.
10. ALL REQUIRED CROSS CONNECTION AND CONTROL DEVICES SHALL BE INSTALLED AS REQUIRED BY THE CITY OF HOWELL DPW AND IN ACCORDANCE WITH THE STANDARDS OF THE MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY.
11. TAPPING SLEEVE SHALL BE STAINLESS STEEL MECHANICAL JOINT.
12. ALL TRENCHES UNDER THE 45 DEGREE LINE OF INFLUENCE OF EXISTING OR PROPOSED PAVEMENTS, SIDEWALKS, BIKEPATHS & DRIVE APPROACHES SHALL BE BACKFILLED WITH MDOT CLASS II SAND COMPACTED TO 95% OF MAXIMUM UNIT WEIGHT.
13. ALL WATER MAIN JOINTS REQUIRING RESTRAINT SHALL USE MEGA-LUG FITTINGS OR FIELD-LOK GASKETS, FOLLOWING MANUFACTURES GUIDLINES. THE USE FOR CONCRETE THRUST BLOCKS WILL NOT BE ALLOWED.
14. TRACER WIRE IS REQUIRED ON ALL HDPE LEADS (SDR9, AWWA C-901, ASTM D2737) IT SHALL BE A MINIMUM OF 12 GAUGE COPPER, COLORED BLACK OR WHITE, AND RUN THE ENTIRE LENGTH OF THE PIPE WITH THE ENDS ACCESSABLE FOR LINE LOCATION PURPOSES.

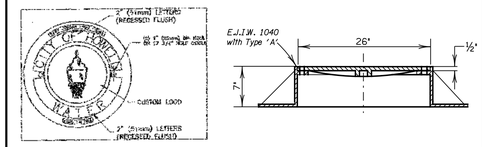


STANDARD FIRE HYDRANT
NO SCALE CROSS SECTION

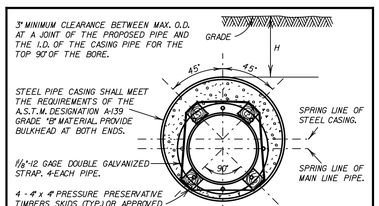


Plan

ALTERNATIVE HYDRANT SETTING



TYPE "H" GATE WELL COVER



ALL VOIDS BETWEEN THE WATER MAIN AND THE CASING PIPE SHALL BE FILLED WITH A LEAN GROUT. 12 MIN. BULKHEADS MUST BE PLACED AT EACH END.

ALLOWABLE HEIGHT OF COVER (H) IN FT., FOR STEEL CASING											
WALL THICKNESS (IN.)		STEEL CASING OUTSIDE DIAMETER (IN.)									
FRACT.	DEC.	12	14	16	18	20	24	28	30	36	42
3/16	.1875	39	30	24	21	19	17	16			
1/4	.250	50	50	39	31	27	21	19	18	16	
5/16	.3125			50	48	39	28	23	21	18	17
3/8	.375				50	50	39	29	27	22	19
7/16	.4375						50	39	34	26	21
1/2	.500							50	44	31	25
9/16	.5625								50	39	30
5/8	.625									48	35

TYPICAL TUNNEL CASING DETAIL

NOTES:
1. FOR 36" W.M. PROVIDE A MIN. OF 60" DIA. CASING WITH 1" WALL THICKNESS.
2. CASING PIPE JOINTS TO BE FULLY WELDED AROUND THE CIRCUMFERENCE BY A CERTIFIED WELDER.
3. THE DIAMETER OF THE BORE CASING SHALL BE A MINIMUM OF 8" LARGE THAN THE WATERMAIN TO ACCOMODATE THE 4" SKIDS.

TYPICAL WATER MAIN TUNNEL CASING DETAIL

WATER MAIN STANDARDS

SHEET C8.3

CITY OF HOWELL
LIVINGSTON COUNTY, MICHIGAN
STANDARD CONSTRUCTION DETAIL SHEET

HOWELL MICHIGAN

HRC 100 YEARS
CONSULTING ENGINEERS SINCE 1915

DATE	REVISION
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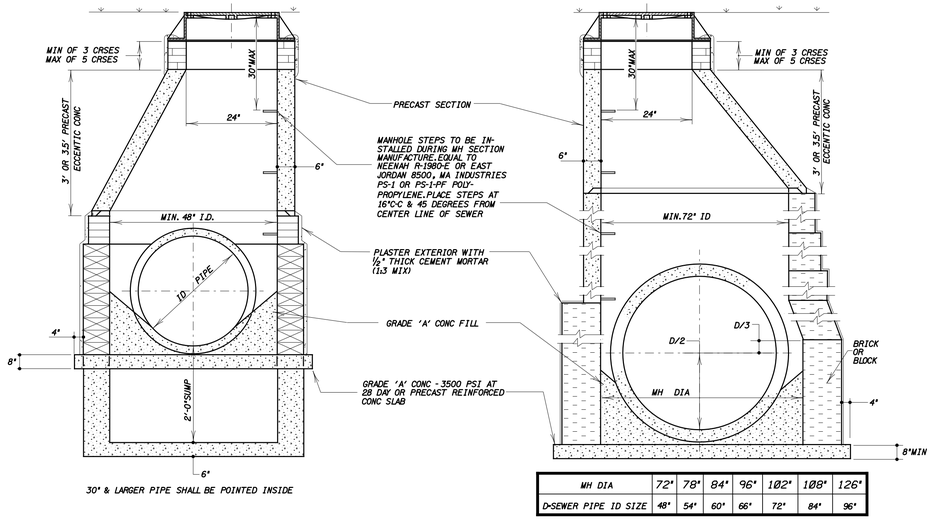
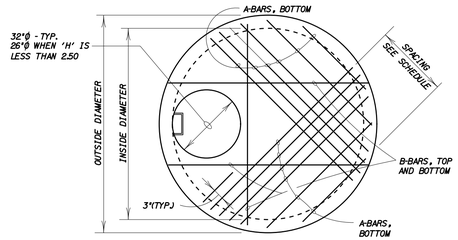


30" & LARGER PIPE SHALL BE POINTED INSIDE

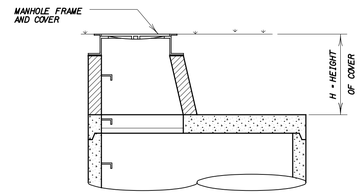
MH DIA	72"	78"	84"	96"	102"	108"	126"
D-SEWER PIPE ID SIZE	48"	54"	60"	66"	72"	84"	96"

STORM MANHOLE FOR 42" PIPE AND UNDER

STORM MANHOLE FOR 48" PIPE AND OVER

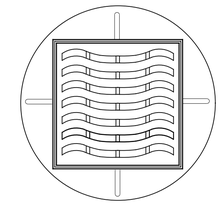


PLAN

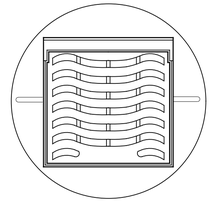


SECTION

INSIDE DIA.	SLAB THICKNESS	MAX. HEIGHT OF COVER	REINFORCEMENT		
			A-BARS EA. SIDE		B-BARS TOP & BOTTOM
			NO. SIZE	SPACING	
4'-0"	8"	8'-0"	(4)-#5	3 @ 3"	(3)-#5
5'-0"	8"	8'-0"	(6)-#5	3 @ 3" 2 @ 6"	(3)-#5
6'-0"	8"	8'-0"	(5)-#6	4 @ 8"	(3)-#5
7'-0"	8"	8'-0"	(7)-#6	6 @ 6"	(3)-#5
8'-0"	8"	8'-0"	(9)-#6	8 @ 6"	(3)-#5
9'-0"	10"	8'-0"	(11)-#6	10 @ 6"	(3)-#5
10'-0"	10"	8'-0"	(13)-#7	12 @ 6"	(3)-#5

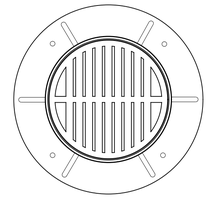


CATCH BASINS AND INLETS WITHIN PAVED DRIVING AREAS
FRAME & COVER EJ #5100 WITH TYPE 'M-1' GRATE



CURBED PAVEMENT SECTIONS
FRAME & COVER EJ #7045 WITH TYPE 'M-1'

MOUNTABLE CURB SECTION
FRAME & COVER EJ #7065 WITH TYPE 'M-1'



REAR YARD FRAME & COVER EJ #1040
WITH TYPE 'N' GRATE



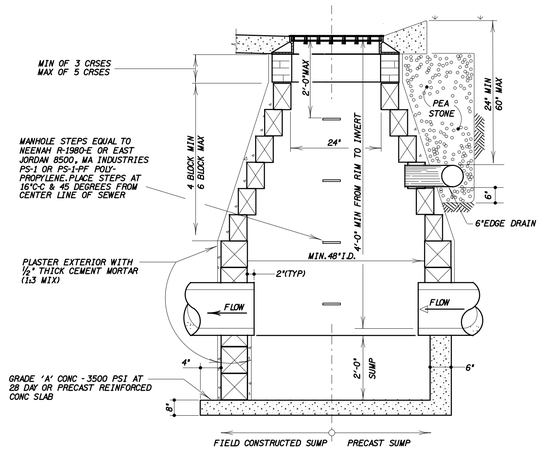
STORM SEWER FRAME & COVER EJ #1040
WITH TYPE 'C' COVER



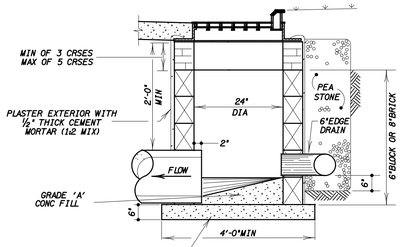
REAR YARD FRAME & COVER FOR 2'-0" DIA. INLET
STR-EJ #1170 WITH TYPE 'N' GRATE

FRAME AND COVER

- ALL COVERS TO INDICATE THAT THEY DRAIN TO WATERWAYS.



CATCH BASIN

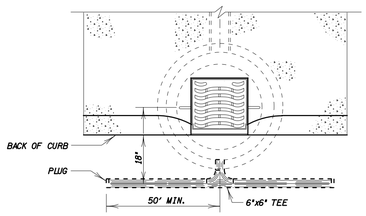


NOTES:
1. IF CLEARANCE IS LESS THAN 2'-0" BETWEEN SUB-GRADE & TOP OF PIPE BACKFILL WILL SHALL CONSIST OF A DRY SAND-CEMENT MIXTURE COMPACTED IN PLACE
2. 4" M.D.O.T. GRANULAR MATERIAL CLASS II OR 6A AGGREGATE BEDDING REQUIRED UNDER ALL STRUCTURES UNLESS OTHERWISE DIRECTED.

LOW HEAD INLET

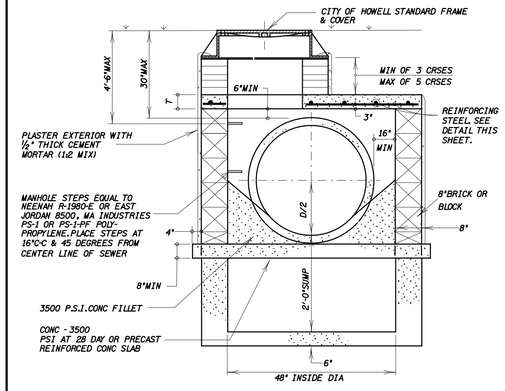
STORM SEWER NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF HOWELL.
2. IT SHALL BE THE OWNER'S ENGINEER AND CONTRACTOR'S RESPONSIBILITY TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES.
3. ALL SEWER TRENCHES UNDER THE 45 DEGREE ZONE OF INFLUENCE LINE OF EXISTING OR PROPOSED PAVEMENTS, BIKEPATHS, SIDEWALKS OR DRIVE APPROACHES SHALL BE BACKFILLED WITH MDOT CLASS II SAND COMPACTED TO AT LEAST 95% OF MAXIMUM UNIT WEIGHT.
4. ALL STORM SEWER SHALL BE INSTALLED ON CLASS "B" BEDDING OR BETTER.
5. JOINTS FOR STORM SEWER SHALL BE PREMIUM JOINTS (TONGUE AND GROOVE WITH RUBBER GASKETS).
6. LEAD MATERIAL SHALL BE SCHED 40 PVC OR SDR 26.

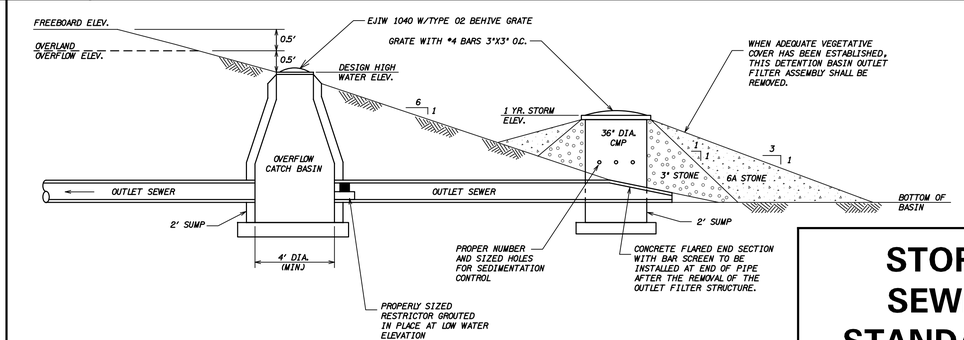


NOTES:
1. LENGTH OF 6" EDGE DRAIN TO BE A MINIMUM 50 FT EACH WAY UNLESS OTHERWISE DETERMINED BY THE CITY. AREAS OF POORLY DRAINED SUBGRADE MAY REQUIRE ADDITIONAL EDGE DRAIN.
2. EDGE DRAIN SHALL BE INSTALLED AT ALL CATCH BASINS & INLETS WITHIN LIMITS OF PAVEMENT OF A PUBLIC ROAD.
3. 6" EDGE DRAIN TO BE GEOTEXTILE WRAPPED CORRUGATED PLASTIC PIPE WITH FOUR ROWS OF SLOTTED PERFORATIONS, OR APPROVED EQUAL.
4. NO SUMP LINES OR DRAINAGE LINES CAN BE TIED INTO EDGE DRAIN.

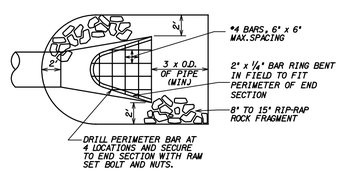
6" EDGE DRAIN



LOW-HEAD STORM SEWER STRUCTURE



OUTLET STRUCTURE DETAIL



END SECTION AND BAR SCREEN DETAIL

STORM SEWER STANDARDS

SHEET C8.4

CITY OF HOWELL
LIVINGSTON COUNTY, MICHIGAN
STANDARD CONSTRUCTION DETAIL SHEET

HOWELL MICHIGAN

HRC 100 YEARS
CONSULTING ENGINEERS SINCE 1915

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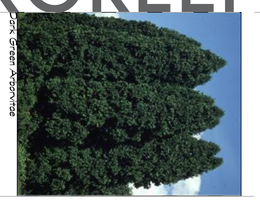
PLEASE RECYCLE

EVERGREEN TREES


White Fir


Compact Juniper


Dark Green Arborvitae


Austrian Pine

DECIDUOUS TREES


Elm Pepper


Swamp White Oak


Red Oak


Heritage® River Birch


Shademaster Honey Locust


Red Rocket Type


Upright European Hornbeam

ORNAMENTAL TREES


Autumn Brilliance Serviceberry


Kousa Dogwood


Pink Flowering Dogwood


Sugar Tyme® Crabapple


Forest Pansy Eastern Redbud

SHRUBBERY


Dense Yew

Limelight Hydrangea

PERENNIALS


Happy Returns Daylily

GROUNDCOVER


Orange Stonecrop Sedum


Big Blue Lilyturf

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOL

1224 W GRAND RIVER AVE HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES — DATE

DESIGN DEVELOPMENT 01/29/2026

CONSTRUCTION DOCUMENT 07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE
PLANT IDENTIFICATION SHEET

SHEET NO.
L020

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PLEASE RECYCLE

PLANT COLOR LEGEND

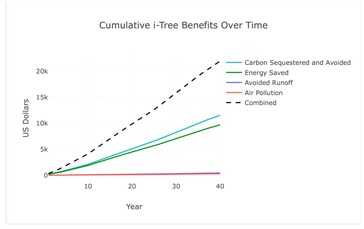
CODE	BOTANICAL / COMMON NAME	FLOWER	FLOWER ACCENTS	FRUIT	FOLIAGE	FOLIAGE ACCENTS	NEW GROWTH	FALL COLOR	WINTER FOLIAGE	BARK	BARK ACCENTS	CONE	STEMS
DECIDUOUS TREES													
BET CUL	BETULA NIGRA 'CULLY' / HERITAGE® RIVER BIRCH												
CAR FST	CARPINUS BETULUS 'FASTIGIATA' / UPRIGHT EUROPEAN HORNBEAM												
GLE SH2	GLEDITSIA TRIACANTHOS INERMIS 'SHADEMASTER' / SHADEMASTER HONEY LOCUST												
LIR TUL	LIRIODENDRON TULIPIFERA / TULIP POPLAR												
QUE BIC	QUERCUS BICOLOR / SWAMP WHITE OAK												
QUE RUB	QUERCUS RUBRA / RED OAK												
EVERGREEN TREES													
ABI CON	ABIES CONCOLOR / WHITE FIR												
PIC CO2	PICEA PUNGENS / COLORADO SPRUCE												
PIN NIG	PINUS NIGRA / AUSTRIAN PINE												
ORNAMENTAL TREES													
AME GRA	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE SERVICEBERRY												
CER FOR	CERCIS CANADENSIS 'FOREST PANSY' / FOREST PANSY EASTERN REDBUD												
COR RUB	CORNUS FLORIDA RUBRA / PINK FLOWERING DOGWOOD												
COR KOU	CORNUS KOUSA / KOUSA DOGWOOD												
MAL SUG	MALUS X 'SUTYZAM' / SUGAR TYME® CRABAPPLE												
SHRUBS													
SPI L29	SPIRAEA JAPONICA 'LEMON PRINCESS' / LEMON PRINCESS JAPANESE SPIREA												
TAX DEN	TAXUS X MEDIA 'DENSIFORMIS' / DENSE YEW												
SHRUB AREAS													
HEM HAP	HEMEROCALLIS X 'HAPPY RETURNS' / HAPPY RETURNS DAYLILY												
LIR BIG	LIRIOPE MUSCARI 'BIG BLUE' / BIG BLUE LILYTURF												
GROUND COVERS													
SED KA2	SEDUM KAMTSCHATICUM / ORANGE STONECROP												

i-Tree Planting Report

i-Tree Benefits and Tree Growth Forecast

Location: Howell, MI 48843
Total number of trees planted in this project: 47
Electricity Emissions Factor: 691.33 kilograms CO2 equivalent/MWh
Fuel Emissions Factor: 88.33 kilograms CO2 equivalent/MMBtu
Lifetime: 40 years
Annual Tree Mortality: 3% (AVERAGE)

All amounts in the tables are for the full lifetime of the project.



Mortality is modeled as a fractional (not whole) tree estimate and may not align year-over-year.
Sequestration does not account for net differences like decay.
Tree canopy cover estimate assumes no overlap between crowns.

Application v2.8.0, powered by engine v0.20.1 (APIv3) and database v12.0.90.

www.fs.usda.gov
www.davey.com
www.arborday.org
ucfsociety.org

SHEET NOTES:

1. DETAILED NOTES ON SITE SPECIFIC TREE BENEFITS OF THE FOLLOWING PROVIDED UPON REQUEST:
   - CARBON SEQUESTERED & AVOIDED
   - ENERGY SAVED
   - AVOIDED RUNOFF(STORMWATER)
   - AIR POLLUTION REMOVED OR AVOIDED

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOL

1224 W GRAND RIVER AVE HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
DESIGN DEVELOPMENT	01/29/2026
CONSTRUCTION DOCUMENT	07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE
PLANT DATA SHEET

SHEET NO.
L030

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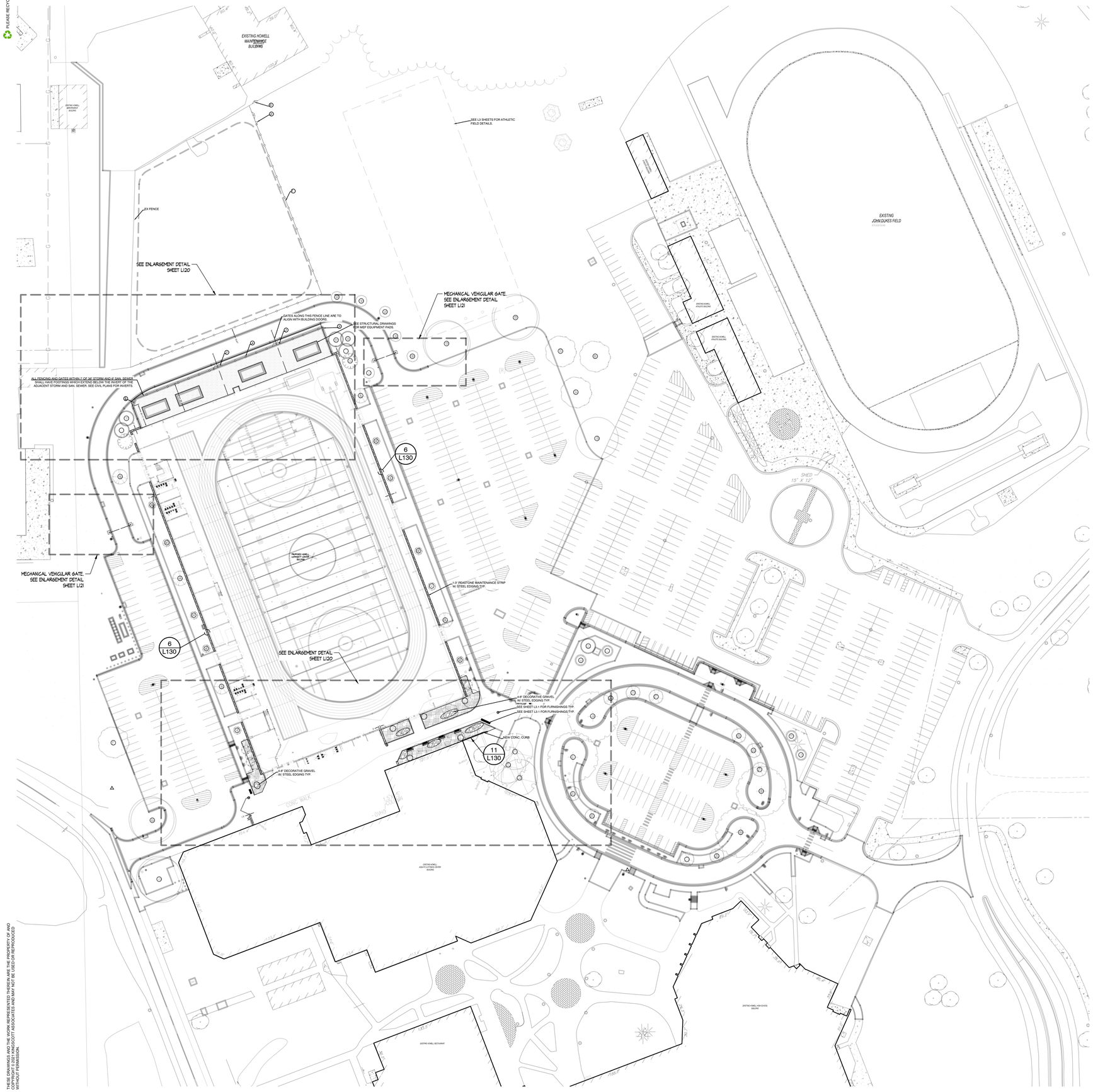

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NORTH

0 40 80 120 160 feet

1" = 40'

LEGEND

- HARDWOOD MULCH (BROWN)
- NEW ¾" CRUSHED LIMESTONE
- NEW ⅜" PEA STONE
- NEW GRAVEL, 4-8" MICHIGAN ROUNDED FIELDSTONE

FENCE/RAIL NOTES:

1. 8 FT. H. BLACK CHAIN LINK FENCE
2. 8 FT H. X 10 FT W. CHAIN LINK EGRESS GATE - SINGLE
3. 10 FT H. X 10 FT W. CHAIN LINK GATE - DOUBLE, (BUILD INTO EXISTING FENCE LINE)
4. 12 FT H. BLACK CHAIN LINK FENCE
5. 12 FT H. X 4 FT W. BLACK CHAIN LINK GATE - SINGLE
6. 12 FT H. X 10 FT W. BLACK CHAIN LINK GATE - DOUBLE
7. 12 FT. H. X 12 FT W. BLACK CHAIN LINK GATE - DOUBLE

LANDSCAPE NOTES

1. PLACE SHREDDED HARDWOOD MULCH TO A 3" DEPTH IN ALL TREE, SHRUB, & PERENNIAL BEDS AND TO A 2" DEPTH IN ALL GROUNDCOVER BEDS.
2. PLACE LANDSCAPE GRAVEL TO A 3" DEPTH IN ALL TREE, SHRUB & PERENNIAL BEDS AND TO A 2" DEPTH IN ALL GROUNDCOVER BEDS.
3. LANDSCAPE GRAVEL TO BE INSTALLED OVER A LAYER OF FILTER/LANDSCAPE FABRIC WITH APPROPRIATE EDGING AS NEEDED.
4. REPAIR AND RESTORE ANY DAMAGE OUTSIDE OF LIMIT OF WORK TO ORIGINAL CONDITION.
5. ALL NURSERY STOCK SHALL BE TRUE TO TYPE AND NAME ALL STOCK SHALL BE FIRST CLASS QUALITY WITH WELL DEVELOPED Branch SYSTEMS AND VIGOROUS HEALTHY ROOT SYSTEMS. ALL STOCK SHALL BE WELL FORMED AND THE TRUNKS OF TREES SHALL BE UNIFORM AND STRAIGHT.
6. PLANTING SOIL MIX SHALL CONSIST OF 50% TOPSOIL, 30% SAND AND 20% LEAF COMPOST. SPREAD PLANTING SOIL MIX TO A DEPTH OF 12 INCHES BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT.
7. 4-8" DECORATIVE GRAVEL TO BE MICHIGAN STONE, MULTICOLORED.
8. ALL PLANTING SIZES ARE MINIMUM ACCEPTABLE SIZES. NECESSARY PRUNING NEEDED FOR ALL PLANTINGS SHOULD STILL FALL WITHIN MINIMAL HEIGHTS & SIZES LISTED.
9. ALL GRAVEL AREAS TO BE EDGED W/ STEEL EDGING.
10. UNLESS OTHERWISE NOTED, ALL PLANT BED EDGES TO BE SPADE CUT TO 4-6" DEPTH AND CUT BETWEEN 90 AND 45 DEG. PERPENDICULARLY AWAY FROM GROUND PLANE.
11. UNLESS OTHERWISE NOTED OR INCLUDED WITHIN A PLANT BED, ALL TREE TO BE INSTALLED WITHIN A 6 FT RADIUS MULCH RING.

SHEET NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR BUILDING DETAILS.
2. TOPOGRAPHY, UNDERGROUND UTILITIES AND PAVEMENT PLAN FOR INFORMATION ONLY. REFER TO CIVIL DRAWINGS FOR DETAILS.
3. SEE MEP DRAWINGS FOR BUILDING UTILITY DETAILS.
4. LOCKING MECHANISMS FOR GATES ARE OWNER FURNISHED.

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOL

1224 W GRAND RIVER AVE HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
DESIGN DEVELOPMENT	01/29/2026
CONSTRUCTION DOCUMENT	07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE

COMPOSITE SITE PLAN

SHEET NO.

L110

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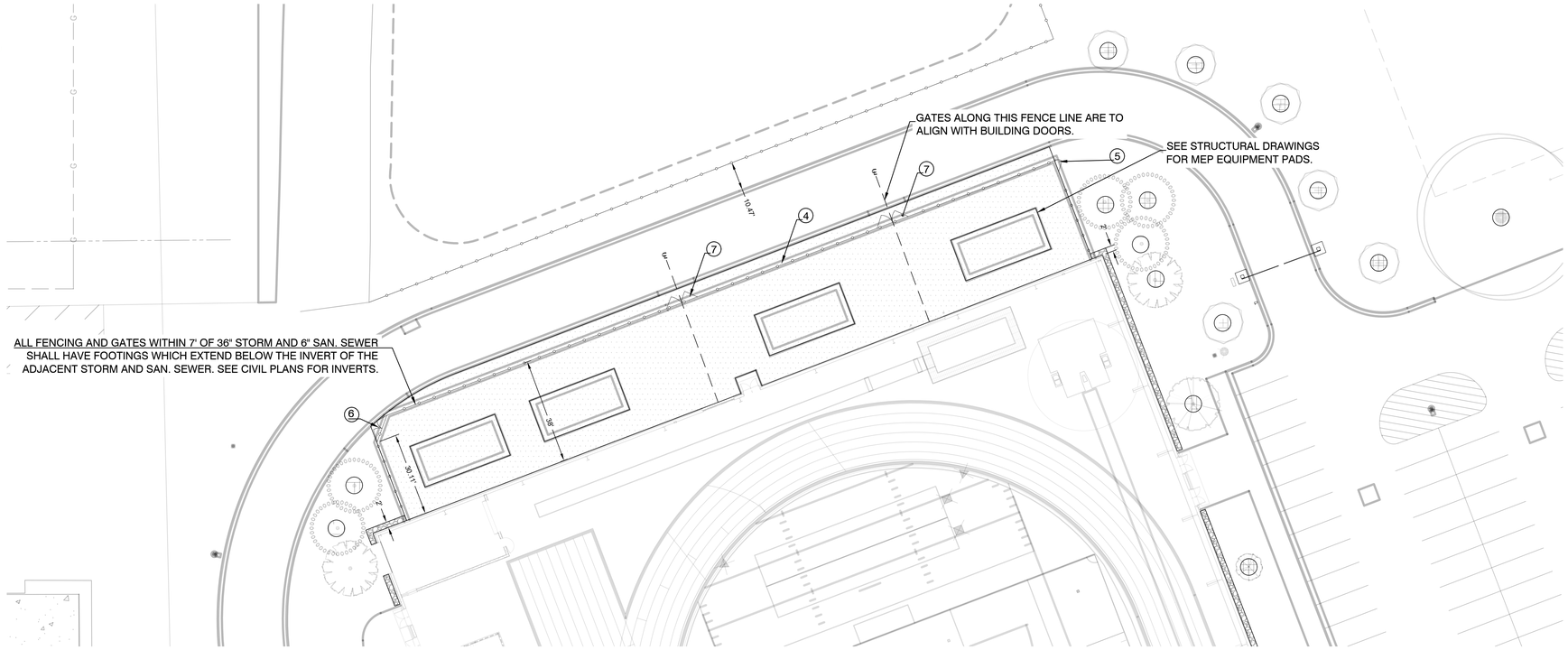
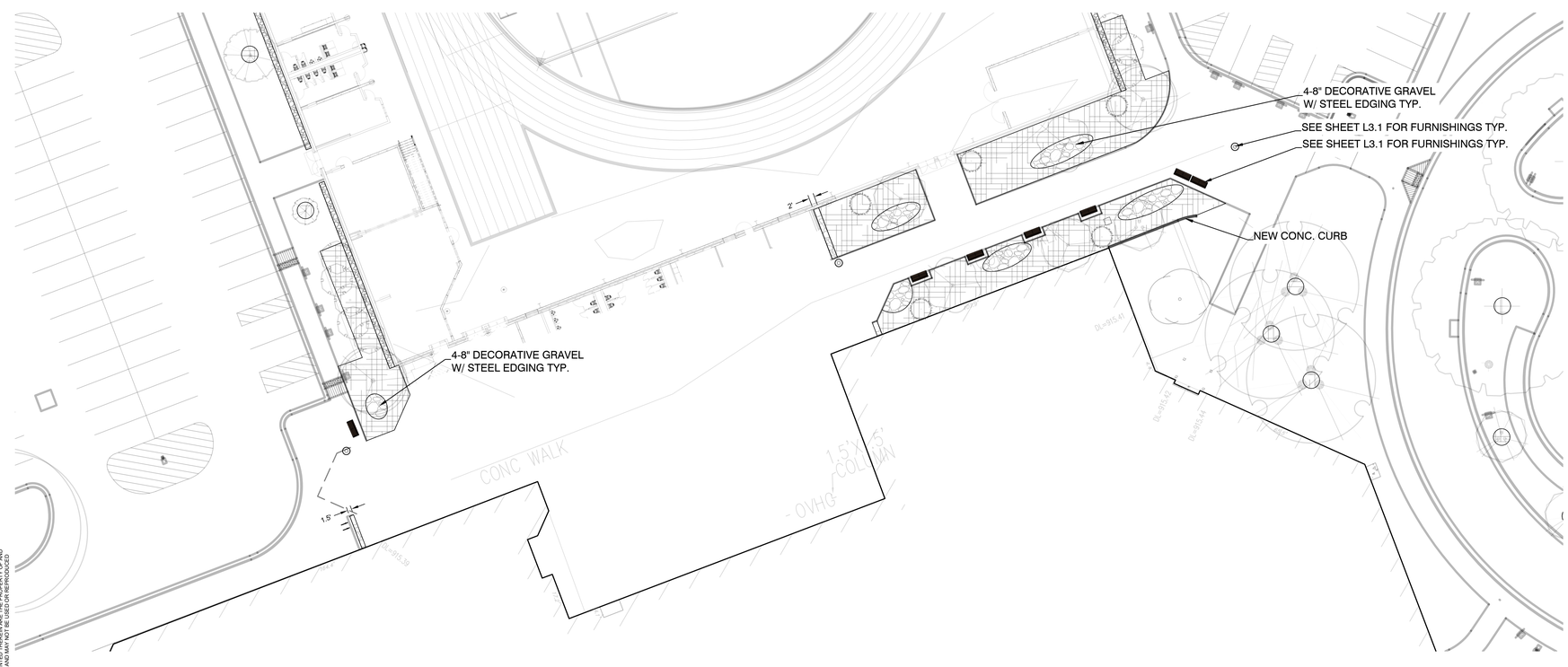


1 NORTH UTILITY AREA ENLARGEMENT
1 : 20



2 EAST & WEST MAIN ENTRIES ENLARGEMENT
1 : 20

NORTH

0 40 80 120 160 feet
1" = 40'

LEGEND

- HARDWOOD MULCH (BROWN)
- NEW ¾" CRUSHED LIMESTONE
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7. 4-8" DECORATIVE GRAVEL TO BE MICHIGAN STONE, MULTICOLORED.
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3. SEE MEP DRAWINGS FOR BUILDING UTILITY DETAILS.

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOL

1224 W GRAND RIVER AVE HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
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CONSTRUCTION DOCUMENT	07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE
SITE ENLARGEMENT DETAILS

SHEET NO.
L120

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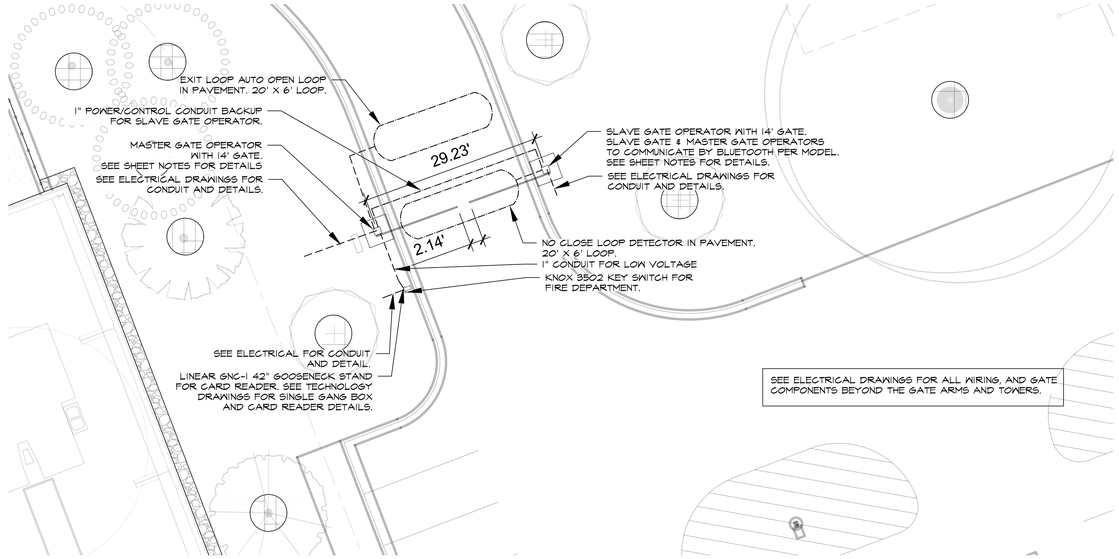
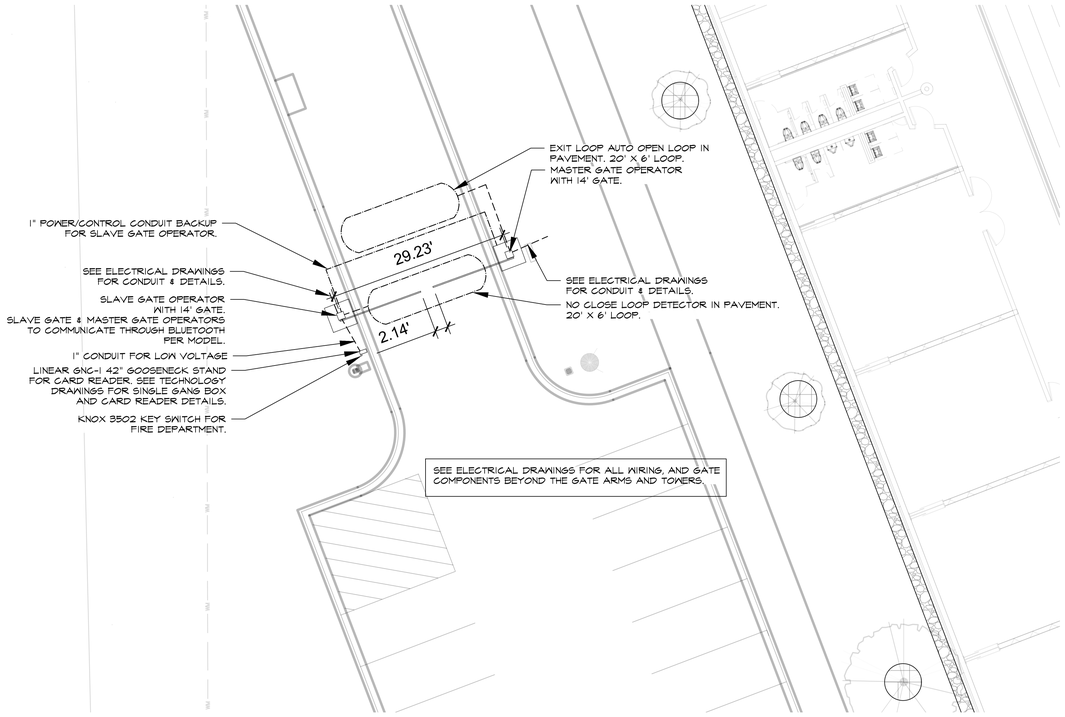


1 NORTHEAST MECHANICAL VEHICULAR GATE ENLARGEMENT
1" = 10'



2 SOUTHWEST MECHANICAL VEHICULAR GATE ENLARGEMENT
1" = 10'

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NORTH

0 40 80 120 160 feet
1" = 40'

TYPICAL GATE CONTROL NOTES:

1. CONTRACTOR TO ADJUST SIZES OF LOOPS, SPACING, DISTANCE, ETC.. AS RECOMMENDED BY MANUFACTURER FOR USE WITH TYPICAL SCHOOL MAINTENANCE VEHICLES TO ACCOMMODATE THEIR LENGTH AND HEIGHT.
2. ADJUST EXACT LOCATION OF GATES TO ACCOMMODATE THE TWO ARMS WITHOUT COLLISION OF EACH OTHER.
3. REPAIR/RESTORE/RESEED ALL DISTURBED AREAS.
4. ALL POWER CONDUITS SHALL BE MINIMUM OF 1' FROM ANY DATA CONDUITS.
5. LOW VOLTAGE CONDUITS TO BE 1-1/4".
6. PROVIDE LOOP DETECTORS WITH MANUFACTURER RECOMMENDED SPACING.
7. SAWCUT LOOPS INTO PAVEMENT AND SAWCUT LOOP LEAD-IN TO EDGE OF PAVEMENT, THEN CONTINUE IN CONDUIT TO PANEL WITH CONDUITS. TYPICALLY $\frac{3}{8}$" WIDE AND 2" DEEP. PROVIDE MULTIPLE LOOPS/WIRES AND COMPLETELY SEAL TOP FLUSH WITH PAVEMENT. CHAMFER CORNERS.
8. BOTH GATES TO OPERATE SIMULTANEOUSLY (MASTER/SLAVE).
9. EXIT TO BE AUTOMATIC TO ALLOW TRAFFIC TO FREELY LEAVE.
10. USE LOOP DETECTOR TO AVOID GATE CLOSING ON VEHICLE (NOT ONLY PHOTO EYE).
11. PROGRAM GATES TO HOLD OPEN AFTER INITIAL OPENING TO ALLOW MULTIPLE VEHICLES TO ENTER (MULTIPLE VEHICLE MEMORY) AT ONCE WITHOUT OPENING CLOSING GATE MULTIPLE TIMES (APPROXIMATE. 3 VEHICLES WITHIN 5 MINUTES). REPEAT FOR EXIT PATH.
12. GATE OPERATORS TO BE:
    - LIFT MASTER: CBG24DCG, TECHNA NEXT GENERATION DC COMMERCIAL BARRIOR OPERATOR. COLOR = (G) DARK GRAY
    - SINGLE PHASE WITH 14' ARM, INCLUDE INTERNAL HEATER AS RECOMMENDED BY SUPPLIER
    - TOWERS ARE INTEGRATED W/ PROGRAMMABLE LED LIGHTS (RED AND GREEN) IN THE BARRIER TOWER.
    - INCLUDE STANDARD BATTERY BACKUP
    - 2 GATES AT EACH LOCATION TO OPERATE SIMULTANEOUSLY (MASTER/SLAVE)
    - SUPPLY WITH ALL NECESSARY LOOP DETECTORS AND EQUIPMENT FOR OPERATION.
    - INCLUDE LOOP DETECTOR TO LET TRAFFIC OUT (LOOPS INSIDE)
    - INCLUDE LOOP DETECTOR UNDER GATE TO PREVENT CLOSING ON VEHICLE
    - LOOPS TO BE CUT INTO ASPHALT AND SEALED.
13. GATE ARM TO BE:
    - LIFTMASTER: BGARM14LED, 14' FUNCTIONAL LENGTH ARM W/ LED
    - GATE ARM TO HAVE CGB OPERATOR COMPATIBILITY.
    - GATE ARMS TO HAVE MINIMUM 18" BETWEEN ENDS.
15. CONTRACTOR TO COORDINATE WITH SCHOOL ON OPERATION OF GATES AND PROVIDE ALL PROGRAMMING OF THE GATES AND PROVIDE ALL DESIRED MODES/PROGRAMMING AS REQUESTED/DESIRED. PROVIDE TRAINING ON HOW TO ADJUST CONTROLS/PROGRAMMING.

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOL

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HOWELL PUBLIC SCHOOLS

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KEY PLAN

JOB NO. 2600.41F

SHEET TITLE
SITE ENLARGEMENT DETAILS

SHEET NO.
L121

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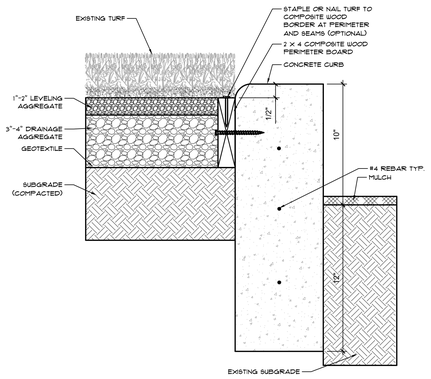
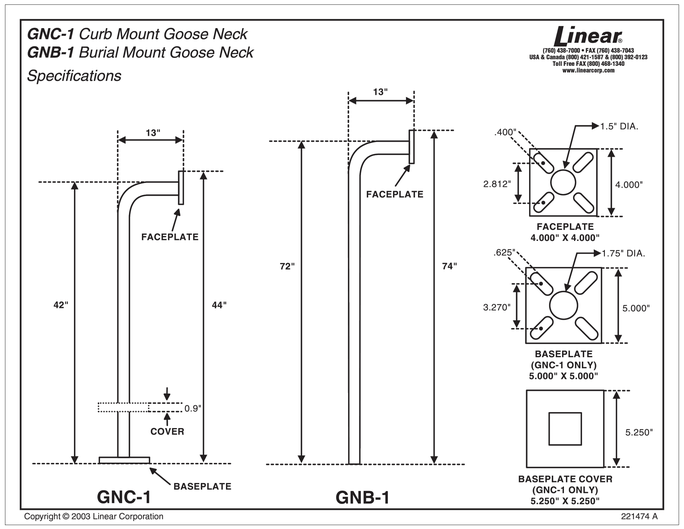


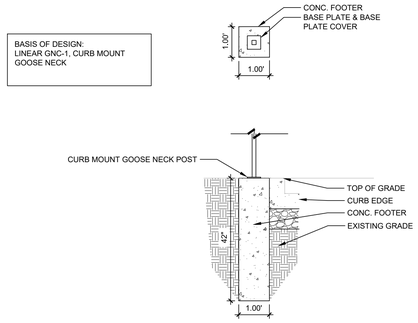
11 EXISTING SYNTHETIC TURF W/ NEW CURB

N.T.S. KAI-HO-HOW6-48



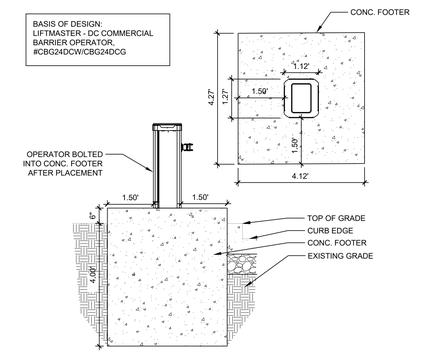
10 GOOSE NECK POST DETAIL

1 : 20



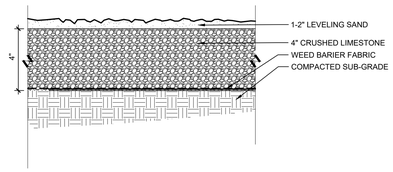
9 COMMERCIAL GOOSE NECK POST FOOTER

1/2" = 1'-0" KAI-HO-HOW6-23



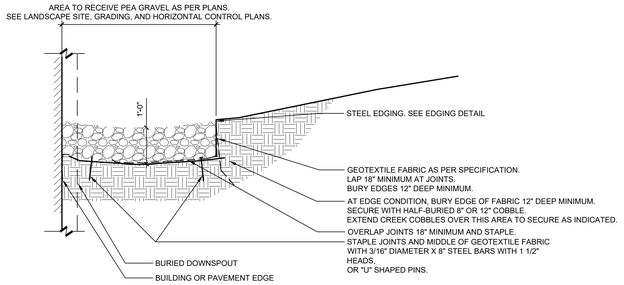
8 COMMERCIAL BARRIER GATE OPERATOR DETAIL

1/2" = 1'-0" KAI-HO-HOW6-35



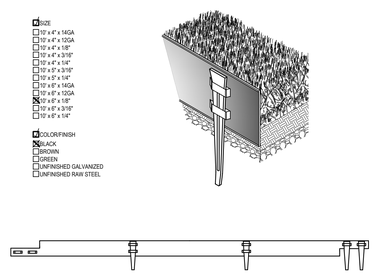
7 CRUSHED GRAVEL PAVEMENT

3" = 1'-0" KAI-HO-HOW6-20



6 MAINTENANCE STRIP DETAIL

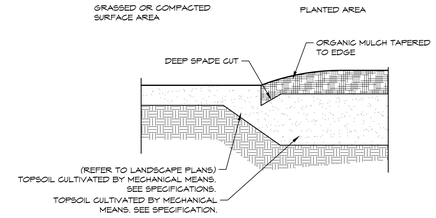
1/2" = 1'-0" KAI-HO-HOW6-02



5 STEEL LANDSCAPE EDGING

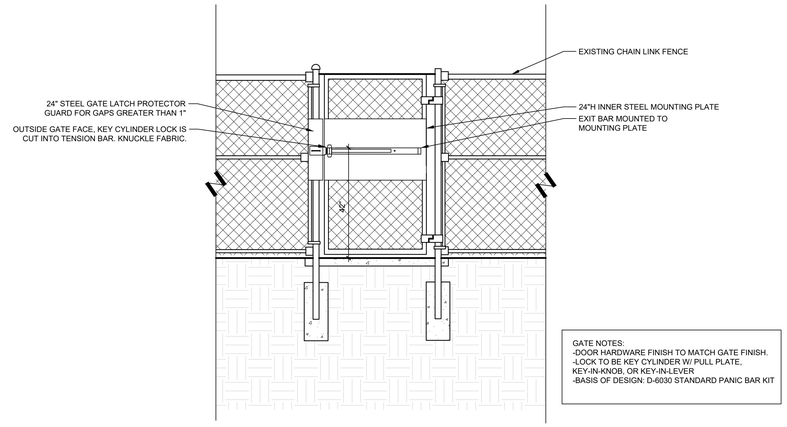
1/2" = 1'-0" KAI-HO-HOW-32

SPADE EDGE NOTES:
1. REFER TO THE DESIGN PLANS FOR PROPOSED LOCATION & EXTENT OF SPADE EDGING.
2. REFER TO LANDSCAPE PLANS FOR DETAILS OF ADJACENT SURFACE.
3. REFER TO LANDSCAPE PLANS FOR MULCH REQUIREMENTS



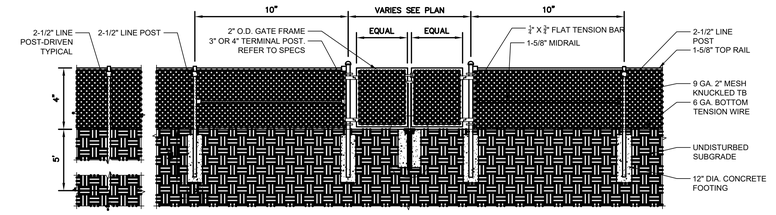
4 SPADE EDGE (SD-610)

NTS KAI-HO-HOW-06



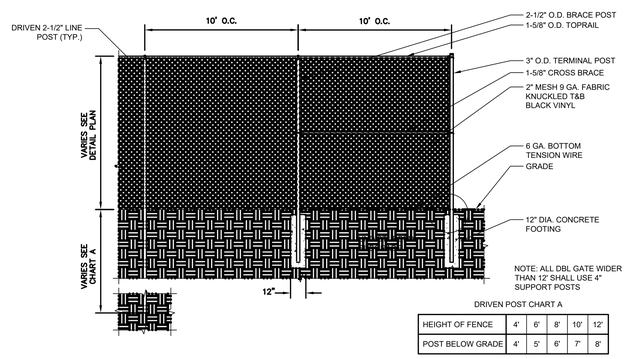
3 CHAIN LINK - SINGLE GATE EGRESS

1/2" = 1'-0" KAI-HO-HOW6-21



2 DOUBLE GATE

1/4" = 1'-0" KAI-HO-HOW-23



DRIVEN POST CHART A

HEIGHT OF FENCE	4'	6'	8'	10'	12'
POST BELOW GRADE	4'	5'	6'	7'	8'

1 FENCE ELEVATION

1/4" = 1'-0" KAI-HO-HOW-22

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KEY PLAN

JOB NO. 2600.41F

SHEET TITLE
SITE DETAILS

SHEET NO.
L130

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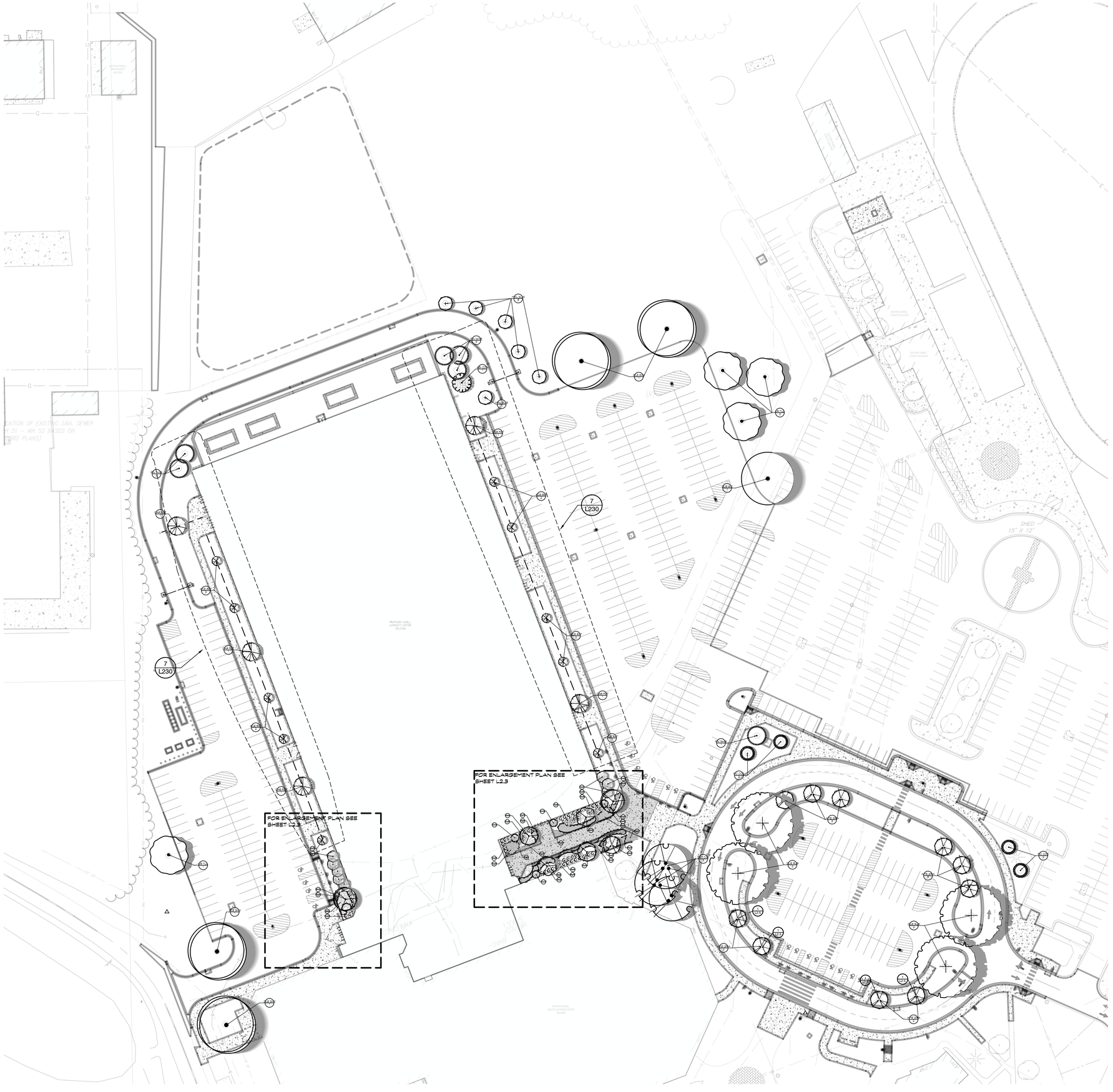

PLANTING NOTES:

1. ALL PLANTS SHALL CONFORM TO "AMERICAN NURSERYMEN'S" STANDARDS, WITH COHERENT ROOT BALL OR WRAPPED ROOTS, OF A HEIGHT, LEAF DENSITY AND SPREAD APPROPRIATE TO THE SPECIES.
2. SHRUBS. SHRUBS PLANTED SHALL HAVE A MINIMUM SIZE EQUAL TO OR GREATER THAN A NUMBER 3 CONTAINER AND HAVE A MINIMUM HEIGHT OF EIGHTEEN(18) INCHES AT THE TIME OF PLANTING.
3. DECIDUOUS TREES THAT ARE INSTALLED SHALL HAVE A MINIMUM DIAMETER OF TWO (2) INCHES, WHICH IS MEASURED TWELVE (12) INCHES ABOVE THE ROOT BALL, AND A CLEAR STEM OF AT LEAST FIVE (5) FEET UNLESS OTHERWISE NOTED.
4. EVERGREEN TREES SHALL HAVE A MINIMUM HEIGHT OF FIVE (5) FEET AT A TIME OF PLANTING.
4. ALL NURSERY STOCK SHALL BE TRUE TO TYPE AND NAME ALL STOCK SHALL BE FIRST CLASS QUALITY WITH WELL DEVELOPED BRANCH SYSTEMS AND VIGOROUS HEALTHY ROOT SYSTEMS. ALL STOCK SHALL BE WELL FORMED AND THE TRUNKS OF TREES SHALL BE UNIFORM AND STRAIGHT.
7. ALL PLANTING SIZES ARE MINIMUM ACCEPTABLE SIZES. NECESSARY PRUNING NEEDED FOR ALL PLANTINGS SHOULD STILL FALL WITHIN MINIMAL HEIGHTS @ SIZES LISTED.
8. PLANTING SOIL MIX SHALL CONSIST OF 50% TOPSOIL, 30% SAND AND 20% LEAF COMPOST. SPREAD PLANTING SOIL MIX TO A DEPTH OF 12 INCHES BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT.

SHEET NOTES:

1. FINAL PLANTING LAYOUT TO BE COORDINATED W/ CIVIL DRAWINGS.

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOL

1224 W GRAND RIVER AVE HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
DESIGN DEVELOPMENT	01/29/2026
CONSTRUCTION DOCUMENT	07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE
PLANTING PLAN

SHEET NO.
L210

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PLANT SCHEDULE

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	QTY	DETAIL	REMARKS
DECIDUOUS TREES							
	ACE RKT	Acer rubrum 'Red Rocket' / Red Rocket Maple	2" Cal.	B&B	10		Columnar
	BET CUL	Betula nigra 'Cully' / Heritage® River Birch	10`-12` Ht	B&B	3		
	CAR FST	Carpinus betulus 'Fastigiata' / Upright European Hornbeam	2" Cal.	B&B	5		Columnar
	GLE SH2	Gleditsia triacanthos inermis 'Shademaster' / Shademaster Honey Locust	2" Cal.	B&B	4		
	LIR TUL	Liriodendron tulipifera / Tulip Poplar	2" Cal.	B&B	4		
	QUE BIC	Quercus bicolor / Swamp White Oak	2" Cal.	B&B	1		
	QUE RUB	Quercus rubra / Red Oak	2" Cal.	B&B	4		
EVERGREEN TREES							
	ABI CON	Abies concolor / White Fir	6` Ht.	B&B	1		
	JUN MO9	Juniperus scopulorum 'Moonglow' / Moonglow Juniper	4` Ht.	#7	5		
	PIC CO2	Picea pungens / Colorado Spruce	6` Ht.	B&B	4		
	PIN WH3	Pinus alba / White Pine	6` Ht.	B&B	6		
	THU DA4	Thuja occidentalis 'Dark Green' / Dark Green Arborvitae	6` Ht.	B&B	7		
	THU DA5	Thuja occidentalis 'Dark Green' / Dark Green Arborvitae	8`-10` Ht	B&B	1		
ORNAMENTAL TREES							
	AME GRA	Amelanchier x grandiflora 'Autumn Brilliance' / Autumn Brilliance Serviceberry	1.5" Cal.	B&B	11		
	CER FOR	Cercis canadensis 'Forest Pansy' / Forest Pansy Eastern Redbud	1.5" Cal.	B&B	2		
	COR RUB	Cornus florida rubra / Pink Flowering Dogwood	1.5" Cal.	B&B	2		
	COR KOU	Cornus kousa / Kousa Dogwood	1.5" Cal.	B&B	2		
	MAL SUG	Malus x 'Sutyzam' / Sugar Tyme® Crabapple	1.5" Cal.	B&B	6		
SHRUBS							
	SPI L29	Spiraea japonica 'Lemon Princess' / Lemon Princess Japanese Spirea	5 gal.	Cont.	25		
	TAX DEN	Taxus x media 'Densiformis' / Dense Yew	#5	Pot	43		

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	SPACING	QTY	DETAIL	REMARKS
SHRUB AREAS								
	HEM HAP	Hemerocallis x 'Happy Returns' / Happy Returns Daylily	#1	Pot	24" o.c.	87		
	LIR BIG	Liriope muscari 'Big Blue' / Big Blue Lilyturf	#1	Pot	12" o.c.	1,277		MAY BE PROVIDED AS PLUGS IN FLATS
GROUND COVERS								
	SED KA2	Sedum kamtschaticum / Orange Stonecrop	#1	Pot	10" o.c.	395		MAY BE PROVIDED AS PLUGS IN FLATS

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ISSUANCES | DATE

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CONSTRUCTION DOCUMENT	07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE

PLANTING SCHEDULE - MAIN

SHEET NO.

L211

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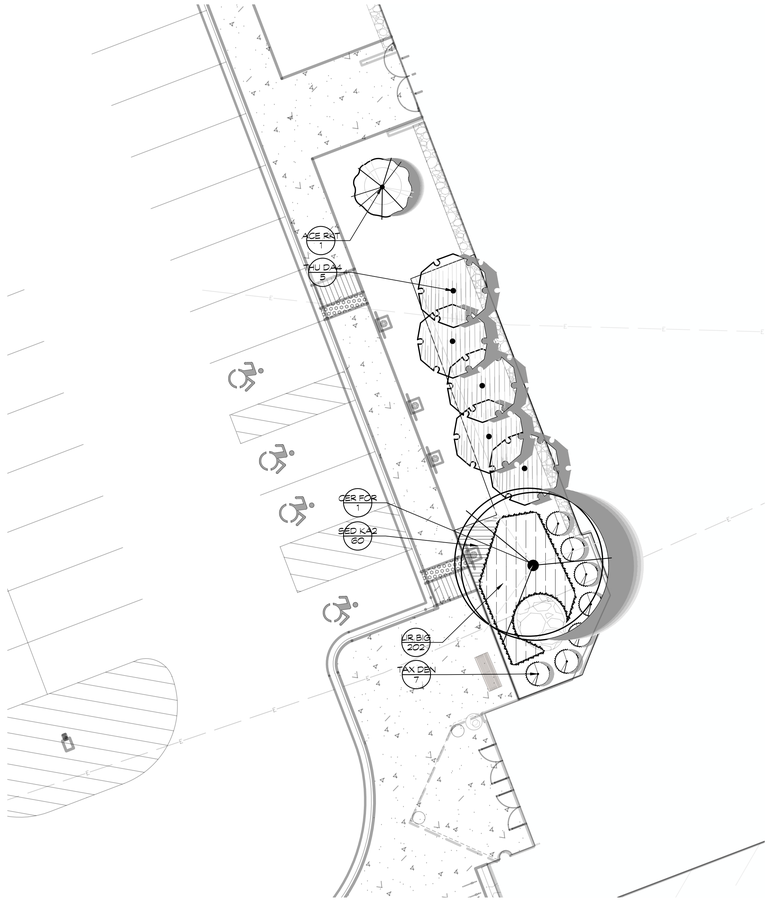
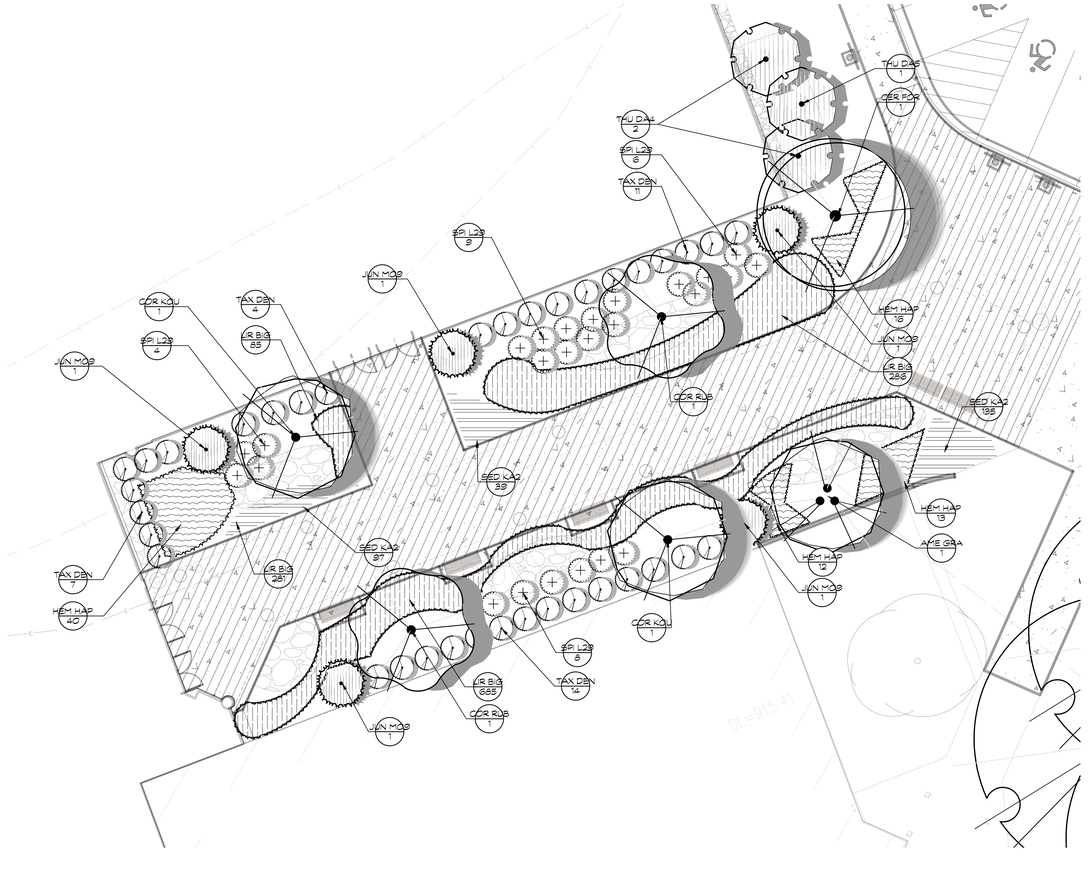


1 WEST ENTRANCE ENLARGEMENT
1" = 10'

NORTH

PLANT SCHEDULE SOUTH ENTRY

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	SPACING	QTY	DETAIL	REMARKS
DECIDUOUS TREES								
	ACE RKT	ACER RUBRUM 'RED ROCKET' / RED ROCKET MAPLE	2" CAL.	B&B		1		COLUMNAR
EVERGREEN TREES								
	THU DA4	THUJA OCCIDENTALIS 'DARK GREEN' / DARK GREEN ARBORVITAE	6` HT.	B&B		5		
ORNAMENTAL TREES								
	CER FOR	CERCIS CANADENSIS 'FOREST PANSY' / FOREST PANSY EASTERN REDBUD	1.5" CAL.	B&B		1		
SHRUBS								
	TAX DEN	TAXUS X MEDIA 'DENSIFORMIS' / DENSE YEW	#5	POT		7		
SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	SPACING	QTY	DETAIL	REMARKS
SHRUB AREAS								
	LIR BIG	LIRIOPE MUSCARI 'BIG BLUE' / BIG BLUE LILYTURF	#1	POT	12" o.c.	202		MAY BE PROVIDED AS PLUGS IN FLATS
GROUND COVERS								
	SED KA2	SEDUM KAMTSCHATICUM / ORANGE STONECROP	#1	POT	10" o.c.	60		MAY BE PROVIDED AS PLUGS IN FLATS



2 EAST ENTRANCE ENLARGEMENT
1" = 10'

NORTH

PLANT SCHEDULE EAST ENTRY

SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	SPACING	QTY	DETAIL	REMARKS
EVERGREEN TREES								
	JUN MO9	Juniperus scopulorum 'Moonglow' / Moonglow Juniper	4` Ht.	#7		5		
	THU DA4	Thuja occidentalis 'Dark Green' / Dark Green Arborvitae	6` Ht.	B&B		2		
	THU DA5	Thuja occidentalis 'Dark Green' / Dark Green Arborvitae	8`-10` Ht	B&B		1		
ORNAMENTAL TREES								
	AME GRA	Amelanchier x grandiflora 'Autumn Brilliance' / Autumn Brilliance Serviceberry	1.5" Cal.	B&B		1		
	CER FOR	Cercis canadensis 'Forest Pansy' / Forest Pansy Eastern Redbud	1.5" Cal.	B&B		1		
	COR RUB	Cornus florida rubra / Pink Flowering Dogwood	1.5" Cal.	B&B		2		
	COR KOU	Cornus kousa / Kousa Dogwood	1.5" Cal.	B&B		2		
SHRUBS								
	SPI L29	Spiraea japonica 'Lemon Princess' / Lemon Princess Japanese Spirea	5 gal.	Cont.		25		
	TAX DEN	Taxus x media 'Densiformis' / Dense Yew	#5	Pot		36		
SYMBOL	CODE	BOTANICAL / COMMON NAME	SIZE	CONTAINER	SPACING	QTY	DETAIL	REMARKS
SHRUB AREAS								
	HEM HAP	Hemerocallis x 'Happy Returns' / Happy Returns Daylily	#1	Pot	24" o.c.	87		
	LIR BIG	Liriope muscari 'Big Blue' / Big Blue Lilyturf	#1	Pot	12" o.c.	1,075		MAY BE PROVIDED AS PLUGS IN FLATS
GROUND COVERS								
	SED KA2	Sedum kamtschaticum / Orange Stonecrop	#1	Pot	10" o.c.	335		MAY BE PROVIDED AS PLUGS IN FLATS

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KEY PLAN

JOB NO. 2600.41F

SHEET TITLE
PLANTING - ENLARGEMENTS

SHEET NO.
L220

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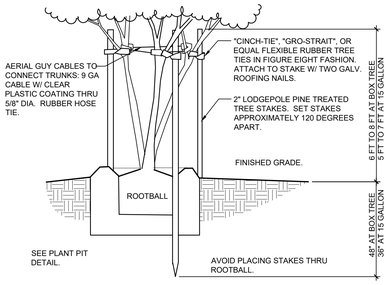
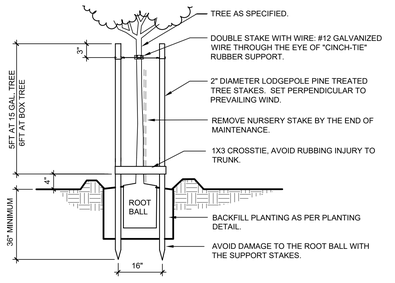
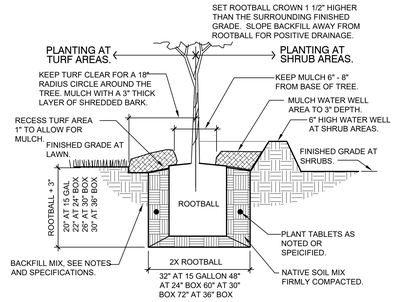
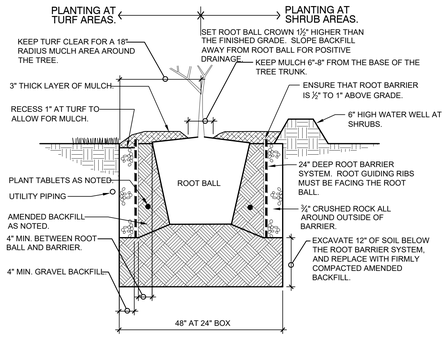


STAKING DETAIL



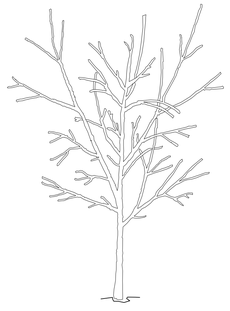


PLANT PIT DETAIL

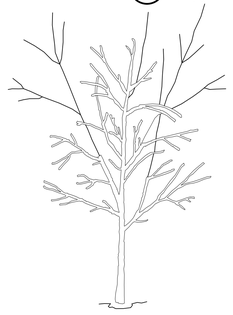


8 TREE PLANTING MULTI-STAKE

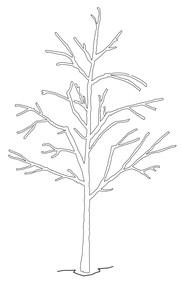
1" = 1'-0" KAI-HO-HOW6-40



BEFORE PLANTING, TREE HAS THREE CODOMINANT STEMS. THE TWO THAT COMPETE WITH THE ONE IN THE CENTER SHOULD BE PRUNED TO SUPPRESS THEIR GROWTH.



TWO COMPETING STEMS WERE REDUCED SUBSTANTIALLY, IN THIS CASE REMOVING ABOUT 70% OF THEIR FOLIAGE USING REDUCTION CUTS.



AFTER PRUNING, TREE HAS ONLY ONE DOMINANT STEM

NOTES:
1- ALL TREES SHOWN ARE REJECTABLE UNLESS THEY UNDERGO RECOMMENDED TREATMENT.
2- TREE SHALL MEET CROWN OBSERVATION DETAIL FOLLOWING CORRECTION.

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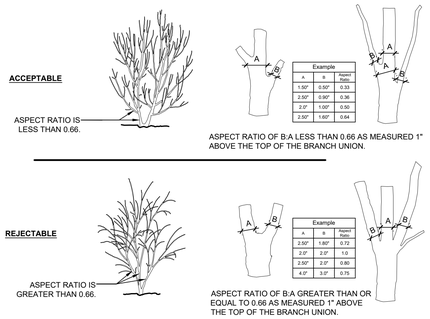
7 ROOT BARRIER TREE PLANTING

1" = 1'-0" KAI-HO-HOW6-13

6 CROWN CORRECTION DETAIL

1/2" = 1'-0"



NOTES:
1- ASPECT RATIO SHALL BE LESS THAN 0.66 ON ALL BRANCH UNIONS. ASPECT RATIO IS THE DIAMETER OF BRANCH (B) DIVIDED BY THE DIAMETER OF THE TRUNK (A) AS MEASURED 1" ABOVE THE TOP OF THE BRANCH UNION.

2- ANY TREE NOT MEETING THE CROWN OBSERVATIONS DETAIL MAY BE REJECTED.

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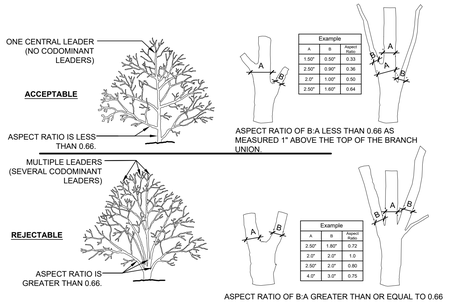
5 CROWN OBSERVATION DETAIL - MULTI

3/16" = 1'-0" KAI-HO-HOW6-33



NOTES:
1- ASPECT RATIO SHALL BE LESS THAN 0.66 ON ALL BRANCH UNIONS. ASPECT RATIO IS THE DIAMETER OF BRANCH (B) DIVIDED BY THE DIAMETER OF THE TRUNK (A) AS MEASURED 1" ABOVE THE TOP OF THE BRANCH UNION.

2- ANY TREE NOT MEETING THE CROWN OBSERVATIONS DETAIL MAY BE REJECTED.

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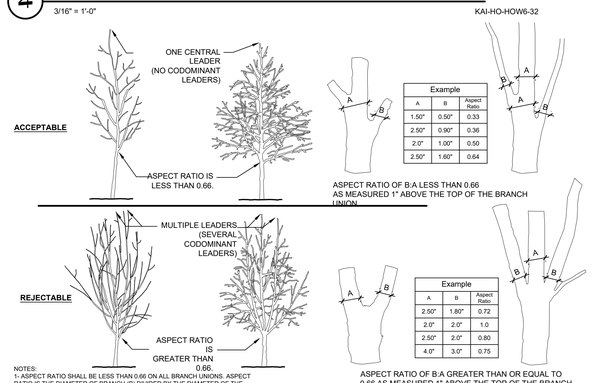
3 CROWN OBSERVATIONS - HIGH BRANCHED

1/4" = 1'-0"

4 CROWN OBSERVATIONS - LOW BRANCHED

3/16" = 1'-0" KAI-HO-HOW6-32



NOTES:
1- ASPECT RATIO SHALL BE LESS THAN 0.66 ON ALL BRANCH UNIONS. ASPECT RATIO IS THE DIAMETER OF BRANCH (B) DIVIDED BY THE DIAMETER OF THE TRUNK (A) AS MEASURED 1" ABOVE THE TOP OF THE BRANCH UNION.

2- ANY TREE NOT MEETING THE CROWN OBSERVATIONS DETAIL MAY BE REJECTED.

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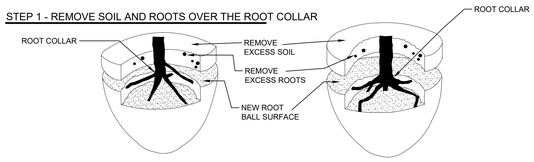
2 ROOT CORRECTION DETAIL - BALLED AND BURLAPPED

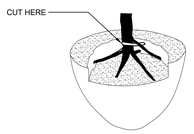
1 1/2" = 1'-0" KAI-HO-HOW6-31

STEP 1 - REMOVE SOIL AND ROOTS OVER THE ROOT COLLAR

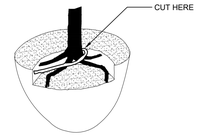


TREE PLANTED TOO DEEPLY IN ROOT BALL. REMOVE EXCESS SOIL AND ROOTS TO MEET ROOT INSPECTION DETAIL.

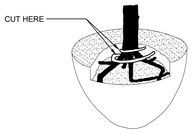
STEP 2 - REMOVE DEFECTS



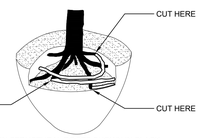
FIVE STRUCTURAL (LARGE) ROOTS SHOWN IN BLACK. REMOVE STRUCTURAL (WHITE) ROOT WRAPPING ROOT COLLAR.



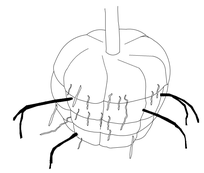
FOUR STRUCTURAL ROOTS SHOWN IN BLACK. REMOVE ROOT (WHITE) GROWING OVER STRUCTURAL ROOTS.



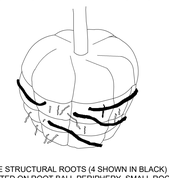
SIX STRUCTURAL ROOTS SHOWN IN BLACK. REMOVE STRUCTURAL ROOTS (WHITE) GROWING OVER ROOT COLLAR BY CUTTING THEM JUST BEFORE THEY MAKE AN ABRUPT TURN.



SEVEN STRUCTURAL ROOTS SHOWN IN BLACK. REMOVE STRUCTURAL ROOTS (WHITE) GROWING AROUND OR OVER ROOT COLLAR BY CUTTING THEM JUST BEFORE THEY MAKE AN ABRUPT TURN.



REMOVE STRUCTURAL ROOTS (4 SHOWN IN BLACK) EXTENDING FROM ROOT BALL.



REMOVE STRUCTURAL ROOTS (4 SHOWN IN BLACK) DEFLECTED ON ROOT BALL PERIPHERY. SMALL ROOTS (1/4" OR LESS) AT THE PERIPHERY OF THE ROOT BALL ARE NOT DEFINED AS DEFECTS AND DO NOT NEED TO BE REMOVED.

NOTES:
1- ALL TREES SHOWN ARE REJECTABLE UNLESS THEY UNDERGO RECOMMENDED CORRECTION.
2- FIRST STEP 1, THEN STEP 2. ADJUST HOLE DEPTH TO ALLOW FOR THE REMOVAL OF EXCESS SOIL AND ROOTS OVER THE ROOT COLLAR.
3- ROOTS AND SOIL MAY BE REMOVED DURING THE CORRECTION PROCESS; SUBSTRATE/SOIL SHALL BE REPLACED AFTER THE CORRECTION HAS BEEN COMPLETED.
4- TREES SHALL PASS ROOT OBSERVATIONS DETAIL FOLLOWING CORRECTION.

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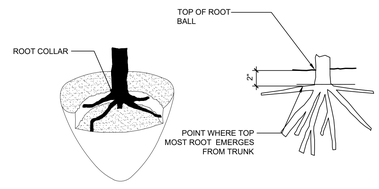
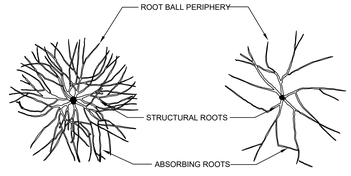
ACCEPTABLE

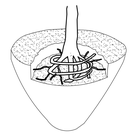


THE POINT WHERE TOP-MOST ROOT(S) EMERGES FROM THE TRUNK (ROOT COLLAR) SHOULD BE WITHIN THE TOP 2" OF SUBSTRATE. THE ROOT COLLAR AND THE ROOT BALL INTERIOR SHOULD BE FREE OF DEFECTS INCLUDING CIRCLING, KINKED, ASCENDING, AND STEM GIRDLING ROOTS. STRUCTURAL ROOTS SHALL REACH THE PERIPHERY NEAR THE TOP OF THE ROOT BALL.

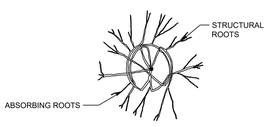


ROOTS RADIATE FROM TRUNK AND REACH SIDE OF ROOT BALL WITHOUT DEFECTING DOWN OR AROUND.

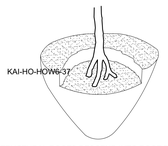
REJECTABLE



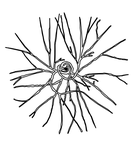
STRUCTURAL ROOTS CIRCLE INTERIOR OF ROOT BALL. NO STRUCTURAL ROOTS ARE HORIZONTAL AND REACH THE ROOT BALL PERIPHERY NEAR THE TOP OF THE ROOT BALL.



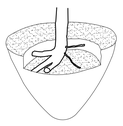
ONLY ABSORBING ROOTS REACH THE PERIPHERY NEAR THE TOP OF THE ROOT BALL. STRUCTURAL ROOTS MOSTLY WRAP OR ARE DEFLECTED ON THE ROOT BALL INTERIOR.



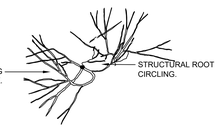
STRUCTURAL ROOTS DESCEND INTO ROOT BALL INTERIOR. NO STRUCTURAL ROOTS ARE HORIZONTAL AND REACH THE ROOT BALL PERIPHERY NEAR THE TOP OF THE ROOT BALL.



STRUCTURAL ROOTS CIRCLE AND DO NOT RADIATE FROM THE TRUNK.



STRUCTURAL ROOTS PRIMARILY GROW TO ONE SIDE.



STRUCTURAL ROOTS MISSING FROM ONE SIDE, AND/OR GROW TANGENT TO TRUNK.

NOTES:
1- OBSERVATIONS OF ROOTS SHALL OCCUR PRIOR TO ACCEPTANCE. ROOTS AND SOIL MAY BE REMOVED DURING THE OBSERVATION PROCESS; SUBSTRATE/SOIL SHALL BE REPLACED AFTER THE OBSERVATIONS HAVE BEEN COMPLETED.

2- SEE SPECIFICATIONS FOR OBSERVATION PROCESS AND REQUIREMENTS.

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1 ROOT OBSERVATIONS DETAIL - BALLED AND BURLAPPED

1 1/2" = 1'-0"

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HOWELL PUBLIC SCHOOL

1224 W GRAND RIVER AVE HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
DESIGN DEVELOPMENT	01/29/2026
CONSTRUCTION DOCUMENT	07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE
PLANTING DETAILS

SHEET NO.
L230

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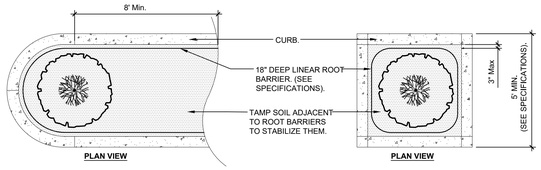

NOTES:
1- ROOT BARRIERS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

2- ROOT BARRIERS SHALL BE INSTALLED WHEN ROOT BALL IS LOCATED WITHIN 8' OF PAVEMENT.

1 ROOT BARRIERS - PARKING LOT ISLANDS

3/8" = 1'-0"

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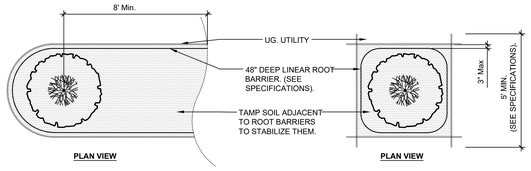
KAI-HO-HOW-07



NOTES:
1- ROOT BARRIERS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

2- ROOT BARRIERS SHALL BE INSTALLED WHEN ROOT BALL IS LOCATED WITHIN 8' OF UNDERGROUND UTILITIES.

2 ROOT BARRIERS - UNDERGROUND UTILITIES

3/8" = 1'-0"

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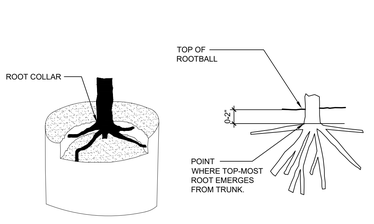
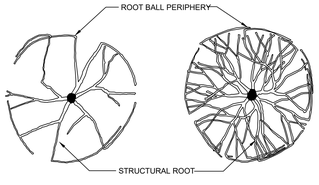
KAI-HO-HOW6-03

ACCEPTABLE

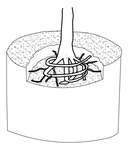


THE POINT WHERE TOP-MOST ROOT(S) EMERGES FROM THE TRUNK (ROOT COLLAR) SHOULD BE WITHIN THE TOP 2" OF SUBSTRATE. THE ROOT COLLAR AND THE ROOT BALL INTERIOR SHOULD BE FREE OF DEFECTS INCLUDING CIRCLING, KINKED, ASCENDING, AND STEM GIRDLING ROOTS. STRUCTURAL ROOTS SHALL REACH THE PERIPHERY NEAR THE TOP OF THE ROOT BALL.

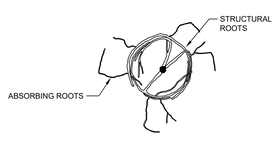


ROOTS RADIATE FROM TRUNK AND REACH SIDE OF ROOT BALL WITHOUT DEFLECTING DOWN OR AROUND.

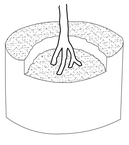
REJECTABLE



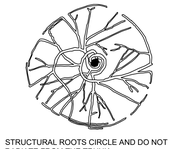
STRUCTURAL ROOTS CIRCLE INTERIOR OF ROOT BALL. NO STRUCTURAL ROOTS ARE HORIZONTAL AND REACH THE ROOT BALL PERIPHERY NEAR THE TOP OF THE ROOT BALL.



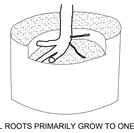
ONLY ABSORBING ROOTS REACH THE PERIPHERY NEAR THE TOP OF THE ROOT BALL. STRUCTURAL ROOTS MOSTLY WRAP OR ARE DEFLECTED ON THE ROOT BALL INTERIOR.



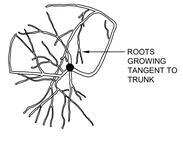
STRUCTURAL ROOTS DESCEND INTO ROOT BALL INTERIOR. NO STRUCTURAL ROOTS ARE HORIZONTAL AND REACH THE ROOT BALL PERIPHERY NEAR THE TOP OF THE ROOT BALL.



STRUCTURAL ROOTS CIRCLE AND DO NOT RADIATE FROM THE TRUNK.



STRUCTURAL ROOTS PRIMARILY GROW TO ONE SIDE.



STRUCTURAL ROOTS MISSING FROM ONE SIDE, AND/OR GROW TANGENT TO TRUNK.

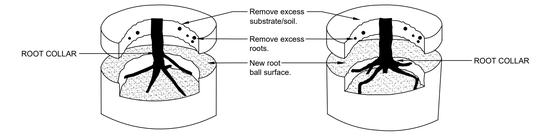
NOTES:
1- OBSERVATIONS OF ROOTS SHALL OCCUR PRIOR TO ACCEPTANCE. ROOTS AND SUBSTRATE MAY BE REMOVED DURING THE OBSERVATION PROCESS; SUBSTRATE/SOIL SHALL BE REPLACED AFTER OBSERVATION HAS BEEN COMPLETED.
2- SMALL ROOTS (1/4" OR LESS) THAT GROW AROUND, UP, OR DOWN THE ROOT BALL PERIPHERY ARE CONSIDERED A NORMAL CONDITION IN CONTAINER PRODUCTION AND ARE ACCEPTABLE HOWEVER THEY SHOULD BE ELIMINATED AT THE TIME OF PLANTING. ROOTS ON THE PERIPHERY CAN BE REMOVED AT THE TIME OF PLANTING. (SEE ROOT BALL SHAVING CONTAINER DETAIL).
3- SEE SPECIFICATIONS FOR OBSERVATION PROCESS AND REQUIREMENTS.

3 ROOT OBSERVATIONS DETAIL - CONTAINER

1 1/2" = 1'-0"

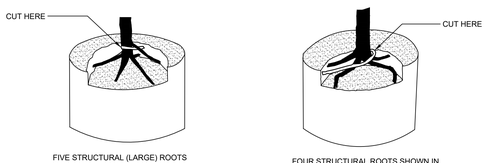
FX-PL-FX-OBSV-02

STEP 1 - REMOVE SUBSTRATE OVER ROOT COLLAR.



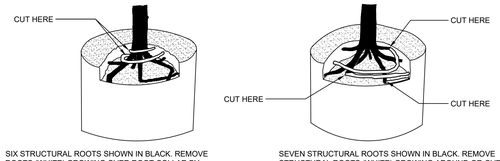
TREE PLANTED TOO DEEPLY IN ROOT BALL. REMOVE EXCESS SUBSTRATE AND ROOTS TO MEET ROOT INSPECTION DETAIL.

STEP 2 - REMOVE DEFECTS



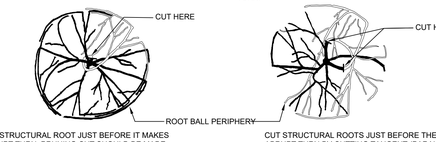
FIVE STRUCTURAL (LARGE) ROOTS SHOWN IN BLACK. REMOVE STRUCTURAL ROOT (WHITE) WRAPPING ROOT COLLAR.

FOUR STRUCTURAL ROOTS SHOWN IN BLACK. REMOVE ROOT (WHITE) GROWING OVER STRUCTURAL ROOTS.



SIX STRUCTURAL ROOTS SHOWN IN BLACK. REMOVE ROOTS (WHITE) GROWING OVER ROOT COLLAR BY CUTTING THEM JUST BEFORE THEY MAKE AN ABRUPT TURN.

SEVEN STRUCTURAL ROOTS SHOWN IN BLACK. REMOVE STRUCTURAL ROOTS (WHITE) GROWING AROUND OR OVER ROOT COLLAR BY CUTTING THEM JUST BEFORE THEY MAKE AN ABRUPT TURN.



CUT STRUCTURAL ROOT JUST BEFORE IT MAKES ABRUPT TURN. PRUNING CUT SHOULD BE MADE TANGENT (PARALLEL) TO THE TRUNK.

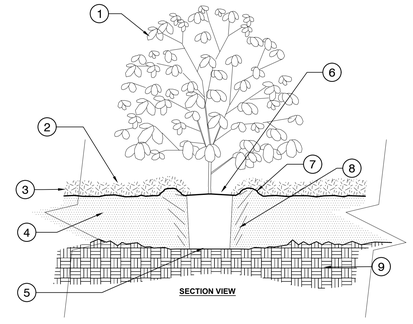
CUT STRUCTURAL ROOTS JUST BEFORE THEY MAKE ABRUPT TURN BY CUTTING TANGENT (PARALLEL) TO THE TRUNK (TWO CUTS SHOWN).

NOTES:
1- ALL TREES SHOWN ARE REJECTABLE UNLESS THEY UNDERGO RECOMMENDED CORRECTION.
2- FIRST STEP 1, THEN STEP 2. ROOTS AND SOIL MAY BE REMOVED DURING THE CORRECTION PROCESS; SUBSTRATE/SOIL SHALL BE REPLACED AFTER CORRECTION HAS BEEN COMPLETED.
3- TREES SHALL MEET ROOT OBSERVATIONS DETAIL FOLLOWING CORRECTION.
4- SMALL ROOTS (1/4" OR LESS) ON THE PERIPHERY OF THE ROOT BALL ARE COMMON WITH CONTAINER PLANT PRODUCTION. THESE SMALL ROOTS ARE NOT DEFINED AS "DEFECTS" AND CAN BE ADDRESSED AT THE TIME OF INSTALLATION (SEE ROOT BALL SHAVING CONTAINER DETAIL).

4 ROOT CORRECTION DETAIL - CONTAINER

1 1/2" = 1'-0"

FX-PL-FX-CORR-02



1. SHRUB
2. 4" LAYER OF MULCH. NO MORE THAN 1" OF MULCH ON TOP OF ROOT BALL. (SEE SPECS FOR MULCH).
3. FINISHED GRADE.
4. MODIFIED SOIL. DEPTH VARIES. (SEE SPECS FOR SOIL MODIFICATION).
5. ROOT BALL RESTS ON EXISTING OR RECOMPACTED SOIL.
6. ROOT BALL.
7. 4" HIGH X 8" WIDE ROUND - TOPPED SOIL BERM ABOVE ROOT BALL SHALL BE CONSTRUCTED AROUND THE ROOT BALL. BERM SHALL BEGIN AT ROOT BALL PERIPHERY. PRIOR TO MULCHING, LIGHTLY TAMP SOIL AROUND THE ROOT BALL IN 6" LIFTS TO BRACE SHRUB. DO NOT OVER COMPACT. WHEN THE PLANTING HOLE HAS BEEN BACKFILLED, POUR WATER AROUND THE ROOT BALL TO SETTLING SOIL.
8. EXISTING SOIL.
9. EXISTING SOIL.

NOTES:
1- SHRUBS SHALL BE OF QUALITY PRESCRIBED IN THE ROOT OBSERVATIONS DETAIL AND SPECIFICATIONS.

2- SEE SPECIFICATIONS FOR FURTHER REQUIREMENTS RELATED TO THIS DETAIL.

5 SHRUB - MODIFIED SOIL

3/4" = 1'-0"

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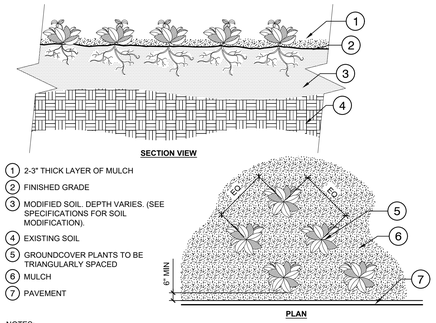
FX-PL-FX-SHRB-03



NOTES:
1- SEE PLANTING LEGEND FOR GROUNDCOVER SPECIES, SIZE, AND SPACING DIMENSION.
2- SMALL ROOTS (1/4" OR LESS) THAT GROW AROUND, UP, OR DOWN THE ROOT BALL PERIPHERY ARE CONSIDERED A NORMAL CONDITION IN CONTAINER PRODUCTION AND ARE ACCEPTABLE HOWEVER THEY SHOULD BE ELIMINATED AT THE TIME OF PLANTING. ROOTS ON THE PERIPHERY CAN BE REMOVED AT THE TIME OF PLANTING. (SEE ROOT BALL SHAVING CONTAINER DETAIL).
3- SETTLE SOIL AROUND ROOT BALL OF EACH GROUNDCOVER PRIOR TO MULCHING.

6 GROUNDCOVER

3/4" = 1'-0"

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FX-PL-FX-GROU-01

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOL

1224 W GRAND RIVER AVE HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
DESIGN DEVELOPMENT	01/29/2026
CONSTRUCTION DOCUMENT	07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE

PLANTING DETAILS

SHEET NO.

L231

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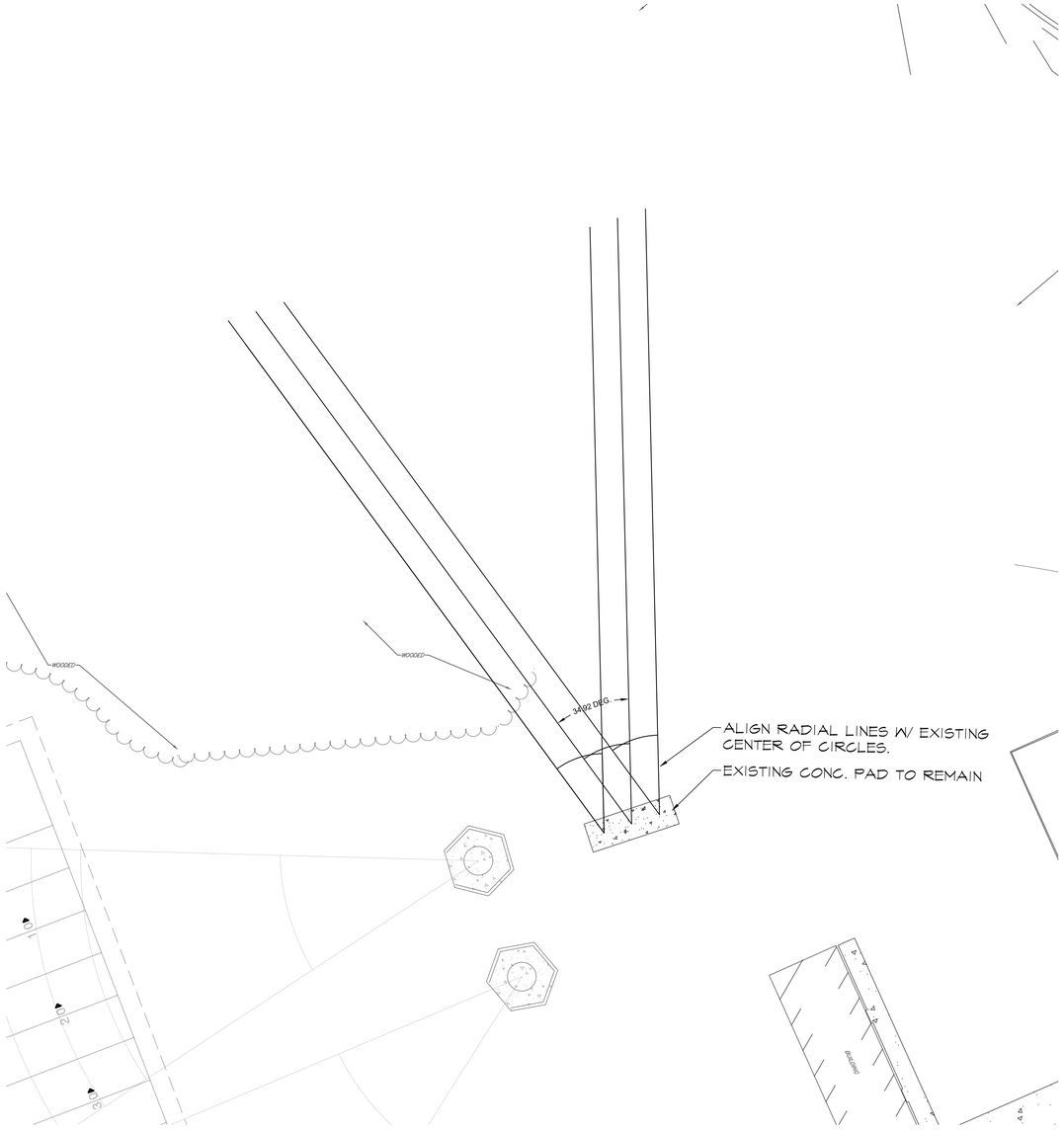

1 SHOTPUT FIELD LAYOUT

PRACTICE FIELD MARKING COLOR NOTES:

1. FOOTBALL FIELD MARKINGS = WHITE
2. DISCUS FIELD MARKINGS = RED
3. SHOTPUT FIELD MARKINGS = WHITE

SHOTPUT FIELD & MARKING NOTES:

1. RADIAL LINES 2 INCHES WIDE SHALL EXTEND FROM THE CENTER OF THE CIRCLE TO FORM AN AREA INTO WHICH LEGAL PUTS MUST BE MADE. THE INSIDE EDGES OF THESE LINES SHALL MARK THE SECTOR AND THE LINES SHALL BE PLACED EQUIDISTANT FROM THE ENDS OF THE STOPBOARD.
2. PROJECTING LINES, 2 INCHES WIDE AND 8 INCHES LONG, LYING ON THE DIAMETER EXTENDED AND OUTSIDE THE CIRCUMFERENCE, SHALL BE USED TO DESIGNATE THE BACK HALF OF THE THROWING CIRCLE.

NORTH

0 20 40 60 80 feet

1" = 20'

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ISSUANCES	DATE
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KEY PLAN

JOB NO. 2600.41F

SHEET TITLE

ATHLETICS - MARKINGS LAYOUT

SHEET NO.

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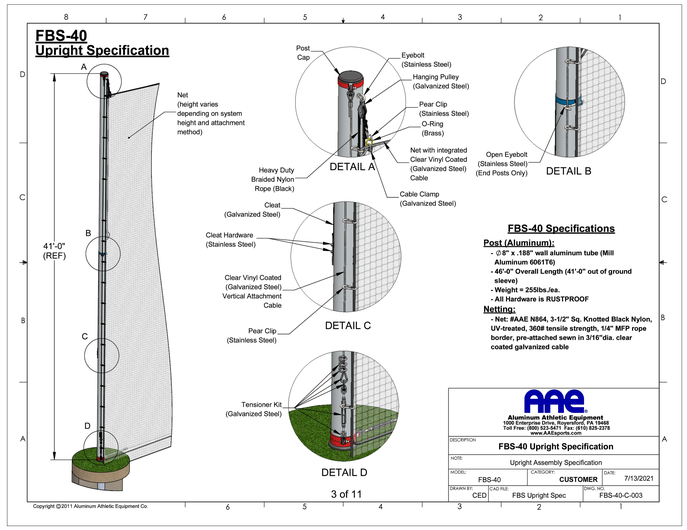
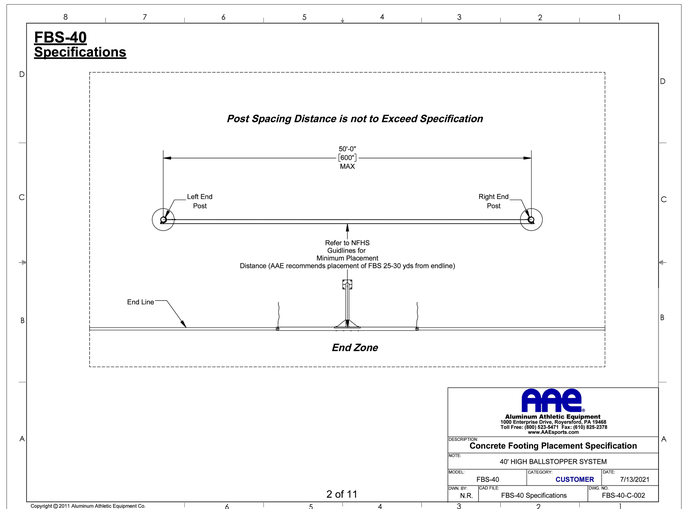


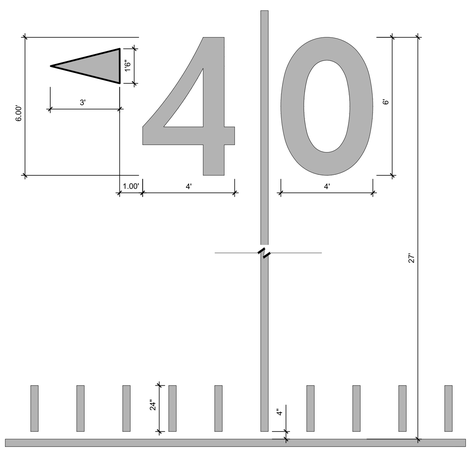
3 FOOTBALL NETTING - FBS-40 SPECIFICATION

NTS



2 FOOTBALL NETTING - PLACEMENT SPECIFICATION

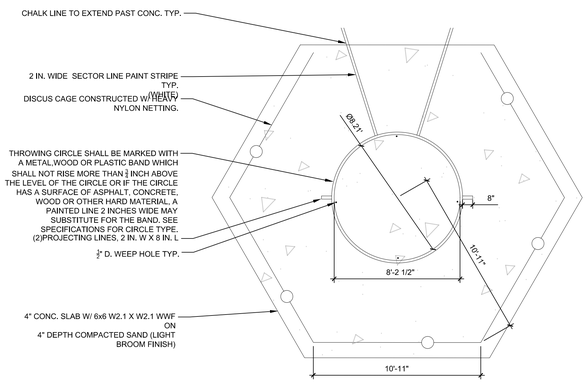
NTS



1 YARDLINE NUMBER DETAIL

3/8" = 1'-0"

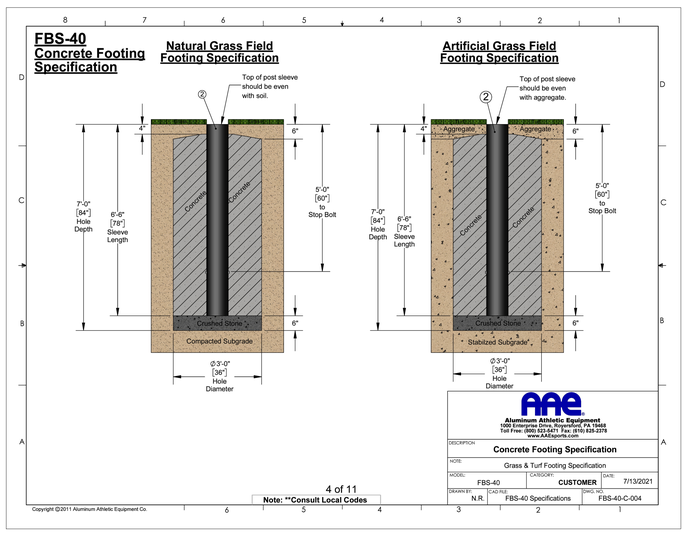
KAI-HO-HOW6-16



5 DISCUS PAD & CAGE DETAIL

1/4" = 1'-0"

KAI-HO-HOW6-18



4 FOOTBALL NETTING - CONCRETE FOOTING SPECIFICATION

NTS

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
DESIGN DEVELOPMENT	01/29/2026
CONSTRUCTION DOCUMENT	07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE

ATHLETIC FIELD DETAILS

SHEET NO.

L350

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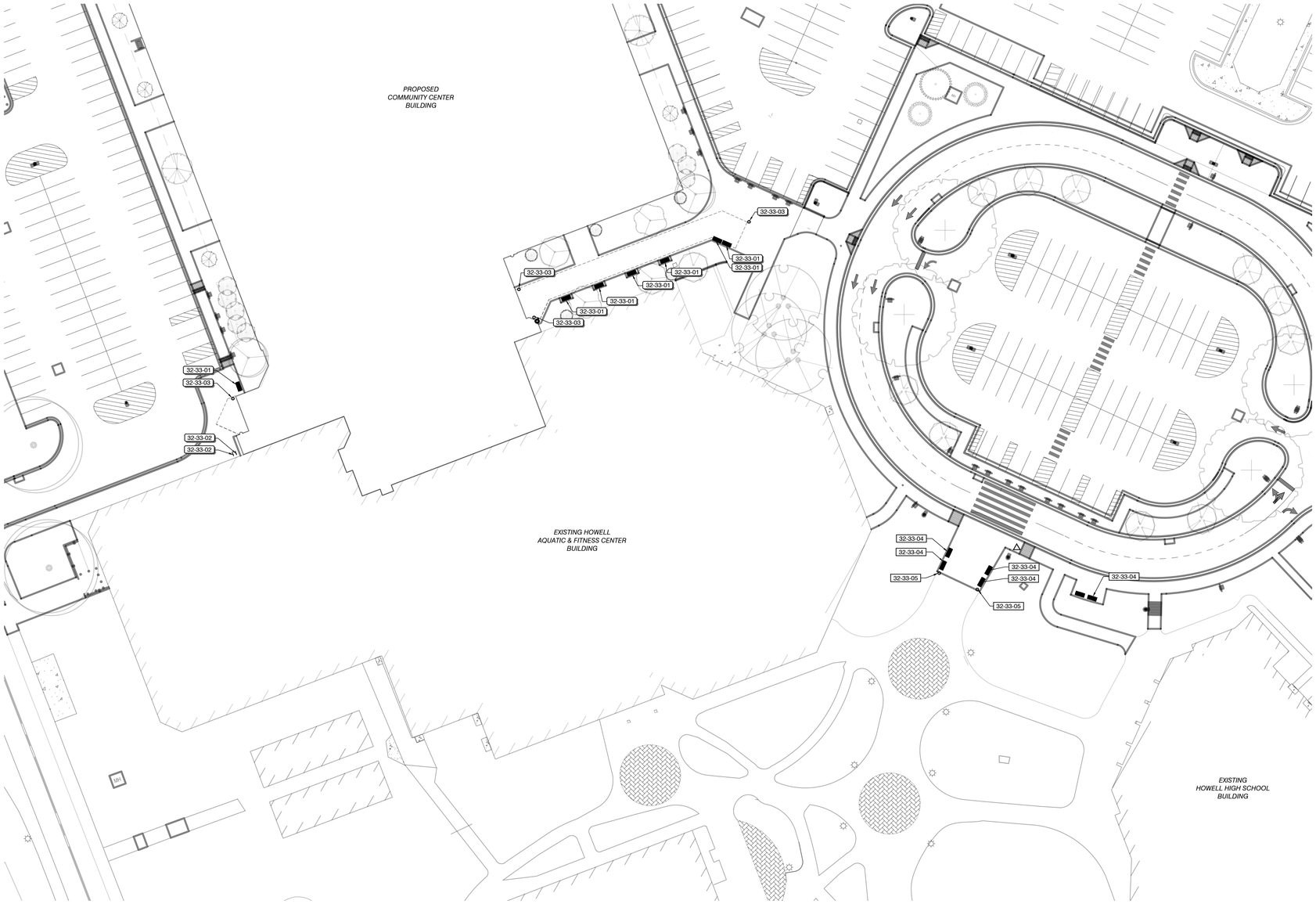


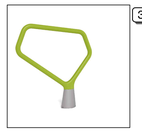
NORTH

0 30 60 90 120 feet

1" = 30'

SHEET NOTES:

1. OWNER & LANDSCAPE ARCHITECT TO CONFIRM FURNISHING COLORS AND TEXTURES BEFORE PURCHASING OR INSTALLATION.

PHOTO	CODE	DESCRIPTION	QTY
Site Furnishings			
	32-33-01	Landscape Forms: Prexus Bench 69in. backed seat w/ no arms, straight 3-unit seat, surface mount Frame: Custom Green: Derbyshire SW 6741, Powdercoat Installation Type: Surface Mount	7
	32-33-02	Landscape Forms FGP-BR FGP Series Bike Rack. Natural aluminum body with durable anodized finish. 30in. W x 4in. D x 32in. H. Bike Frame: Steel Powdercoat, Custom Color Green= Derbyshire SW 6741, Installation Type: Embedded	2
	32-33-03	Landscape Forms: Park Vue Receptacle Side Opening, with liner Lid: Black Base: Custom Green: Derbyshire SW 6741, Powdercoat Basket: Custom Green: Derbyshire SW 6741, Powdercoat Installation Type: Surface Mount	4
	32-33-04	Salvaged: Prexus Bench (Landscape Forms) 69in. backed seat w/ no arms, straight 3-unit seat, surface mount Frame: Custom Green: Derbyshire SW 6741, Powdercoat Installation Type: Surface Mount	6
	32-33-05	Salvaged: Receptacle with basket & liner Lid: Black, with side opening Base: Custom Green: Derbyshire SW 6741, New Powdercoat Basket: Custom Green: Derbyshire SW 6741, New Powdercoat	2

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HOWELL PUBLIC SCHOOL

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KEY PLAN

JOB NO. 2600.41F

SHEET TITLE

SITE AMENITY LAYOUT

SHEET NO.

L410

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SHEET NOTES:

1. OWNER & LANDSCAPE ARCHITECT TO CONFIRM FURNISHING COLORS AND TEXTURES BEFORE PURCHASING OR INSTALLATION.

Instructions

Assembly
Installation
Operation

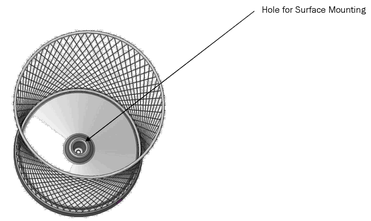
7/2007

Parc Vue™ Litter Receptacle

HANDLE WITH CARE! Pangard II® Polyester Powder coat is a strong, long-lasting finish. Protect this finish from damage during installation. Place unwrapped powder coated parts on packaging foam or other non-abrasive surface. Do not place or slide powder coated parts on concrete or other hard or abrasive surfaces – this will damage the finish causing rust to occur. Use touch-up paint to repair any finish abrasions.

Recommended Procedure for Surface Mounting:

1. All litter receptacle bases have a center hole that will accommodate anchors 1/2" diameter or less.
2. The installer is responsible for anchoring hardware suitable for site conditions. Corrosion resistant anchors are recommended. The receptacle should be surface mounted with nylon glides in place.
3. Place the unit in the desired position.
4. Remove the top and lift out the liner.
5. Mark anchor location through the hole in the base.
6. Move the unit to allow access for drilling holes.
7. Complete the installation according to the anchor manufacturer's instructions.



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3 RECEPTACLE INSTALLATION DETAIL

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FGP Bike Rack
Installation Guide

Date: June 10, 2015
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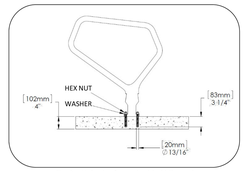

Fig. 3 – Hole size for embedded bike rack

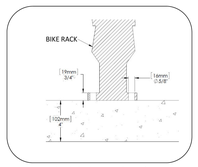

Fig. 4. – Anchor hole clearance for surface mount

INSTALLATION PROCEDURE:

WARNING! **Unit must be anchored.**

1. Remove cover plates. See Fig. 2. Set aside on non-marring surface. Retain the two screws used to secure the cover plates together.
2. Set bike rack in position..
3. Mark hole locations. See Fig. 1 for recommended spacing.
4. Move bike rack and drill holes. Clear debris from holes.

FOR EMBEDDED MOUNT:

1. Fill holes with adhesive to level recommended by adhesive manufacturer.
2. Set threaded rods in place and wipe away excess adhesive.
3. Test fit unit over threaded rods to ensure accurate placement.
4. Remove unit and allow adhesive to fully cure per adhesive manufacturer's recommendations.
5. Once adhesive is fully cured, set unit in position over threaded rods.
6. Install washer and hex nut as shown in Fig. 3.
7. Reinstall the cover plates.

FOR SURFACE MOUNT:

1. Set unit in place and install anchor bolts (not supplied by Landscape Forms) according to anchor manufacturer's instructions. See Fig. 4 for anchor hole clearances.
2. Reinstall the cover plates.

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5 BICYCLE RACK INSTALLATION DETAIL 2

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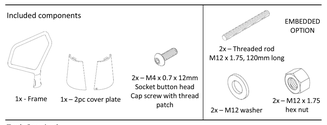
Included components



Tools Required

- Unit ships assembled
- 2.5mm hex key
- 19mm wrenches for embedded option
- Hammer drill with masonry bits
- For embedded mount option: chemical anchoring adhesive (Hilti HIT RE 500 or equivalent)
- For surface mount option: stainless steel anchoring hardware, (2) required per unit (not included). Landscape Forms, Inc. recommends maximum 12mm dia bolt, with a minimum embedded depth of 80mm (see Fig. 4 for bolt clearances).

WARNING! **Unit must be anchored.**

HANDLE WITH CARE! The finish can be scuffed by contact with tools, concrete, or other abrasive surfaces. Protect the finish from damage during installation.

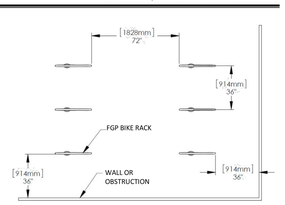


Fig. 1 - Recommended spacing, according to Association of Pedestrian and Bicycle Professionals (APBP), 2nd edition

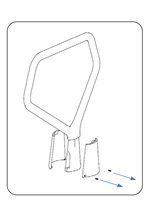


Fig. 2 – remove cover plates

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4 BICYCLE RACK INSTALLATION DETAIL

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2 BENCH INSTALLATION DETAIL

NTS

Plexus-II Bench
Installation Guide

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Surface Mount or Wall Mount Installation:

1. Set unit in place. Place all units that are to be installed in a group before anchoring any of them. Horizontal support tubes may be aligned and butted end-to-end.
2. Mark hole locations. See Fig. 5 for surface mount plate details. See Figs. 6, 7 and 8 for wall mount details.
3. Move unit to allow access for drilling holes.
4. Drill holes at marked locations according to anchor manufacturer's recommendations. Minimum 2-1/2" anchor depth is recommended.
5. Move unit back into place and install anchors.

Embedded Installation:

1. Set unit in place.
2. Mark hole locations.
3. Move unit to allow access for excavating holes.
4. Excavate area for each vertical support as shown in Fig. 9.
5. Set unit in place and secure before pouring concrete. Clean any excess concrete off of support tube.

Seat, Table and Arm Installation:

1. Place seat or table on support tube, aligning mounting adapters.
2. Install arms, if specified, as shown in Fig. 11. Backed seats have left and right style arms, as determined by sitting in the seat. Straight backless seats have a universal style arm.
3. Using hardware provided, insert cap screw through adapters and install the hex nut on the inside of the bracket. See Fig. 10 or Fig. 11. Repeat for other side.
4. Tighten hardware on one side halfway, and then tighten the other side halfway. Repeat until each side is securely fastened. Tighten to 40 ft-lbs.

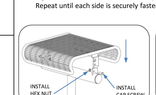

Fig. 10– Seat install – no arm

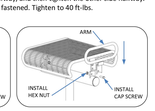

Fig. 11 – Seat install – with arm

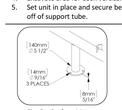

Fig. 5 – Surface Mount

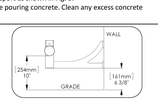

Fig. 6 – Wall Mount Up for backed seats

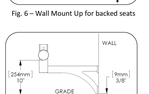

Fig. 7 – Wall Mount Down for backless seats

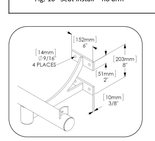

Fig. 8 – Wall mount bracket detail

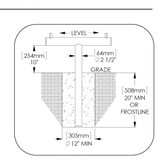

Fig. 9 – Embedded

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1 BENCH INSTALLATION DETAIL

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOL

1224 W GRAND RIVER AVE HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
DESIGN DEVELOPMENT	01/29/2026
CONSTRUCTION DOCUMENT	07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE
SITE AMENITY DETAILS

SHEET NO.
L420

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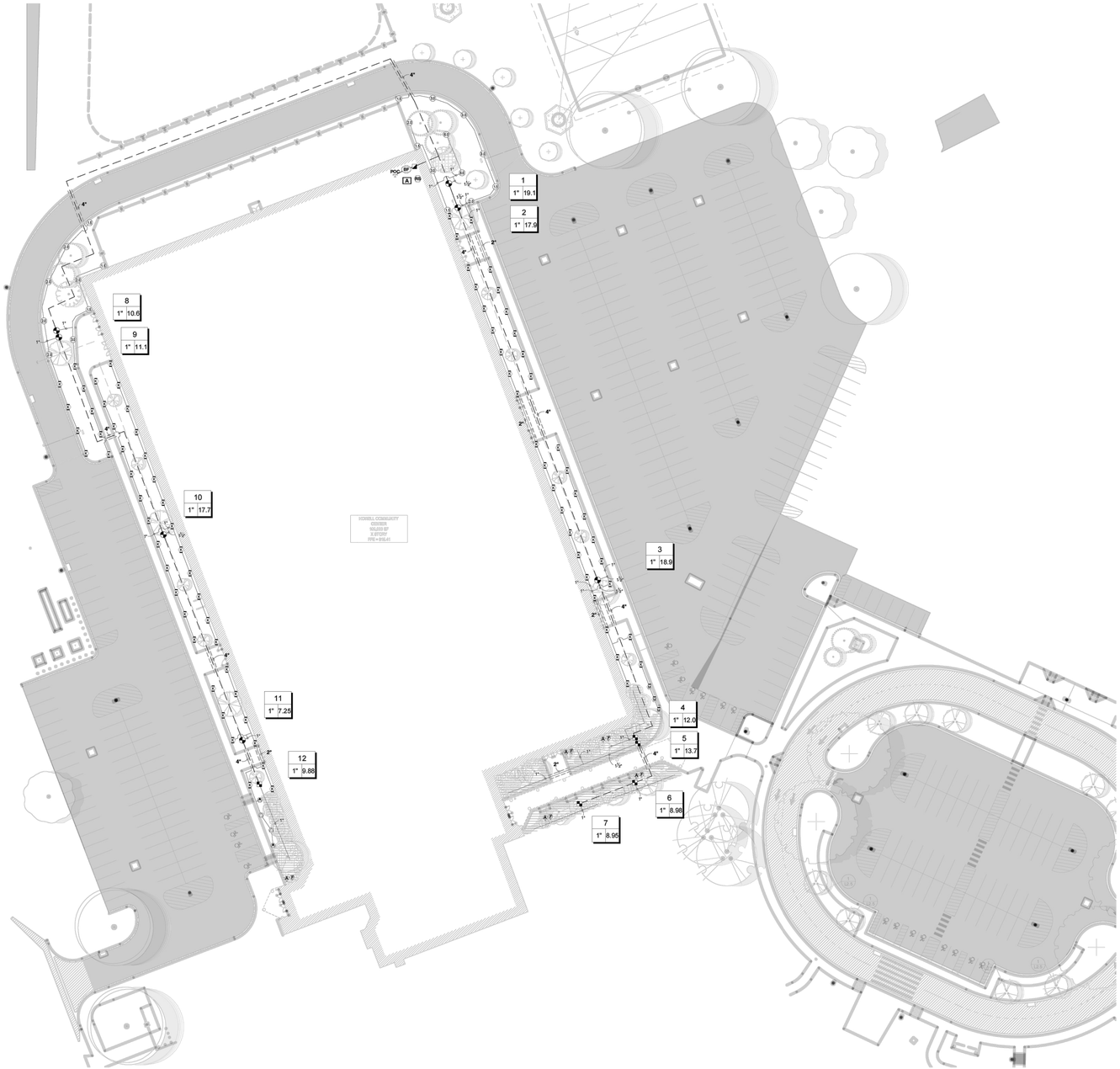

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL	QTY
LST RST SST	Hunter MP Strip PROS-04-PRS40-CV	4
M L D	Hunter MP1000 PROS-04-PRS40-CV	3
X D B	Hunter MP2000 PROS-04-PRS40-CV	80

SYMBOL	MANUFACTURER/MODEL	QTY
1.5	Hunter PGP-04 1.5	7
2.0	Hunter PGP-04 2.0	7
3.0	Hunter PGP-04 3.0	5
6.0	Hunter PGP-04 6.0	2

SYMBOL	MANUFACTURER/MODEL	QTY
	Rain Bird XCZ-100-PRF 1"	5
F	Flush Valve	5
A	Drip Air Relief Valve	5
	Area to Receive Dripline Netafim TLDL-06-12-12	5,348 lf

SYMBOL	MANUFACTURER/MODEL	QTY
	Hunter PGV-101G 1"	7
	Hunter HQ-44RC 1"	1
BF	Febco 765 1"	1
A	Hunter P2C-400 with (03) PCM-300	1
RS	Hunter WR-CLIK	1
POC	POC 1"	1
	Irrigation Lateral Line: Polyethylene Pipe 100 PSI 1"	2,440 lf
	Irrigation Lateral Line: Polyethylene Pipe 100 PSI 1 1/2"	99.2 lf
	Irrigation Mainline: PVC Class 160 SDR 26 1 1/2"	1,532 lf
	Pipe Sleeve: PVC Class 160 SDR 26 2"	120.1 lf
	Pipe Sleeve: PVC Class 160 SDR 26 4"	213.2 lf

Valve Callout

IRRIGATION SPECIFICATIONS

1. IRRIGATION SYSTEM DESIGN BASED ON 20 GPM AT 40 PSI.
2. IRRIGATION DESIGN IS FROM THE POINT OF CONNECTION(POC)ONLY. THE DESIGN IS BASED ON GALLONS PER MINUTE(GPM)AND POUNDS PER SQUARE INCH(PSI)FURNISHED BY OTHERS.
3. IRRIGATION CONTRACTOR IS TO VERIFY POINT OF CONNECTION IN THE FIELD. INSTALLER IS TO CONFIRM THE MINIMUM DISCHARGE REQUIREMENTS OF THE POINT OF CONNECTION AS INDICATED ON THE LEGEND PRIOR TO INSTALLATION.
4. THE PRESSURE REQUIREMENT AT THE POINT OF CONNECTION IS BASED ON NO MORE THAN 5 FEET OF ELEVATION CHANGE IN THE AREAS OF IRRIGATION.
5. ALL PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND ACCORDING TO LOCAL BUILDING, ELECTRICAL, AND PLUMBING CODES.
6. IRRIGATION CONTRACTOR WILL ARRANGE INSPECTIONS REQUIRED BY LOCAL AGENCIES AND ORDINANCES DURING THE COURSE OF CONSTRUCTION AS REQUIRED. ALL WIRING TO BE PER LOCAL CODE. BACKFLOW PREVENTION TO BE PER LOCAL CODE.
7. LOCATION OF IRRIGATION COMPONENTS SHOWN ON DRAWING IS APPROXIMATE. ACTUAL PLACEMENT MAY VARY SLIGHTLY AS REQUIRED TO ACHIEVE FULL, EVEN COVERAGE.
8. ALL SPRINKLER HEADS SHALL BE INSTALLED PERPENDICULAR TO FINISH GRADES. EXCEPT AS OTHERWISE INDICATED.
9. INSTALL IRRIGATION MAINS WITH A MINIMUM 18" OF COVER BASED ON FINISH GRADES. INSTALL IRRIGATION LATERALS WITH MINIMUM 12" OF COVER BASED ON FINISH GRADES.
10. PIPE LOCATIONS ARE DIAGRAMMATIC. VALVES AND MAINLINE SHOWN IN PAVED AREAS ARE FOR GRAPHIC CLARITY ONLY.
11. THE IRRIGATION CONTRACTOR SHALL COMPLY WITH PIPE SIZES AS INDICATED.
12. ALL WIRE SPLICES OR CONNECTIONS SHALL BE MADE WITH APPROVED WATERPROOF WIRE CONNECTIONS AND BE IN A VALVE OR SPLICE BOX.
13. ALL CONTROL WIRING DOWNSTREAM OF THE CONTROLLER IS TO BE 14 AWG, UL APPROVED DIRECT BURY.
14. THE DESIGN IS BASED ON THE SITE INFORMATION AND/OR DRAWING SUPPLIED WITH THE DESIGN CRITERIA BEING SET(AREA TO BE IRRIGATED, EQUIPMENT MANUFACTURER AND MODEL TO BE USED, WATER SOURCE INFORMATION, ELECTRICAL POWER AVAILABILITY, ETC...). SITEONE LANDSCAPE SUPPLY BEARS NO RESPONSIBILITY OR LIABILITY FOR ANY ERRORS IN DESIGN OR INSTALLATION THAT ARISE DUE TO INACCURACIES IN THE ABOVE REFERENCED INFORMATION SUPPLIED TO SITEONE LANDSCAPE SUPPLY LANDSCAPES IN RELATION TO THIS PROJECT, UNLESS OTHERWISE NOTED.

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HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOLS

HOWELL, MI, 48843

Design Date: 01/27/26
Revision Date: 06/23/26
Checked By: C.BEST

SCALE: 1" = 50' - 0"
0' 25' 50' 100'

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HOWELL PUBLIC SCHOOL
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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
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CONSTRUCTION DOCUMENT	07/30/2026

KEY PLAN

JOB NO. 2600.41F

SHEET TITLE
IRRIGATION PLAN

SHEET NO.
L710

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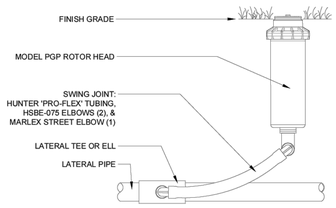
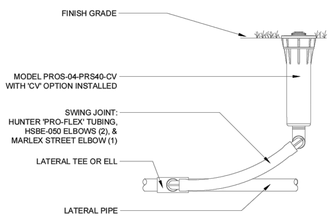


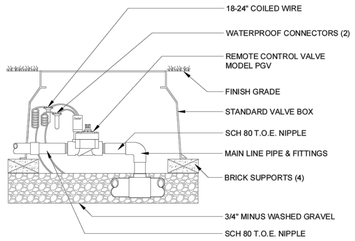
1 PGP ROTOR HEAD WITH PRO-FLEX TUBING

NTS S1-RO-HUN-01



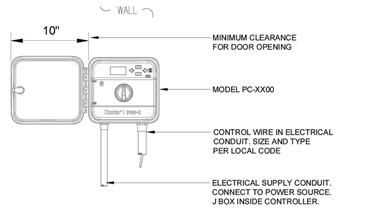
2 PROS-04-PRS40-CV MP ROTATOR SPRINKLER

S1-RO1-HUN-01



3 PGV GLOBE VALVE 1"

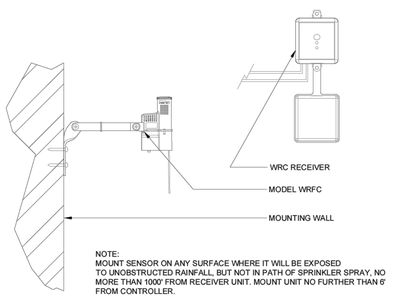
S1-VA-HUN-01



NOTE
MOUNT CONTROLLER WITH LCD SCREEN AT EYE LEVEL. CONTROLLER SHALL BE HARD-WIRED TO GROUNDED 110 VAC SOURCE.

4 PRO-C CONTROLLER

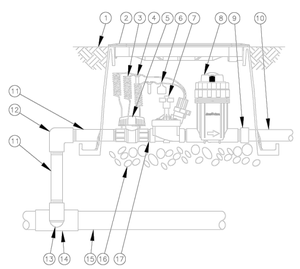
NTS S1-CO-HUN-01



NOTE:
MOUNT SENSOR ON ANY SURFACE WHERE IT WILL BE EXPOSED TO UNOBSTRUCTED RAINFALL, BUT NOT IN PATH OF SPRINKLER SPRAY, NO MORE THAN 1000' FROM RECEIVER UNIT. MOUNT UNIT NO FURTHER THAN 6' FROM CONTROLLER.

5 WIRELESS RAIN/FREEZE-CLIK

S1-SE-HUN-02



1. FINISH GRADE/TOP OF MULCH
2. VALVE BOX WITH COVER: RAIN BIRD VB-STD
3. 30-INCH LINEAR LENGTH OF WIRE, COILED
4. WATERPROOF CONNECTION: RAIN BIRD DB SERIES
5. 1-INCH BALL VALVE (INCLUDED IN XCZ-PRF-100-KIT)
6. ID TAG
7. REMOTE CONTROL VALVE: RAIN BIRD PESB (INCLUCED IN XCZ-PRF-100-KIT)
8. PRESSURE REGULATING QUICK CHECK BASKET FILTER: RAIN BIRD PRF-QKCHK-100 (INCLUDED IN XCZ-PRF-100-KIT)
9. PVC SCH 40 FEMALE ADAPTOR
10. LATERAL PIPE
11. PVC SCH 80 NIPPLE (LENGTH AS REQUIRED)
12. PVC SCH 40 ELL
13. PVC SCH 80 NIPPLE (2-INCH LENGTH, HIDDEN) AND PVC SCH 40 ELL
14. PVC SCH 40 TEE OR ELL
15. MAINLINE PIPE
16. 3-INCH MINIMUM DEPTH OF 3/4-INCH WASHED GRAVEL
17. PVC SCH 80 NIPPLE, CLOSE (INCLUDED IN XCZ-PRF-100-KIT)

6 Rain Bird XCZ-100-PRF ZONE KIT

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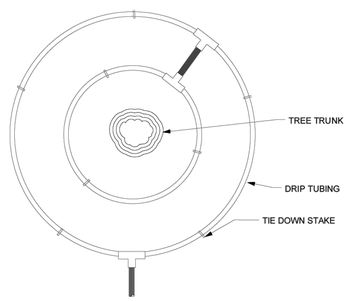

7 TYPICAL DRIP TREE RING

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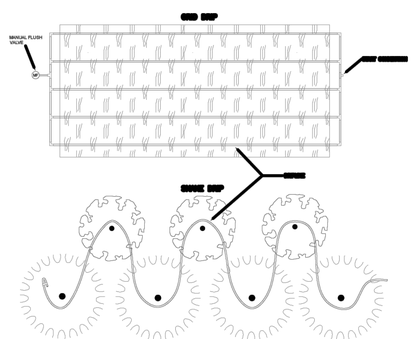

8 TYPICAL DRIP TUBING LAYOUT

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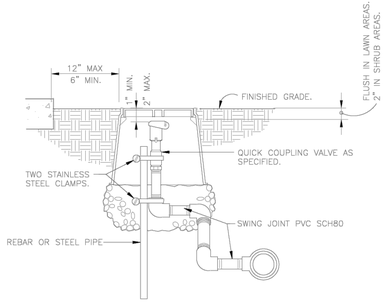
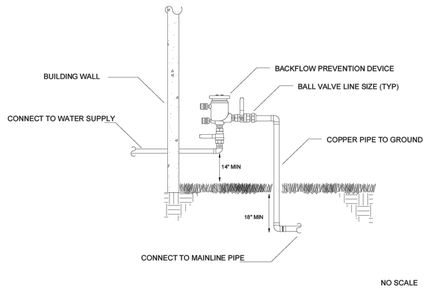


9 QUICK COUPLING VALVE IN BOX

S1-QU-01



NO SCALE

10 PRESSURE VACUUM BREAKER

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IRRIGATION DETAILS

SHEET NO.
L720

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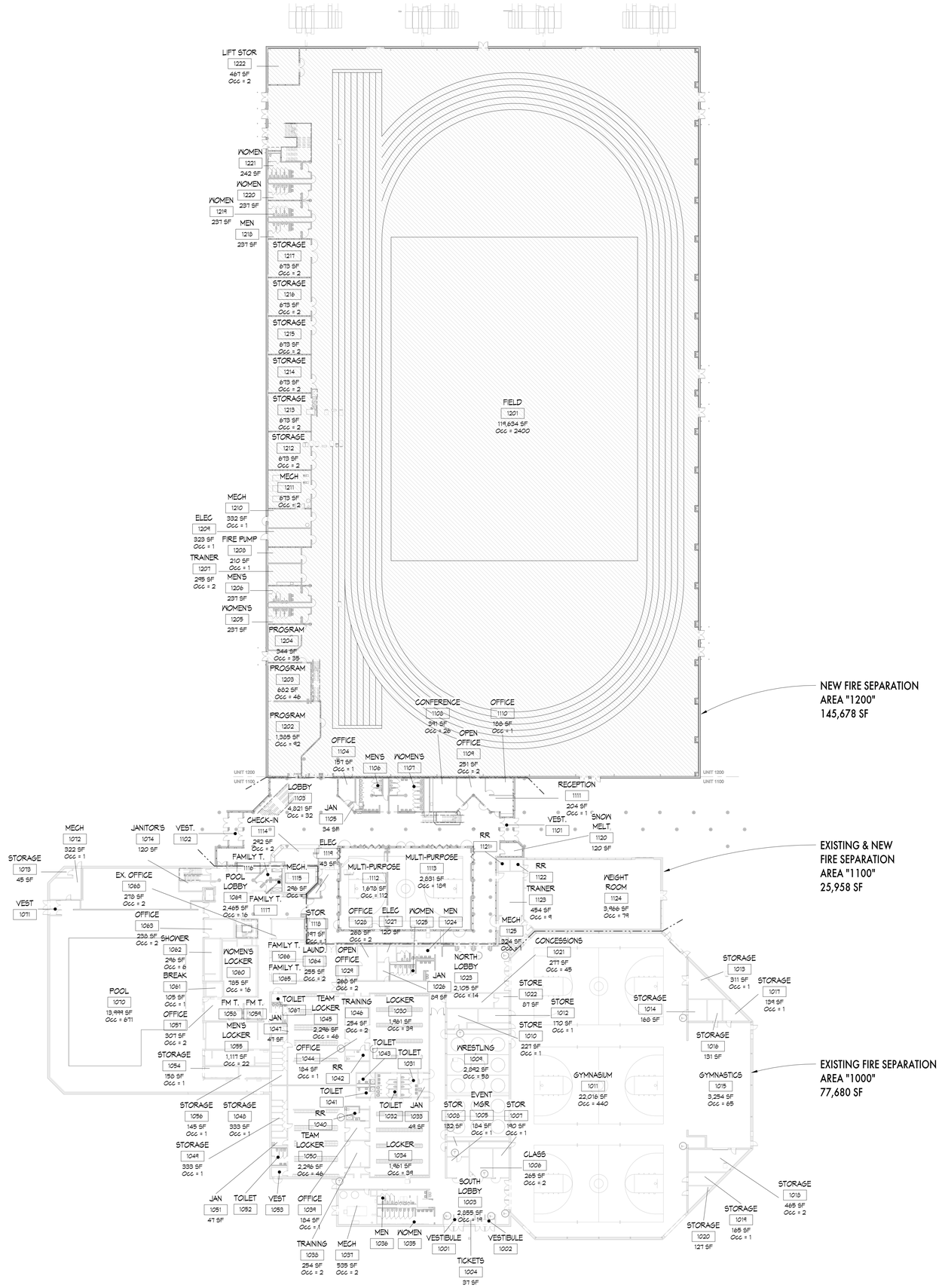

1 FIRST FLOOR CODE COMPLIANCE PLAN
1" = 30'-0"

CODE COMPLIANCE LEGEND

THIS PORTION OF THE BUILDING IS TYPE 1-B CONSTRUCTION
-PRIMARY STRUCTURAL STEEL COMPONENTS REQUIRE 1-HOUR RATING FROM FIRST FLOOR LEVEL UP TO THE TOP OF THE EXTERIOR WALL

2 HOUR FIRE RATED BUILDING SEPARATION.

NAME
####
AREA
OCCUPANT LOAD
ROOM TAG

GENERAL NOTES

1. CORRIDOR WALLS SHALL EXTEND TIGHT TO UNDERSIDE OF DECK TO RESIST THE PASSAGE OF SMOKE.
2. SEAL ALL PENETRATIONS AND OPENINGS IN FIRE RATED CONSTRUCTION WITH EQUAL OR GREATER RATED SEALANT, FIRE STOPPING, OR CONSTRUCTION.

BUILDING CODE INFORMATION

BUILDING CODES:	MICHIGAN BUILDING CODE 2021 MICHIGAN LIFE SAFETY CODE 2012
BARRIER FREE DESIGN:	MICHIGAN ACCESSIBILITY CODE 2017
PLUMBING CODE:	MICHIGAN PLUMBING CODE 2021
MECHANICAL CODE:	MICHIGAN MECHANICAL CODE 2021
ELECTRICAL CODE:	MICHIGAN ELECTRICAL CODE 2023
OCCUPANCY:	A-4 (ASSEMBLY)
CONSTRUCTION TYPE:	UNIT 1000/2000: II B UNIT 1100/2100: II B UNIT 1200/2200: I B
FIRE SUPRESSION:	FULLY SPRINKLERED
SEPARATION OF BUILDING AREAS:	2 HR.

MEANS OF EGRESS REQUIREMENTS

	ALLOWED
COMMON PATH (M.B.C. 1006.2.1):	75' - 0"
ASSEMBLY SEATING AREAS 1030.8):	30' - 0"
MAX DEAD END CORRIDOR (MBC 1020.5):	20' - 0"
EXIT TRAVEL DIST. (MBC 1017.2):	250' - 0"
OCCUPANT LOAD:	UNIT 1000/2000: 1,878 (4 EXITS REQUIRED) UNIT 1100/2100: 512 (3 EXITS REQUIRED) UNIT 1200/2200: 3,811 (4 EXITS REQUIRED) TOTAL FOR COMPLEX: 6,201
CORRIDOR RATING (MBC 1020.2):	0 - HOUR
HORIZONTAL EXITS (MBC 1026):	1/2 OF REQUIRED EXITS ALLOWED THROUGH ADJACENT UNIT
MAN AND OTHER EXITS (MBC 1030):	1/2 OF OCCUPANT LOAD TO BE SERVED BY MAIN EXIT
NO OF PLUMBING FIXTURES: MPC TABLE 403.1	REQUIRED: M - 33 WC., 18 LAV ; F - 64 WC., 21 LAV ; 6 DF TOTAL PROVIDED: M - 44 WC. (27 WC & 22 URINAL), 26 LAV ; F - 82 WC., 32 LAV, 2 DF, 2 SERVICE SINKS

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
SCHEMATIC DESIGN	06.02.2025
PEMB & TIMBER BID SET	10.31.2025

JOB NO. 2600.41F

N

SHEET TITLE
FIRST FLOOR CODE COMPLIANCE PLAN

SHEET NO.
A0.3

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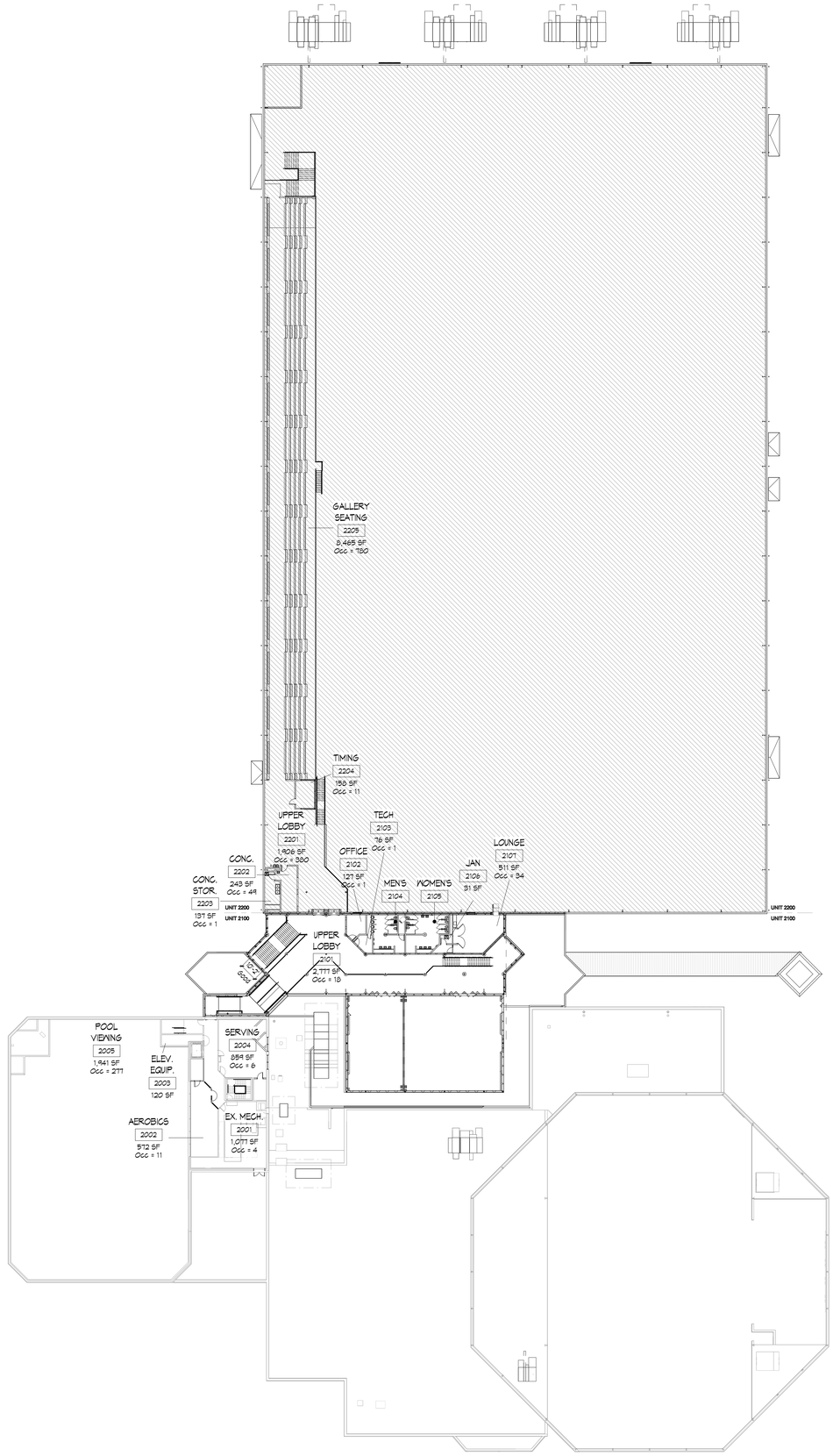

1 SECOND FLOOR CODE COMPLIANCE PLAN
1" = 30'-0"

CODE COMPLIANCE LEGEND

THIS PORTION OF THE BUILDING IS TYPE 1-B CONSTRUCTION
-PRIMARY STRUCTURAL STEEL COMPONENTS REQUIRE 1-HOUR RATING FROM FIRST FLOOR LEVEL UP TO THE TOP OF THE EXTERIOR WALL

2 HOUR FIRE RATED BUILDING SEPARATION.

NAME
ROOM TAG
AREA
OCCUPANT LOAD

GENERAL NOTES

1. CORRIDOR WALLS SHALL EXTEND TIGHT TO UNDERSIDE OF DECK TO RESIST THE PASSAGE OF SMOKE.
2. SEAL ALL PENETRATIONS AND OPENINGS IN FIRE RATED CONSTRUCTION WITH EQUAL OR GREATER RATED SEALANT, FIRE STOPPING, OR CONSTRUCTION.

BUILDING CODE INFORMATION

BUILDING CODES:	MICHIGAN BUILDING CODE 2021 MICHIGAN LIFE SAFETY CODE 2012
BARRIER FREE DESIGN:	MICHIGAN ACCESSIBILITY CODE 2017
PLUMBING CODE:	MICHIGAN PLUMBING CODE 2021
MECHANICAL CODE:	MICHIGAN MECHANICAL CODE 2021
ELECTRICAL CODE:	MICHIGAN ELECTRICAL CODE 2023
OCCUPANCY:	A-4 (ASSEMBLY)
CONSTRUCTION TYPE:	UNIT 1000/2000: II B UNIT 1100/2100: III B UNIT 1200/2200: I B
FIRE SUPRESSION:	FULLY SPRINKLERED
SEPARATION OF BUILDING AREAS:	*2 HR.*

MEANS OF EGRESS REQUIREMENTS

	ALLOWED
COMMON PATH (M.B.C. 1006.2.1):	75' - 0"
ASSEMBLY SEATING AREAS 1030.8):	30' - 0"
MAX DEAD END CORRIDOR (MBC 1020.5):	20' - 0"
EXIT TRAVEL DIST. (MBC 1017.2):	250' - 0"
OCCUPANT LOAD:	UNIT 1000/2000: 1,878 (4 EXITS REQUIRED) UNIT 1100/2100: 512 (3 EXITS REQUIRED) UNIT 1200/2200: 3,811 (4 EXITS REQUIRED) TOTAL FOR COMPLEX: 6,201
CORRIDOR RATING (MBC 1020.2):	0 - HOUR
HORIZONTAL EXITS (MBC 1026):	1/2 OF REQUIRED EXITS ALLOWED THROUGH ADJACENT UNIT
MAIN AND OTHER EXITS (MBC 1030):	1/2 OF OCCUPANT LOAD TO BE SERVED BY MAIN EXIT
NO OF PLUMBING FIXTURES: MPC TABLE 403.1	*REQUIRED: M - 33 W.C., 16 LAV ; F - 64 W.C., 21 LAV ; 6 DF* *TOTAL PROVIDED: M - 49 W.C. (27 W.C. & 22 URINAL), 26 LAV ; F - 62 W.C., 32 LAV.* *? DF, ? SERVICE SINKS.*

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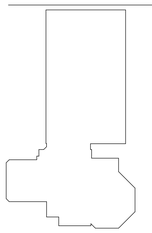
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
SCHEMATIC DESIGN	06.02.2025
PEMB & TIMBER BID SET	10.31.2025



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JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR CODE COMPLIANCE PLAN

SHEET NO.
A0.4

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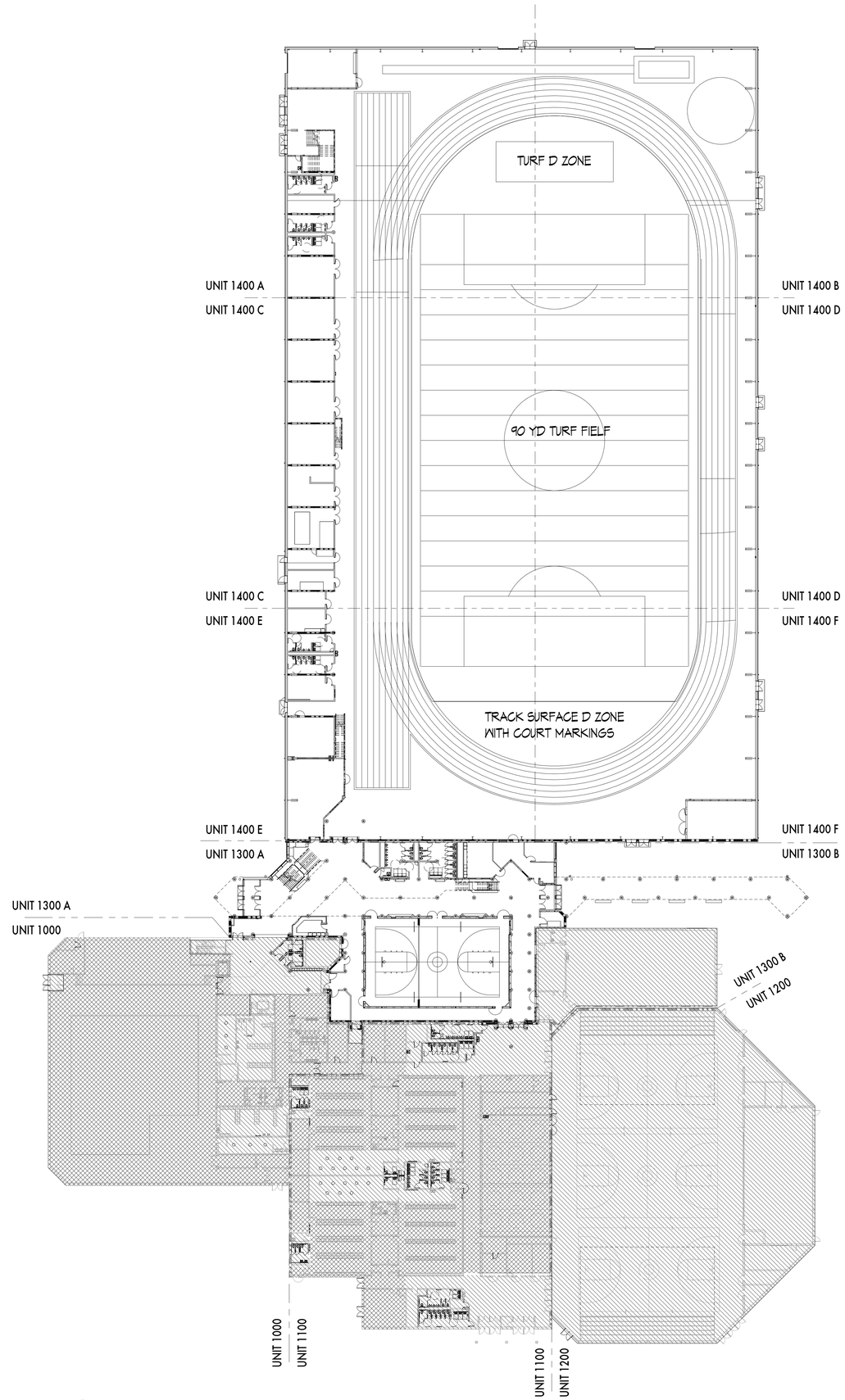

1 FIRST FLOOR COMPOSITE PLAN
1" = 30'-0"

COMPOSITE PLAN GENERAL NOTES

NEW ADDITION

EXISTING TO REMAIN - NO WORK SCOPE

MINOR REMODELED AREA

* SHOWN FOR GENERAL ORIENTATION / REFERENCE ONLY

REFER TO CODE COMPLIANCE SHEETS FOR BUILDING CODE REQUIREMENTS.

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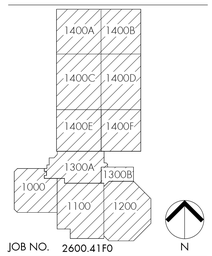
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
COMPOSITE PLAN - FIRST FLOOR

SHEET NO.
A011

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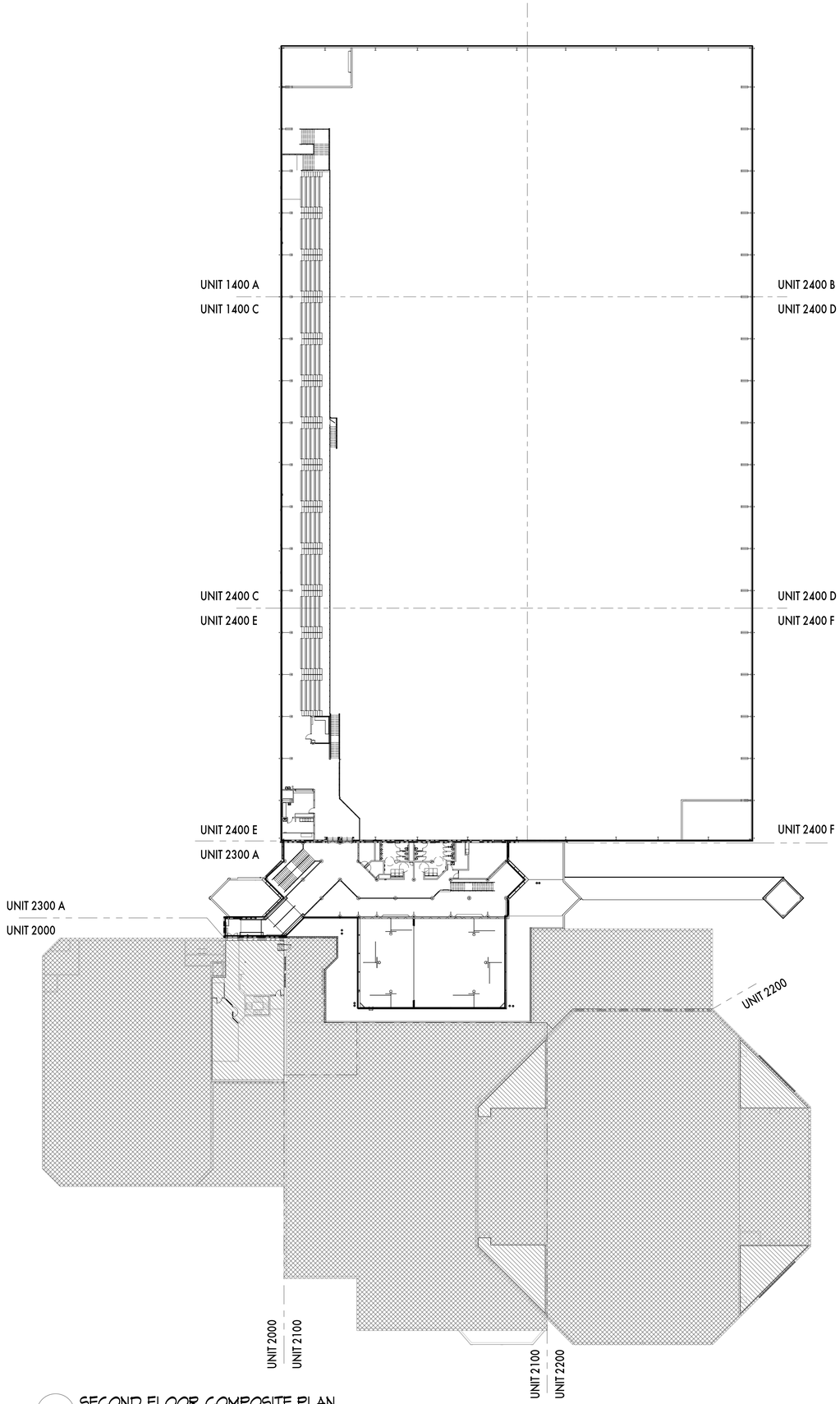

1 SECOND FLOOR COMPOSITE PLAN
1" = 30'-0"

COMPOSITE PLAN GENERAL NOTES

NEW ADDITION

EXISTING TO REMAIN - NO WORK SCOPE

MINOR REMODELED AREA

* SHOWN FOR GENERAL ORIENTATION / REFERENCE ONLY

REFER TO CODE COMPLIANCE SHEETS FOR BUILDING CODE REQUIREMENTS.

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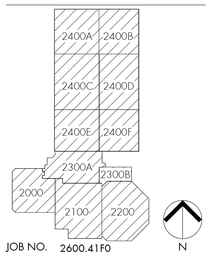
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
COMPOSITE PLAN - SECOND FLOOR

SHEET NO.
A012

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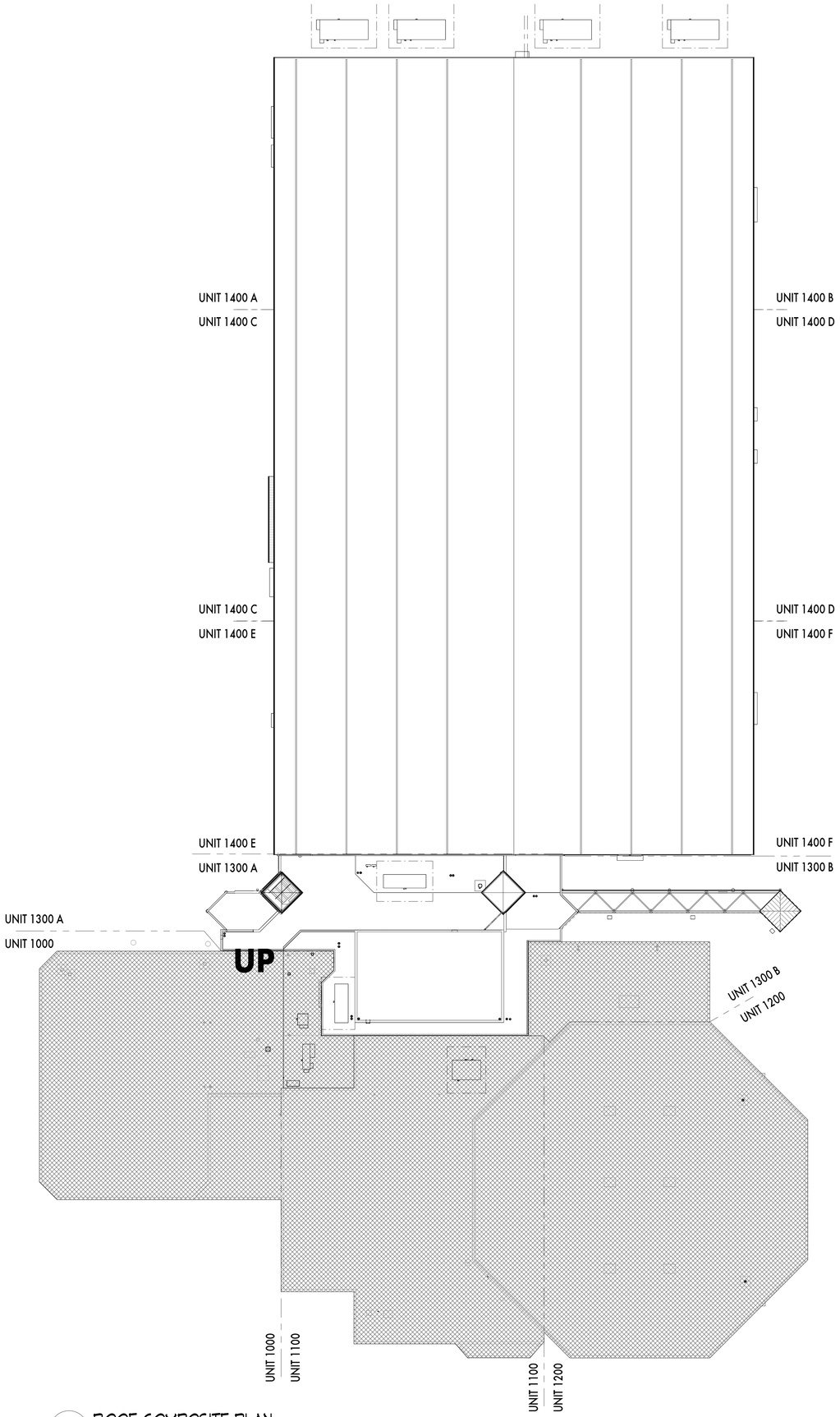

1 ROOF COMPOSITE PLAN
1" = 30'-0"

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
2. PROVIDE TREATED WOOD CURB RAILS ON WALK PADS FOR SMALL CONDENSER UNIT ASSOCIATED W/ FAN COIL UNITS. SEE MECHANICAL FOR LOCATIONS. SEE STRUCTURAL STANDARD DETAILING FOR PLACEMENT AND JOIST REINFORCEMENT.
3. ROOF SLOPES TO BE A MINIMUM OF 1/4" PER FOOT. TAPERED INSULATION ROOF SADDLES TO SLOPE TO ROOF DRAINS AS REQUIRED TO MAKE A COMPLETE SYSTEM OF 1/4" PER FOOT SLOPE.
4. TAPERED INSULATION INDICATED IS FOR DESIGN INTENT ONLY. ROOFING CONTRACTOR IS RESPONSIBLE FOR ALL SITE VERIFICATION AND FINAL INSULATION LAYOUTS TO ENSURE POSITIVE DRAINAGE. SUBMIT SHOP DRAWINGS OF TAPER AND INSULATION PLAN AT ALL NEW ROOF AREAS.
5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
6. OVERFLOW DRAINS (OD) SHALL BE INSTALLED WITH INLET 2" ABOVE ROOF DRAIN (RD) INLET. OVERFLOW DRAINS SHALL NOT ACCEPT WATER UNTIL ROOF DRAIN BECOMES PLUGGED AND 2" OF STORM WATER ACCUMULATES ON ROOF SURFACE.
7. REFER TO ROOF TYPES ON SHEET A021.
8. PROVIDE AT LEAST 30" PARAPET AT 2 HR RATED WALL LOCATIONS.
9. PATCH AREAS OF ROOF TO MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING MANUFACTURER. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.
10. REFER TO ARCHITECTURAL ROOF, CURB AND PIPE PENETRATION DETAILS ON A611.

COMPOSITE PLAN GENERAL NOTES

NEW ADDITION

EXISTING TO REMAIN - NO WORK SCOPE

MINOR REMODELED AREA

* SHOWN FOR GENERAL ORIENTATION / REFERENCE ONLY

REFER TO CODE COMPLIANCE SHEETS FOR BUILDING CODE REQUIREMENTS.

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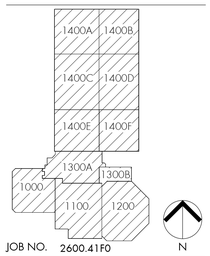
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
COMPOSITE PLAN - ROOF

SHEET NO.
A019

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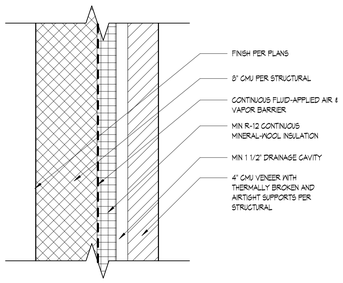
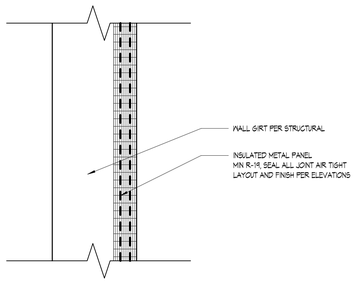


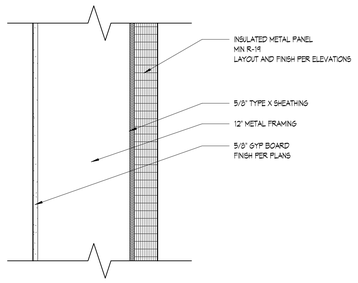
WX-C1: CMU WALL WITH BRICK VENEER

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



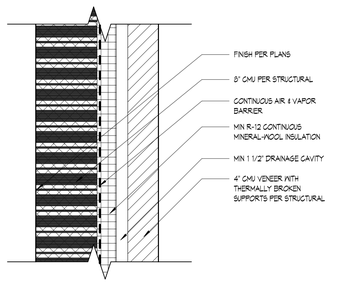
WX-P1: PEMB WALL WITH IMP VENEER

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



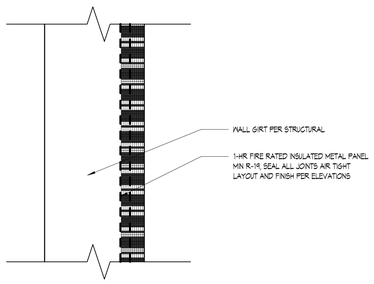
WX-M1: METAL STUD WALL WITH IMP VENEER

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



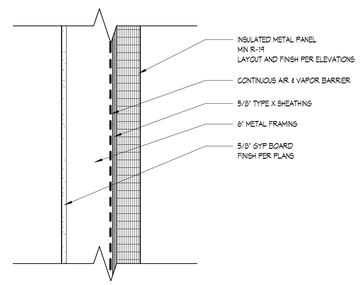
WXF-C1: CMU WALL WITH BRICK VENEER

1-HOUR FIRE RATED PER MBC 601 & 705, CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



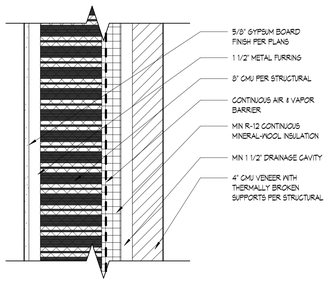
WXF-P1: PEMB WALL WITH IMP VENEER

1-HOUR FIRE RATED PER MBC 601 & 705, CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



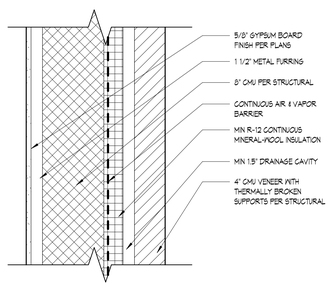
WX-M2: METAL STUD WALL WITH IMP VENEER

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



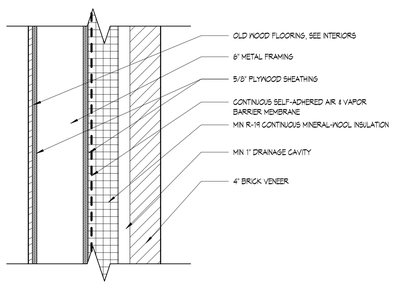
WXF-C2: CMU WALL WITH BRICK VENEER & GYP

1-HOUR FIRE RATED PER MBC 601 & 705, CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



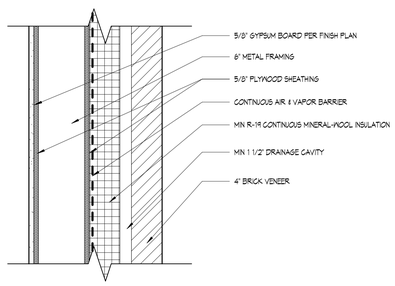
WX-C2: CMU WALL WITH CMU VENEER

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



WX-C3: STUD WALL W BRICK VENEER

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



WX-C4: STUD WALL W BRICK VENEER & GYP

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5

ASSEMBLY GENERAL NOTES:

ASSEMBLY TAGS ON DRAWINGS AND ASSEMBLY TYPE DETAILS HAVE BEEN PROVIDED TO SHOW GENERAL INTENT OF THE CONSTRUCTION. CONTRACTORS MUST VERIFY EACH CONDITION FOR FIRE RATING, BEARING, STRUCTURAL REQUIREMENTS AND WALL FINISHES. PROVIDE APPROPRIATE CONSTRUCTION AS REQUIRED. REFER TO THE FOLLOWING NOTES FOR ADDITIONAL REQUIREMENTS AND DIRECTIONS FOR APPLICATION OF SEALANT, MATERIALS AND GYPSUM BOARD TYPES.

1. REFER TO CODE COMPLIANCE PLANS FOR REQUIRED RATINGS ON WALLS. PROVIDE FIRE RATED SEALANT, FIRESTOP AND TYPE 'X' GYPSUM BOARD AS REQUIRED. ALL RECESSES IN FIRE WALLS SHALL HAVE SOLID MASONRY OR MULTIPLE LAYERS OF GYPSUM BOARD AS REQUIRED TO MAINTAIN APPLICABLE FIRE RATING. PROVIDE ACOUSTICAL SEALANT AT ALL NON-RATED WALLS. PROVIDE FIRE RATED SEALANT AT ALL RATED WALLS.
2. PROVIDE FIRE RATED SEALANT AND/OR FIRESTOP AT ALL PENETRATIONS (CONDUIT, PIPING, DUCTWORK, ETC.) THROUGH FIRE RATED WALLS. REFER TO DETAILS AND COORDINATE ATH ALL TRADES.
3. PROVIDE ACOUSTICAL SEALANT AT ALL PENETRATIONS (CONDUIT, PIPING, DUCTWORK, ETC.) THROUGH NON-FIRE RATED WALLS.
4. PROVIDE ABUSE RESISTANT GYPSUM BOARD FROM FLOOR 8'-0" A.F.F. FOR ALL WALLS NOT COVERED BY TILE OR WALL PROTECTION.
5. PROVIDE COMBINATION WATER AND ABUSE RESISTANT GYPSUM BOARD FROM FLOOR TO 48" A.F.F. FOR ALL WALLS IN JANITOR CLOSETS AND NON-TILED TOILET ROOMS.
6. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS, LOCATIONS AND MATERIALS.
7. REFER TO STRUCTURAL DRAWINGS FOR FLOOR AND METAL DECK ELEVATIONS AND LOCATIONS.
8. REFER TO COLOR LAYOUT PLANS FOR WALL FINISH.
9. REFER TO BUILDING DETAILS, EQUIPMENT PLANS AND SPECIFICATIONS. PROVIDE BLOCKING IN ALL STEEL STUD PARTITIONS AS REQUIRED FOR CASEWORK SUPPORT, TVS, PROJECTORS AND OTHER EQUIPMENT. PROVIDE SOLID BLOCKING FOR ALL DOOR STOP LOCATIONS.
10. REFER TO STRUCTURAL DRAWINGS FOR TOP OF WALL DEFLECTION DETAILS AT MASONRY AND STUD WALLS. PROVIDE SLIP TYPE DEFLECTION TRACK AND DETAILING AT HEAD OF NON-FIRE RATED, NON-BEARING STUD WALLS AS REQUIRED FOR FIRE RATINGS. CONSULT STUD AND GYPSUM BOARD MANUFACTURER STANDARD DETAILING FOR THESE CONDITIONS.
11. PROVIDE MINIMUM 20 GA. STUDS AT 16" O.C. FOR ALL WALLS, U.N.O. STUD SIZE AND GUAGE WILL VERY DEPENDING ON STUD WALL HEIGHT AND AS REQUIRED FOR MINIMUM GUAGE AND SIZE NOTES.
12. ASSEMBLY TYPES ARE A REPRESENTATION OF ASSEMBLY REQUIREMENTS, REFER TO WALL SECTIONS AND BUILDING DETAILS FOR SPECIFIC CONDITIONS AND CONNECTIONS.
13. THE MASON TO FLUSH STRIKE THE MORTAR JOINTS AT ALL LOCATIONS TO REQUIRE AIR BARRIER MEMBRANES.

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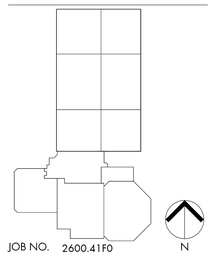
HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

N

SHEET TITLE

ARCHITECTURAL ASSEMBLIES - EXTERIOR WALLS

SHEET NO.

A020

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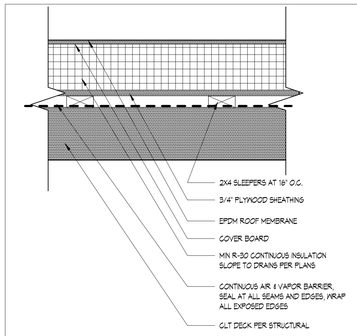
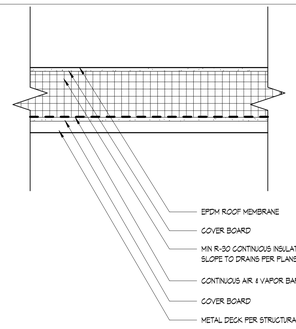


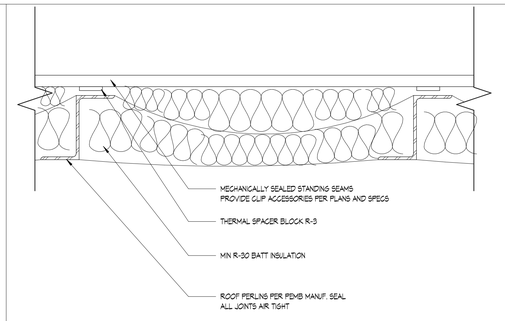
R-W1: CLT WOOD DECK WITH EPDM MEMBRANE

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



R-M1: METAL DECK WITH EPDM MEMBRANE

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5



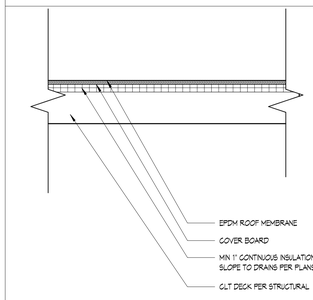
R-P1: PEMB ROOFING

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5

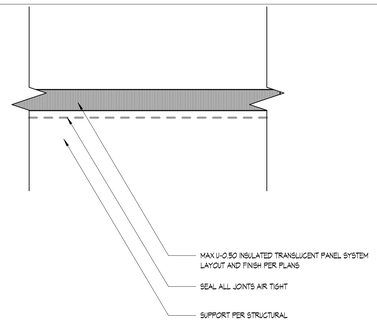
ASSEMBLY GENERAL NOTES:

ASSEMBLY TAGS ON DRAWINGS AND ASSEMBLY TYPE DETAILS HAVE BEEN PROVIDED TO SHOW GENERAL INTENT OF THE CONSTRUCTION. CONTRACTORS MUST VERIFY EACH CONDITION FOR FIRE RATING, BEARING, STRUCTURAL REQUIREMENTS AND WALL FINISHES. PROVIDE APPROPRIATE CONSTRUCTION AS REQUIRED. REFER TO THE FOLLOWING NOTES FOR ADDITIONAL REQUIREMENTS AND DIRECTIONS FOR APPLICATION OF SEALANT, MATERIALS AND GYPSUM BOARD TYPES.

1. REFER TO CODE COMPLIANCE PLANS FOR REQUIRED RATINGS ON WALLS. PROVIDE FIRE RATED SEALANT, FIRESTOP AND TYPE 'X' GYPSUM BOARD AS REQUIRED. ALL RECESSES IN FIRE WALLS SHALL HAVE SOLID MASONRY OR MULTIPLE LAYERS OF GYPSUM BOARD AS REQUIRED TO MAINTAIN APPLICABLE FIRE RATING. PROVIDE ACOUSTICAL SEALANT AT ALL NON-RATED WALLS. PROVIDE FIRE RATED SEALANT AT ALL RATED WALLS.
2. PROVIDE FIRE RATED SEALANT AND/OR FIRESTOP AT ALL PENETRATIONS (CONDUIT, PIPING, DUCTWORK, ETC.) THROUGH FIRE RATED WALLS. REFER TO DETAILS AND COORDINATE WITH ALL TRADES.
3. PROVIDE ACOUSTICAL SEALANT AT ALL PENETRATIONS (CONDUIT, PIPING, DUCTWORK, ETC.) THROUGH NON-FIRE RATED WALLS.
4. PROVIDE ABUSE RESISTANT GYPSUM BOARD FROM FLOOR 8'-0" A.F.F. FOR ALL WALLS NOT COVERED BY TILE OR WALL PROTECTION.
5. PROVIDE COMBINATION WATER AND ABUSE RESISTANT GYPSUM BOARD FROM FLOOR TO 48" A.F.F. FOR ALL WALLS IN JANITOR CLOSETS AND NON-TILED TOILET ROOMS.
6. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS, LOCATIONS AND MATERIALS.
7. REFER TO STRUCTURAL DRAWINGS FOR FLOOR AND METAL DECK ELEVATIONS AND LOCATIONS.
8. REFER TO COLOR LAYOUT PLANS FOR WALL FINISH.
9. REFER TO BUILDING DETAILS, EQUIPMENT PLANS AND SPECIFICATIONS. PROVIDE BLOCKING IN ALL STEEL STUD PARTITIONS AS REQUIRED FOR CASEWORK SUPPORT, TV'S, PROJECTORS AND OTHER EQUIPMENT. PROVIDE SOLID BLOCKING FOR ALL DOOR STOP LOCATIONS.
10. REFER TO STRUCTURAL DRAWINGS FOR TOP OF WALL DEFLECTION DETAILS AT MASONRY AND STUD WALLS. PROVIDE SLIP TYPE DEFLECTION TRACK AND DETAILING AT HEAD OF NON-FIRE RATED, NON-BEARING STUD WALLS AS REQUIRED FOR FIRE RATINGS. CONSULT STUD AND GYPSUM BOARD MANUFACTURER STANDARD DETAILING FOR THESE CONDITIONS.
11. PROVIDE MINIMUM 20 GA. STUDS AT 16" O.C. FOR ALL WALLS, U.N.O. STUD SIZE AND GUAGE WILL VERY DEPENDING ON STUD WALL HEIGHT AND AS REQUIRED FOR MINIMUM GUAGE AND SIZE NOTES.
12. ASSEMBLY TYPES ARE A REPRESENTATION OF ASSEMBLY REQUIREMENTS, REFER TO WALL SECTIONS AND BUILDING DETAILS FOR SPECIFIC CONDITIONS AND CONNECTIONS.
13. THE MASON TO FLUSH STRIKE THE MORTAR JOINTS AT ALL LOCATIONS TO RECEIVE AIR BARRIER MEMBRANES.



R-W2: CLT WOOD DECK WITH EPDM MEMBRANE



R-T1: INSULATED TRANSLUCENT PANEL SKYLIGHT

CONTINUOUS AIR BARRIER & INSULATION PER MCEC 5.4.3 & 5.5-5

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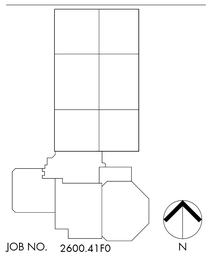
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE

ARCHITECTURAL ASSEMBLIES - ROOFS

SHEET NO.

A021

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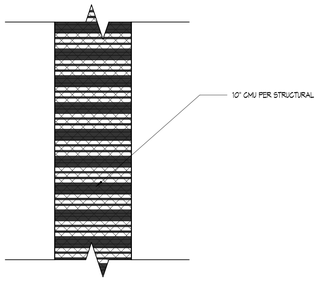
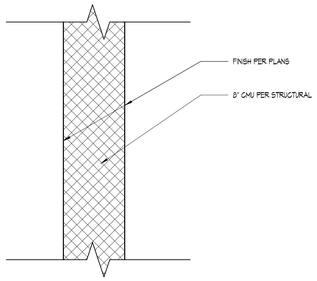
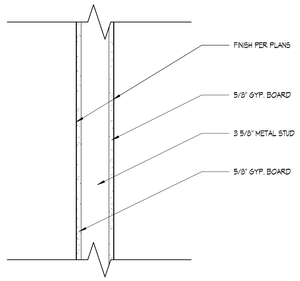


WF-C10: FIRE RATED 10" CMU BEARING WALL

2-HOUR FIRE RATED PER MBC 601.



W-C8: 8" CMU WALL



W-S3: TYPICAL METAL STUD WALL

ASSEMBLY GENERAL NOTES:

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5. PROVIDE COMBINATION WATER AND ABUSE RESISTANT GYPSUM BOARD FROM FLOOR TO 48" A.F.F. FOR ALL WALLS IN JANITOR CLOSETS AND NON-TILED TOILET ROOMS.
6. REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS, LOCATIONS AND MATERIALS.
7. REFER TO STRUCTURAL DRAWINGS FOR FLOOR AND METAL DECK ELEVATIONS AND LOCATIONS.
8. REFER TO COLOR LAYOUT PLANS FOR WALL FINISH.
9. REFER TO BUILDING DETAILS, EQUIPMENT PLANS AND SPECIFICATIONS. PROVIDE BLOCKING IN ALL STEEL STUD PARTITIONS AS REQUIRED FOR CASEWORK SUPPORT, TV'S, PROJECTORS AND OTHER EQUIPMENT. PROVIDE SOLID BLOCKING FOR ALL DOOR STOP LOCATIONS.
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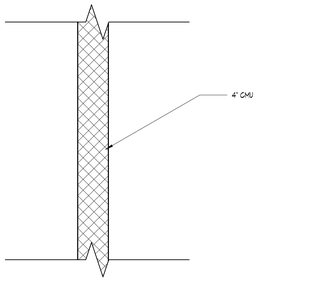
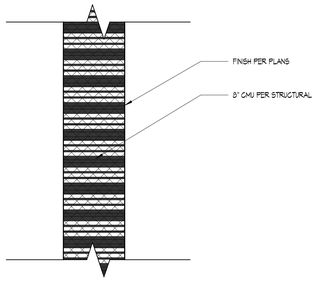
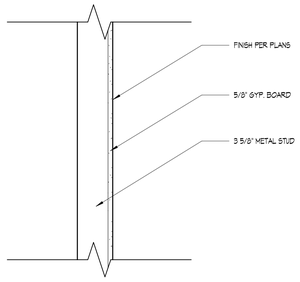


W-C4: 4" CMU WALL

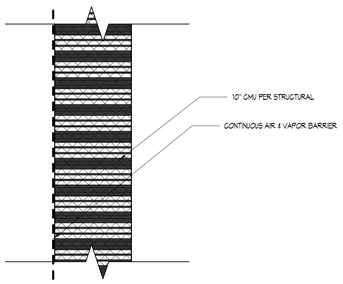


WF-C8: FIRE RATED 8" CMU

2-HOUR FIRE RATED PER MBC 707 & 1026.

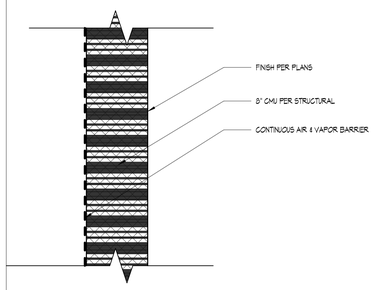


W-S4: TYPICAL METAL STUD FURRING WALL



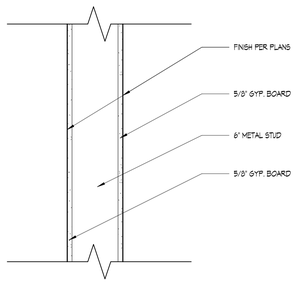
2-HOUR FIRE RATED PER MBC 601.

WFX-C10: FIRE RATED 10" CMU BEARING WALL W VAPOR BARRIER

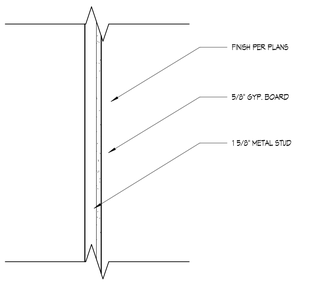


WFX-C8: FIRE RATED 8" CMU W/ VAPOR BARRIER

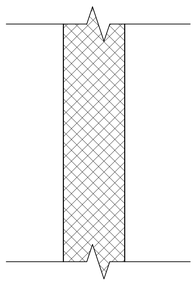
2-HOUR FIRE RATED PER MBC 707 & 1026, CONTINUOUS AIR BARRIER PER MCEC 5.4.3



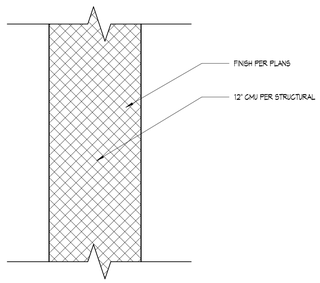
W-S6: TYPICAL METAL STUD WALL



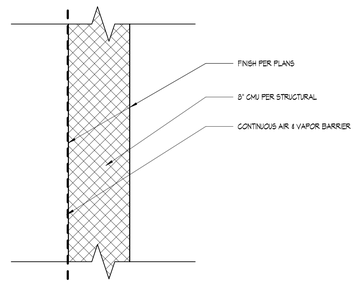
W-S1: METAL STUD FURRING WALL



W-C9: COLUMN BLOCK, SEE SPECS



W-C12: 12" CMU WALL



WX-C8: 8" CMU WALL W/ VAPOR BARRIER

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PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F0

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SHEET TITLE

ARCHITECTURAL ASSEMBLIES - INTERIOR WALLS

SHEET NO.

A022

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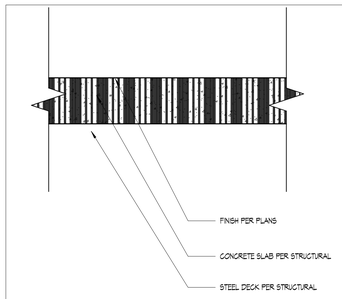
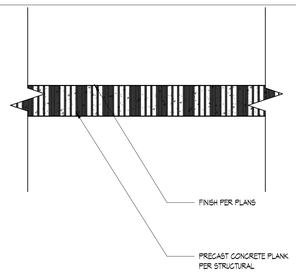


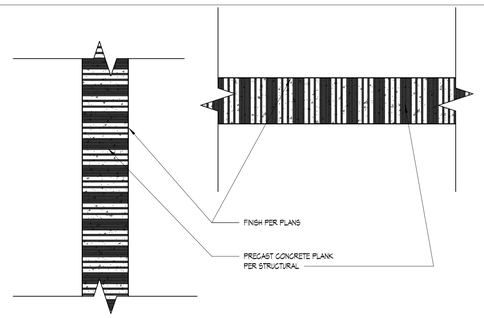
FF-C6: 6" CONC. DECK ON STEEL STRUCTURE

2-HOUR FIRE RATED PER MBC 601. REFER TO STRUCTURAL.



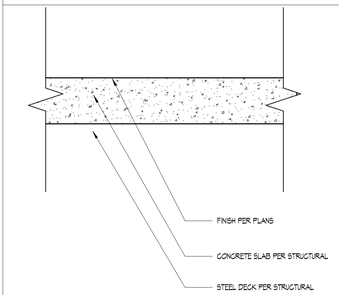
FF-P4: FIRE RATED 4" PRECAST CONC. PLANK

2-HOUR FIRE RATED PER MBC 601. REFER TO STRUCTURAL.



FF-P6: FIRE RATED 6" PRECAST CONC. PLANK

2-HOUR FIRE RATED PER MBC 601. REFER TO STRUCTURAL.



F-C6: 6" CONC. DECK ON STEEL STRUCTURE

REFER TO STRUCTURAL.

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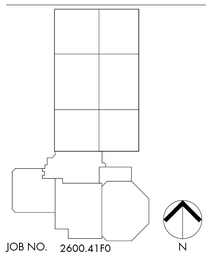
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL ASSEMBLIES – INTERIOR FLOORS

SHEET NO.

A025

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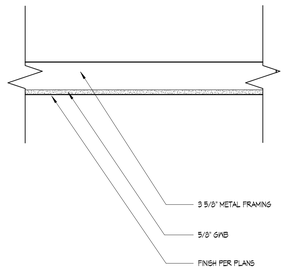
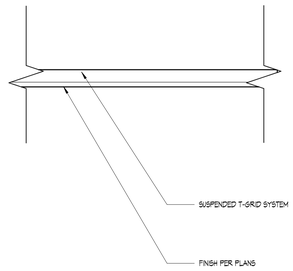
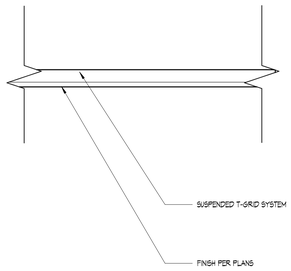


C-G1: GYPSUM BOARD ON METAL FRAMING

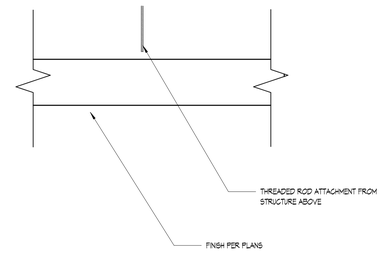
PROVIDE CONTROL JOINTS IN GYPSUM CEILINGS @ MINIMUM OF 20'-0" O.C. VERTICALLY & HORIZONTALLY.



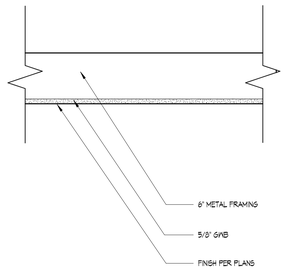
C-A2: 2'X2' ACT GRID CEILING



C-AM2: 2'X2' ACT CEILING- MOISTURE RESISTANT



C-B1: BAFFLE CEILING



C-G2: GYPSUM BOARD ON METAL FRAMING

PROVIDE CONTROL JOINTS IN GYPSUM CEILINGS @ MINIMUM OF 20'-0" O.C. VERTICALLY & HORIZONTALLY.

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ISSUANCES	DATE
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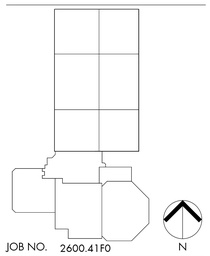

JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL ASSEMBLIES - CEILIGNS & SOFFITS

SHEET NO.

A027

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CODE ROOM SCHEDULE

Level	Number	Name	Area	Occupancy	Occupancy Gross or Net	Occupancy Load Tag Value	Comments
FIRST FLOOR	1001	POOL LOBBY	2,055 SF			15	
FIRST FLOOR	1002	POOL	11,920 SF			671	
FIRST FLOOR	1003	VEST	61 SF				
FIRST FLOOR	1004	MECH	248 SF			1	
FIRST FLOOR	1005	STORAGE	44 SF				
FIRST FLOOR	1006	JANITOR'S	171 SF				
FIRST FLOOR	1007	STORAGE	143 SF			1	
FIRST FLOOR	1008	MEN'S LOCKER	708 SF			22	
FIRST FLOOR	1009	STORAGE	154 SF			1	
FIRST FLOOR	1010	OFFICE	288 SF			2	
FIRST FLOOR	1011	FM T.	97 SF				
FIRST FLOOR	1012	FM T.	97 SF				
FIRST FLOOR	1013	WOMEN'S LOCKER	719 SF			17	
FIRST FLOOR	1014	BREAK	95 SF			1	
FIRST FLOOR	1015	SHOWER	296 SF			6	
FIRST FLOOR	1016	HOT TUB	211 SF			5	
FIRST FLOOR	1017	FAMILY T.	92 SF				
FIRST FLOOR	1018	FAMILY T.	113 SF				
FIRST FLOOR	1019	MECH.	242 SF			1	
FIRST FLOOR	1022	SHOWER	318 SF				
FIRST FLOOR	1023	TOILET	81 SF				
FIRST FLOOR	1024	TLT	98 SF				
BLEACHER	1025	BLEACHERS	1,804 SF				
FIRST FLOOR	1101	VESTIBULE	78 SF				
FIRST FLOOR	1102	VESTIBULE	78 SF				
FIRST FLOOR	1103	SOUTH LOBBY	3,003 SF			20	
FIRST FLOOR	1104	TICKETS	38 SF			1	
FIRST FLOOR	1105	ADMIN	185 SF			1	
FIRST FLOOR	1106	CONF RM	295 SF			13	
FIRST FLOOR	1107	OFFICE	184 SF			1	
FIRST FLOOR	1108	OFFICE	134 SF			1	
FIRST FLOOR	1109	WRESTLING	2,842 SF			59	
FIRST FLOOR	1110	TEAM ROOM	402 SF			9	
FIRST FLOOR	1111	CONCESSIONS	2,119 SF			55	
FIRST FLOOR	1112	STORE	81 SF				
FIRST FLOOR	1113	NORTH LOBBY	1,780 SF			9	
FIRST FLOOR	1114	MEN	235 SF				
FIRST FLOOR	1115	WOMEN	325 SF				
FIRST FLOOR	1116	JAN	102 SF				
FIRST FLOOR	1117	ELEC.	121 SF				
FIRST FLOOR	1118	OFFICE	268 SF			2	
FIRST FLOOR	1119	OPEN OFFICE	264 SF			2	
FIRST FLOOR	1120	LOCKER	1,980 SF			39	
FIRST FLOOR	1121	TOILET	171 SF				
FIRST FLOOR	1122	TOILET	154 SF				
FIRST FLOOR	1123	JAN	48 SF				
FIRST FLOOR	1124	LOCKER	1,458 SF			39	
FIRST FLOOR	1125	WOMEN	282 SF				
FIRST FLOOR	1126	MEN	244 SF				
FIRST FLOOR	1127	MECH	938 SF			2	
FIRST FLOOR	1128	TRAINING	254 SF			2	
FIRST FLOOR	1129	OFFICE	184 SF			1	
FIRST FLOOR	1130	RR	77 SF				
FIRST FLOOR	1131	TOILET	81 SF				
FIRST FLOOR	1132	RR	94 SF				
FIRST FLOOR	1133	TOILET	81 SF				
FIRST FLOOR	1134	OFFICE	184 SF			1	
FIRST FLOOR	1135	TEAM LOCKER	1,380 SF			46	
FIRST FLOOR	1136	TRAINING	254 SF			2	
FIRST FLOOR	1137	VEST	55 SF				
FIRST FLOOR	1138	TOILET	122 SF				
FIRST FLOOR	1139	JAN	47 SF				
FIRST FLOOR	1140	STORAGE	178 SF				
FIRST FLOOR	1140A	CORRIDOR	150 SF			1	
FIRST FLOOR	1141	STORAGE	178 SF				
FIRST FLOOR	1141A	CORRIDOR	150 SF			1	
FIRST FLOOR	1142	TEAM LOCKER	1,382 SF			46	
FIRST FLOOR	1143	JAN	47 SF			1	
FIRST FLOOR	1144	TOILET	112 SF				
FIRST FLOOR	1145	VEST	54 SF				
FIRST FLOOR	1146	GIRLS TLT	214 SF				
FIRST FLOOR	1147	BOYS TLT	221 SF				
FIRST FLOOR	1148	STOR.	283 SF			2	
FIRST FLOOR	1150	EX. OFFICE	249 SF			2	
FIRST FLOOR	1160	CORRIDOR	371 SF				
FIRST FLOOR	1161	SHOWER	771 SF				
FIRST FLOOR	1162	SHOWER	726 SF				
FIRST FLOOR	1163	IT	167 SF				
FIRST FLOOR	1201	GYMNASIUM	21,974 SF			441	
FIRST FLOOR	1202	STORAGE	318 SF			1	
FIRST FLOOR	1203	STORAGE	168 SF			1	
FIRST FLOOR	1204	STORAGE	130 SF			1	
FIRST FLOOR	1205	STORAGE	143 SF			1	
FIRST FLOOR	1206	GYMNASTICS	3,326 SF			65	
FIRST FLOOR	1207	STORAGE	471 SF			2	
FIRST FLOOR	1208	STORAGE	165 SF			1	
FIRST FLOOR	1209	STORAGE	129 SF			1	

CODE ROOM SCHEDULE

Level	Number	Name	Area	Occupancy	Occupancy Gross or Net	Occupancy Load Tag Value	Comments
FIRST FLOOR	1424	STORAGE	948 SF				
SECOND FLOOR -POOL	1425	Room	1,896 SF				
SECOND FLOOR	2001	EX. MECH.	1,283 SF			4	
SECOND FLOOR	2002	AEROBICS	512 SF			10	
SECOND FLOOR	2003	ELEV. EQUIP.	177 SF				
SECOND FLOOR	2004	AEROBICS	838 SF			17	
SECOND FLOOR	2005	POOL VIEWING	1,416 SF			277	
SECOND FLOOR -POOL	2005	STORAGE	60 SF				
SECOND FLOOR -POOL	2006	STORAGE	60 SF				
SECOND FLOOR -POOL	2007	CORRIDOR	839 SF				
SECOND FLOOR	2201	MEZZANINE	3,197 SF				
SECOND FLOOR	2202	MECH	851 SF				
SECOND FLOOR	2203	MECH	862 SF				
SECOND FLOOR	2204	MECH	816 SF				

CODE ROOM SCHEDULE

Level	Number	Name	Area	Occupancy	Occupancy Gross or Net	Occupancy Load Tag Value	Comments
FIRST FLOOR	1301	VEST.	125 SF				
FIRST FLOOR	1302	VEST.	143 SF				
FIRST FLOOR	1303	LOBBY	7,298 SF			52	
FIRST FLOOR	1304	OFFICE	134 SF			1	
FIRST FLOOR	1305	JAN	55 SF				
FIRST FLOOR	1306	MEN'S	348 SF				
FIRST FLOOR	1307	WOMEN'S	451 SF				
FIRST FLOOR	1308	CONFERENCE	342 SF			26	
FIRST FLOOR	1309	OPEN OFFICE	251 SF			2	
FIRST FLOOR	1310	OFFICE	141 SF			1	
FIRST FLOOR	1311	RECEPTION	137 SF			1	
FIRST FLOOR	1312	MULTI-PURPOSE	1,688 SF			112	
FIRST FLOOR	1313	MULTI-PURPOSE	2,884 SF			184	
FIRST FLOOR	1314	CHECK-IN	184 SF			2	
FIRST FLOOR	1315	STOR	200 SF			1	
FIRST FLOOR	1317	SNOW MELT	122 SF				
FIRST FLOOR	1318	RR	94 SF				
FIRST FLOOR	1319	RR	80 SF				
FIRST FLOOR	1319	ELEC	41 SF				
FIRST FLOOR	1320	TRAINER	452 SF			9	
FIRST FLOOR	1321	WEIGHT ROOM	3,980 SF			79	
FIRST FLOOR	1322	VEST	317 SF			1	
FIRST FLOOR	1400	STAIR E	340 SF				
FIRST FLOOR	1401	FIELD	118,134 SF			2388	
FIRST FLOOR	1402	PROGRAM	1,384 SF			92	
FIRST FLOOR	1403	PROGRAM	676 SF			45	
FIRST FLOOR	1404	PROGRAM	378 SF			25	
FIRST FLOOR	1405	WOMEN'S	261 SF				
FIRST FLOOR	1406	MEN'S	256 SF				
FIRST FLOOR	1407	TRAINER	314 SF			2	
FIRST FLOOR	1408	STORAGE	219 SF			1	
FIRST FLOOR	1409	FIRE PUMP RM	325 SF			1	
FIRST FLOOR	1410	MECH	329 SF			1	
FIRST FLOOR	1411	MECH	673 SF			2	
FIRST FLOOR	1412	ELEC	861 SF			2	
FIRST FLOOR	1413	STORAGE	673 SF			2	
FIRST FLOOR	1414	STORAGE	673 SF			2	
FIRST FLOOR	1415	STORAGE	673 SF			2	
FIRST FLOOR	1416	STORAGE	673 SF			2	
FIRST FLOOR	1417	STORAGE	673 SF			2	
FIRST FLOOR	1418	MEN	274 SF			1	
FIRST FLOOR	1419	WOMEN	242 SF				
FIRST FLOOR	1420	STORAGE	301 SF				
FIRST FLOOR	1421	WOMENS	286 SF				
FIRST FLOOR	1422	STAIR C	110 SF				
FIRST FLOOR	1422	J.C.	73 SF				
FIRST FLOOR	1423	LIFT STOR	946 SF			2	

CODE ROOM SCHEDULE

Level	Number	Name	Area	Occupancy	Occupancy Gross or Net	Occupancy Load Tag Value	Comments
SECOND FLOOR	2205	MECH	816 SF				
SECOND FLOOR -POOL	2222	STAIR C	108 SF				
SECOND FLOOR -POOL	2300	STAIR A	262 SF				
SECOND FLOOR	2301	UPPER LOBBY	2,811 SF			141	
SECOND FLOOR	2302	OFFICE	111 SF			1	
SECOND FLOOR	2303	TECH	84 SF			1	
SECOND FLOOR	2304	MEN'S	334 SF				
SECOND FLOOR	2305	WOMEN'S	420 SF				
SECOND FLOOR	2306	JAN	123 SF			1	
SECOND FLOOR	2307	LOUNGE	457 SF			34	
SECOND FLOOR -POOL	2309	STAIR B	124 SF				
SECOND FLOOR -POOL	2400	STAIR E	842 SF				
SECOND FLOOR	2401	UPPER LOBBY	1,805 SF			380	
SECOND FLOOR -POOL	2402	CONC.	237 SF			49	
SECOND FLOOR -POOL	2403	CONC. STOR.	Redundant Room				
SECOND FLOOR	2404	TIMING	186 SF			11	
SECOND FLOOR	2405	GALLERY SEATING	9,164 SF			730	
FIRST FLOOR	ELEV	ELEV	97 SF				
FIRST FLOOR	STAIR A	STAIR A	262 SF				
FIRST FLOOR	STAIR B	STAIR B	124 SF				
FIRST FLOOR	STAIR E1	STAIR E1	194 SF				
SECOND FLOOR -POOL	STAIR E1	STAIR E1	194 SF				
FIRST FLOOR	STAIR E2	STAIR E2	93 SF				

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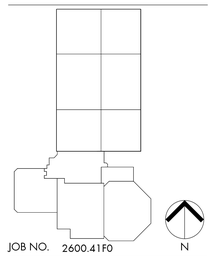
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



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SHEET TITLE

ARCHITECTURAL SCHEDULES & TYPES - ROOMS

SHEET NO.

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DOOR SCHEDULE

DOOR NUMBER	DOOR WIDTH	DOOR HEIGHT	Door Type	DOOR MATERIAL	DOOR GLASS	FRAME TYPE	FRAME MATERIAL	FRAME GLASS	DETAILS HEAD	DETAILS JAMB	DETAILS JAMB	DETAILS SILL	Fire Rating Label	REMARKS
1001A	3'-0"	6'-10"	N	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-	-	-	-	-	EXISTNG	REMOVE KEYWAY
1001B	3'-0"	6'-10"	N	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-	-	-	-	-	EXISTNG	REMOVE KEYWAY
1001C	3'-4"	6'-10"	G	HM	1/4" SAF	EXISTNG	EXISTNG	1/4" SAF	-	-	-	-	EXISTNG	
1001D	3'-4"	6'-10"	G	HM	1/4" SAF	EXISTNG	EXISTNG	1/4" SAF	-	-	-	-	EXISTNG	
1001E	3'-8"	7'-2"	FG2	WD	1/4" SAF	8	ALUM	1/4" SAF	4/A642	8/A614		-	90 MN	120 MN RATED SIDELIGHT GLAZING, 90 MN DOOR GLAZING
1001F	3'-8"	7'-2"	FG2	WD	1/4" SAF	8	ALUM	1/4" SAF	4/A642	8/A614		-	90 MN	120 MN RATED SIDELIGHT GLAZING, 90 MN DOOR GLAZING
1002A	6'-0"	7'-2"	NN	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-	-	-	-	-	EXISTNG	TOUCH UP PAINT/FINISH
1002B	6'-0"	7'-2"	F+F	HM	-	EXISTNG	EXISTNG	-	-	-	-	-	EXISTNG	NEW DOOR ACCESSORIES
1003A	6'-0"	6'-10"	F+F	HM	-	T	HM	-	8/A642	T/A642	T/A642	TT/A642	EXISTNG	
1003B	3'-0"	6'-10"	F	HM	-	T	HM	-	8/A642	T/A642	T/A642	TT/A642	EXISTNG	
1003C	6'-0"	6'-10"	G+S	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-	-	-	-	-	EXISTNG	TOUCH UP PAINT/FINISH
1003D	3'-0"	6'-10"	G	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-	-	-	-	-	EXISTNG	TOUCH UP PAINT/FINISH
1004A	3'-4"	6'-10"	F	HM	-	EXISTNG	EXISTNG	-	-	-	-	-	EXISTNG	PROVIDE RUST INHIBITOR COATINGS FOR DOOR, FRAME AND ALL ACCESSORIES
1004B	3'-4"	6'-10"	F	EXISTNG	-	EXISTNG	EXISTNG	-	-	-	-	-	EXISTNG	NEW PAINT TO MATCH EXISTING
1005	3'-0"	6'-10"	F	FIRD	-	1	FIRD	-					-	
1006A	3'-4"	6'-10"	F	EXISTNG	-	EXISTNG	EXISTNG	-	-	-	-	-	-	TOUCH UP PAINT/FINISH
1006	3'-4"	6'-10"	F	EXISTNG	-	EXISTNG	EXISTNG	-						HW ONLY
1009	6'-0"	7'-2"	P+P	EXISTNG	-	EXISTNG	EXISTNG	-	-	-	-	-	-	TOUCH UP PAINT/FINISH
1010A	3'-0"	6'-10"	G	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-	-	-	-	-	-	TOUCH UP PAINT/FINISH
1010B	3'-0"	6'-10"	G	EXISTNG	EXISTNG	EXISTNG	EXISTNG							ADD WALL STOP. TOUCH UP PAINT/FINISH
1011	3'-0"	6'-10"	F	EXISTNG	-	EXISTNG	EXISTNG							HW ONLY
1012	3'-0"	6'-10"	F	EXISTNG	-	EXISTNG	EXISTNG	-	-	-	-	-	EXISTNG	HW ONLY
1013	3'-0"	7'-2"	F	EXISTNG	-	EXISTNG	EXISTNG	-	-	-	-	-	EXISTNG	HW ONLY
1014	3'-4"	6'-10"	F	EXISTNG	-	EXISTNG	EXISTNG	-						TOUCH UP PAINT/FINISH
1015	3'-0"	6'-10"	F	EXISTNG	-	EXISTNG	EXISTNG	-	-	-	-	-	-	TOUCH UP PAINT/FINISH
1017	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1018	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1019	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A642	5/A642	5/A642	-	90 MN	
1022	3'-0"	6'-10"	F	EXISTNG	-	EXISTNG	EXISTNG	-	-	-	-	-	-	TOUCH UP PAINT/FINISH
1101I	3'-0"	7'-2"												HW ONLY
1101J	3'-0"	7'-2"												HW ONLY
1101K	3'-0"	7'-2"												HW ONLY
1101L	3'-0"	7'-2"												HW ONLY
1102I	3'-0"	7'-2"												HW ONLY
1102J	3'-0"	7'-2"												HW ONLY
1102K	3'-0"	7'-2"												HW ONLY
1102L	3'-0"	7'-2"												HW ONLY
1103A	6'-0"	7'-2"	F+F	WD	1/4" SAF	1A	HM	1/4" SAF	2/A426	1/A615	1/A615	2/A426	90 MN	
1103B	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642	T/A642		-	90 MN	REUSE EXISTING HW
1103C	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642			-	90 MN	REUSE EXISTING HW
1103D	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642			-	90 MN	REUSE EXISTING HW
1103E	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642			-	90 MN	REUSE EXISTING HW
1103F	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642			-	90 MN	REUSE EXISTING HW
1103G	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642	T/A642		-	90 MN	REUSE EXISTING HW
1103M	6'-0"	6'-10"	F+F	HM	-	1	HM	-	19/A641	18/A641	18/A641	TT/A642	EXISTNG	
1104	3'-0"	7'-2"												HW ONLY
1105	3'-0"	7'-2"	N	WD	1/4" SAF	EXISTNG	EXISTNG	-						TOUCH UP PAINT/FINISH
1106	3'-0"	7'-2"	N	WD	1/4" SAF	EXISTNG	EXISTNG	-						TOUCH UP PAINT/FINISH
1107	3'-0"	7'-2"	N	WD	1/4" SAF	EXISTNG	EXISTNG	-						TOUCH UP PAINT/FINISH. ADD LATCH GUARD
1108A	3'-8"	7'-2"	F	WD	-	EXISTNG	EXISTNG	-						
1108B	3'-0"	7'-2"	F	WD	-	EXISTNG	EXISTNG	-						TOUCH UP PAINT/FINISH
1108C	3'-0"	7'-2"	F	WD	-	EXISTNG	EXISTNG	-					90 MN	
1109	3'-0"	7'-2"	F	WD	1/4" SAF		EXISTNG	-					EXISTNG	TOUCH UP PAINT/FINISH, SEE HW
1109A	3'-0"	7'-2"	F	WD	1/4" SAF	EXISTNG	EXISTNG	EXISTNG					EXISTNG	TOUCH UP PAINT/FINISH, SEE HW
1109B	3'-0"	7'-2"	F	EXISTNG	EXISTNG	EXISTNG	EXISTNG	EXISTNG						TOUCH UP PAINT/FINISH
1109C	6'-0"	7'-2"	F+F	WD	-	EXISTNG	EXISTNG	-					90 MN	
1110A	3'-0"	7'-2"	F	WD	-	EXISTNG	EXISTNG	-					90 MN	
1110B	3'-0"	7'-2"	F	WD	-	EXISTNG	EXISTNG	-					90 MN	ADD NEW PANIC
1111	3'-0"	7'-2"	F	EXISTNG	-	EXISTNG	EXISTNG	-					90 MN	TOUCH UP PAINT/FINISH
1113A	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642	T/A642		-	90 MN	REUSE EXISTING HW
1113B	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642			-	90 MN	REUSE EXISTING HW
1113C	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642			-	90 MN	REUSE EXISTING HW
1113D	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642			-	90 MN	REUSE EXISTING HW
1113E	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642			-	90 MN	REUSE EXISTING HW
1113F	3'-0"	7'-2"	F	HM	-	8	HM	-	8/A642	T/A642		-	90 MN	REUSE EXISTING HW
1114A	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1115	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1116	3'-0"	7'-0"	F	WD		1	HM		19/A641	18/A641	18/A641	-		Add ADA hardware and door transition
1117	3'-0"	7'-0"	F	WD		1	HM		19/A641	18/A641	18/A641	-		ADA hardware
1119	3'-0"	7'-2"	F	WD	-	EXISTNG	EXISTNG	-	-	-	-	-		
1120A	3'-0"	7'-2"	F	EXISTNG			EXISTNG					-		TOUCH UP PAINT/FINISH, SEE HW
1120B	3'-0"	7'-2"	F	WD	-	1	HM	-	19/A641	18/A641	18/A641	-	EXISTNG	
1123A	6'-0"	7'-2"	NN	WD	1/4" SAF	1	HM	-	4/A426	T/A613	T/A613	4/A426	90 MN	90 MN GLAZING
1123B	6'-0"	7'-2"	NN	WD	1/4" SAF	1	HM	-	4/A426	T/A613	T/A613	4/A426	90 MN	90 MN GLAZING
1123C	6'-0"	7'-2"	NN	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-	-				EXISTNG	TOUCH UP PAINT/FINISH
1124	3'-0"	7'-2"	F	WD	-	EXISTNG	EXISTNG	-					-	
1124A	3'-0"	7'-2"	F	WD	-	EXISTNG	EXISTNG	-					-	
1125	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1126	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1127A	6'-0"	7'-2"	F+F	HM	-	1	HM	-	19/A641	18/A641	18/A641		90 MN	
1128A	3'-0"	7'-2"	G	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-						TOUCH UP PAINT/FINISH
1128B	3'-0"	7'-2"	G	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-						TOUCH UP PAINT/FINISH
1129A	3'-0"	7'-2"	G	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-						TOUCH UP PAINT/FINISH
1129B	3'-0"	7'-2"	G	EXISTNG	EXISTNG	EXISTNG	EXISTNG	-						TOUCH UP PAINT/FINISH
1130	3'-0"	7'-2"	D	EXISTNG	-	EXISTNG	EXISTNG	-						TOUCH UP PAINT/FINISH
1131	3'-0"	7'-2"	F	EXISTNG			EXISTNG							TOUCH UP PAINT/FINISH, SEE HW
1133	3'-0"	7'-2"	F	EXISTNG			EXISTNG							TOUCH UP PAINT/FINISH, SEE HW
1137	3'-0"	7'-2"	F	WD			EXISTNG							
1139	2'-8"	7'-2"	F	WD		1	HM		19/A641	18/A641	18/A641	-	-	
1140	3'-0"	7'-2"	F	WD		1	HM		19/A641	18/A641	18/A641	-	EXISTNG	
1140B	3'-0"	7'-2"	N											TOUCH UP PAINT/FINISH
1141B	3'-0"	7'-2"	N											TOUCH UP PAINT/FINISH
1144A	3'-0"	7'-2"	G	WD			EXISTNG							
1144B	3'-0"	7'-2"	G	WD			EXISTNG							
1145A	3'-0"	7'-2"	F	EXISTNG			EXISTNG							TOUCH UP PAINT/FINISH
1145B	3'-0"	7'-2"	F	EXISTNG			EXISTNG							TOUCH UP PAINT/FINISH
1146	3'-0"	7'-2"	F	EXISTNG			EXISTNG							TOUCH UP PAINT/FINISH, SEE HW
1146A	3'-0"	7'-2"	F	EXISTNG			EXISTNG							TOUCH UP PAINT/FINISH
1146B	3'-0"	7'-2"	F	EXISTNG			EXISTNG							TOUCH UP PAINT/FINISH
1148	3'-0"	7'-2"	F	WD			EXISTNG							TOUCH UP PAINT/FINISH, SEE HW
1150	3'-0"	6'-10"	G	WD	1/4" SAF	9	HM	1/4" SAF	19/A641	18/A641	18/A641	-	60 MN	
1150A	6'-4"	6'-10"	NN	WD	1/4" SAF	1	HM	-	19/A641	18/A641	T/A642	-	EXISTNG	
1160B	3'-6"	7'-2"	N	WD	-	1A	HM	-	4/A642	2/A614	3/A641	-	90 MN	
1163	3'-0"	7'-2"	F	WD			EXISTNG						EXISTNG	
1201A	6'-0"	7'-2"	P+P	EXISTNG			EXISTNG							TOUCH UP PAINT/FINISH
1201B	3'-0"	7'-2"	P	EXISTNG			EXISTNG							NEW DOOR ACCESSORIES
1201D	10'-0"	8'-0"		EXISTNG			EXISTNG							ADD DOOR CONTACT
1201W	3'-0"	7'-2"	N	WD	1" INSUL	1	HM	-	4/A642	4/A613	4/A613	TT/A641	90 MN	
1202	6'-0"	7'-2"	P+P	HM			EXISTNG							
1204	3'-0"	7'-2"	F	HM			EXISTNG							
1210	6'-0"	7'-0"	F+F	HM	-	1	HM	-	8/A642	T/A642	T/A642	TT/A642	EXISTNG	
1301A	6'-0"	7'-2"	FG2 + FG2	FRP	1" INSUL	4	ALUM	1" INSUL	21/A641	18/A642		1/A642		
1301B	6'-0"	7'-2"	FG2 + FG2	FRP	1" INSUL	4	ALUM	1" INSUL	21/A641	9/A642		1/A642		
1301C	6'-0"	7'-2"	FG2 + FG2	FRP	1" INSUL	4A	ALUM	1" INSUL	3/A422	15/A642		-		
1301D	6'-0"	7'-2"	FG2 + FG2	FRP	1" INSUL	4A	ALUM	1" INSUL	3/A422	2/A642		-		
1302A	6'-0"	7'-2"	FG2 + FG2	FRP	1" INSUL	3	ALUM	1" INSUL	21/A641	6/A614	6/A614	1/A642		
1302B	6'-0"	7'-2"	FG2 + FG2	FRP	1" INSUL	3	ALUM	1" INSUL	21/A641	4/A614	4/A614	1/A642		
1302C	6'-0"	7'-2"	FG2 + FG2	FRP	1" INSUL	3	ALUM	1" INSUL	4/A422	6/A614	6/A614	-		
1302D	6'-0"	7'-2"	FG2 + FG2	FRP	1" INSUL	3	ALUM	1" INSUL	4/A422	4/A614	4/A614	-		
1303				STL			STL	-	4/A420			4/A420	90 MN	
1304	3'-0"	7'-2"	FG2	WD	1/4" SAF	2	HM	1/4" SAF	4/A641	3/A641	2/A641	-	-	
1305	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1309	3'-0"	7'-2"	FG2	WD	1/4" SAF	2A	HM	1/4" SAF	4/A641	3/A641	2/A641	-	-	
1310	3'-0"	7'-2"	F	WD		1	HM	-	14/A641	13/A641	13/A641	-	-	
1311	3'-0"	7'-2"	FG2	WD	1/4" SAF	2A	HM	1/4" SAF	4/A641	3/A641	2/A641	-	-	
1312A	3'-0"	7'-2"	N	WD	1/4" SAF	1	HM	-	4/A641	3/A641	3/A641	-	-	
1312B	3'-8"	7'-2"	N	WD	1/4" SAF	1	HM	-	10/A641	1/A641	1/A641	-	-	
1313A	4'-0"	7'-2"	N	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1313B	3'-8"	7'-2"	N	WD	1/4" SAF	1	HM	-	10/A641	1/A641	1/A641	-	-	
1313C	6'-0"	7'-2"	NN	WD	1/4" SAF	1	HM	-	10/A641	1/A641	1/A641	-	-	
1314	3'-0"	7'-2"	FG2	WD	1/4" SAF	2A	HM	1/4" SAF	4/A641	3/A641	2/A641	-	-	
1315	4'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1317	4'-0"	7'-2"	F	WD	-	1	HM	-	14/A641	13/A641	13/A641	-	-	
1318	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1320	4'-0"	7'-2"	FG2	WD	1/4" SAF	2A	HM	1/4" SAF	20/A642	21/A642		-	-	
1320A	4'-0"	7'-0"	F	EXISTNG			EXISTNG		20/A641	21/A642				HEAD AND JAMB RETURN ONLY
1400.1	12'-0"	10'-0"		STL	INSUL		STL		T/A641	11/A641, 17/A641	11/A641, 17/A641	8/A641	-	
1400.2	12'-0"	14'-0"		STL	INSUL		STL		T/A641	11/A641, 17/A641	11/A641, 17/A641	8/A641	-	
1400A	3'-0"	7'-2"	F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400B	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400C	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	

DOOR SCHEDULE

DOOR NUMBER	DOOR WIDTH	DOOR HEIGHT	Door Type	DOOR MATERIAL	DOOR GLASS	FRAME TYPE	FRAME MATERIAL	FRAME GLASS	DETAILS HEAD	DETAILS JAMB	DETAILS JAMB	DETAILS SILL	Fire Rating Label	REMARKS
1400D	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400E	6'-0"	7'-2"	N+N	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400F	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400H	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400J	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400K	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400M	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400N	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400P	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400Q	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1400R	6'-0"	7'-2"	F+F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641	8/A641	-	
1402A	3'-0"	7'-2"	FG2	WD	1/4" SAF	2G	ALUM	1/4" SAF	3/A426	2/A613	2/A613	3/A426	90 MN	120 MN RATED SIDELIGHT GLAZING, 90 MN DOOR GLAZING
1402B	3'-0"	7'-2"	N	WD	1/4" SAF	1	HM	-	4/A641	3/A641	3/A641	-	-	
1403	3'-0"	7'-2"	N	WD	1/4" SAF	1	HM	-	4/A641	3/A641	3/A641	-	90 MN	
1404	3'-0"	7'-6"	F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1405	3'-0"	7'-6"	D	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	LOUVERED DOOR
1406	3'-0"	7'-6"	D	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	LOUVERED DOOR
1407	3'-0"	7'-6"	F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1408	3'-0"	7'-6"	F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1409A	3'-0"	7'-6"	F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1409B	4'-0"	7'-2"	F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641			
1410A	3'-0"	7'-6"	F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1410B	3'-0"	7'-2"	F	FRP	INSUL	1	ALUM	-	9/A641	8/A641	8/A641		-	
1410C	3'-0"	7'-2"	F	HM	-	1	HM	-	4/A641	3/A641	3/A641	-	90 MN	
1411	6'-0"	7'-6"	F+F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	STC 36 RATED DOOR & FRAME, SELF-CLOSING DOOR
1412	6'-0"	7'-6"	F+F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	STC 36 RATED DOOR & FRAME
1413	5'-0"	7'-6"	F+F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1414	6'-0"	7'-6"	F+F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1415	6'-0"	7'-6"	F+F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1416	6'-0"	7'-6"	F+F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1417	6'-0"	7'-6"	F+F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1418	3'-0"	7'-6"	D	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	LOUVERED DOOR
1419	3'-0"	7'-6"	D	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	LOUVERED DOOR
1420	3'-0"	7'-6"	F	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	
1421	3'-0"	7'-6"	D	HM	-	1	HM	-	5/A641	3/A641	3/A641	-	-	LOUVERED DOOR
1422	3'-0"	7'-2"	F	HM	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1423A	3'-0"	7'-6"	F	HM	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1423B				STL			STL		20/A641	18/A641	18/A641	-	-	12'WX10'H COILING DOOR
1423C	12'-0"	10'-0"		STL	INSUL		STL		T/A641	11/A641	11/A641, TT/A641	8/A641		
1424	3'-0"	8'-0"	F+F	HM	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
1436	6'-0"	7'-2"	FG2 + FG2	WD	1" INSUL	5	ALUM	1" INSUL	2/A428	3/A613	3/A613	2/A428	90 MN	120 MN RATED TRANSOM GLAZING, 90 MN DOOR GLAZING
1437	6'-0"	7'-2"	FG2 + FG2	WD	1" INSUL	5	ALUM	1" INSUL	2/A428	3/A613	3/A613	2/A428	90 MN	120 MN RATED TRANSOM GLAZING, 90 MN DOOR GLAZING
2001B	3'-0"	7'-2"	F	EXISTNG			EXISTNG	-	-	-	-	-		NEW DOOR ACCESSORIES
2002	3'-0"	7'-2"	FG2	WD	1/4" SAF	2B	HM	1/4" SAF	14/A641	13/A641	12/A641	-	-	
2004	3'-0"	6'-10"	F	HM	INSUL	1	HM	-	8/A642	T/A642	T/A642	14/A642	90 MN	SILL 4" ABOVE SECOND FLOOR LEVEL
2005	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
2006	3'-0"	7'-2"	F	WD	-	1	HM	-	14/A641	13/A641	13/A641	-	-	
2101A	6'-0"	7'-2"	FG2 + FG2	WD	1/4" SAF	1A	HM	-	2/A426	1/A615	1/A615	2/A426	90 MN	90 MN GLAZING
2102	3'-0"	7'-2"	N	WD	1/4" SAF	1	HM	-	4/A641	3/A641	3/A641	-	-	
2103	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
2202	6'-0"	7'-2"	F+F	WD			EXISTNG	-	-	-	-	-		
2204	6'-0"	6'-10"	F+F	EXISTNG	-		EXISTNG	-	-	-	-	-	EXISTNG	ADD PADLOCK, CLOSING DEVICE
2205	6'-0"	6'-10"	F+F	EXISTNG	-		EXISTNG	-	-	-	-	-	EXISTNG	ADD PADLOCK, CLOSING DEVICE
2306	3'-0"	7'-2"	F	WD	-	1	HM	-	4/A641	3/A641	3/A641	-	-	
2307	3'-0"	7'-2"	FG2	WD	1/4" SAF	2A	HM	1/4" SAF	4/A641	3/A641	2/A641	-	-	
2401A	6'-0"	7'-2"	FG2 + FG2	WD	1" INSUL	1A	HM	-	2/A428	3/A613	3/A613	2/A428	90 MN	90 MN GLAZING
2401B	6'-0"	7'-2"	FG2 + FG2	WD	1" INSUL	1A	HM	-	2/A428	3/A613	3/A613	2/A428	90 MN	90 MN GLAZING
2402A	3'-0"	7'-2"	N	WD	1/4" SAF	1	HM	-	4/A641	3/A641	3/A641	-	-	
2402B				STL			STL		12/A642	18/A641	18/A641	12/A642	-	
2403	3'-0"	7'-2"	N	WD	1/4" SAF	1	HM	-	4/A641	3/A641	3/A641	-	-	
2404	3'-0"	7'-2"	F	WD	-	1	HM	-	19/A642	18/A642	18/A642	-	-	

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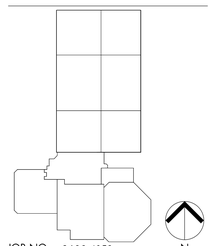
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

N

SHEET TITLE

ARCHITECTURAL SCHEDULES & TYPES - DOORS

SHEET NO.

A050

LEGEND:

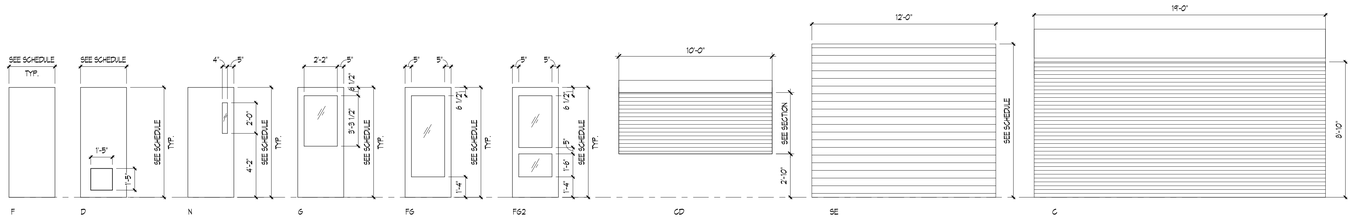
ALUM - ALUMINUM
HM - HOLLOW METAL
STL - STAINLESS STEEL
FRP - FIBERGLASS REINFORCED PANEL
FPD - TRUE FIBERGLASS DOOR
CD - COUNTERTOP COILING DOOR
C - COILING DOOR
SE - SECTIONAL DOOR

NOTES:

1. EXTERIOR DOORS SHALL BE FABRICATED IN SIZES TO ACCOMMODATE OPENINGS (I.E. UNDERCUT AT BARRIER FREE THRESHOLDS)
2. REFER TO SPECIFICATION FOR HARDWARE SCHEDULE.
3. ALL INTERIOR BORROWED LITE AND SIDE LITE GLAZING SHOULD BE ON CORRIDOR SIDE U.N.O..
4. FRAMING SHALL BE 2" TYP. U.N.O.
5. VERIFY IN FIELD ALL EXISTING OPENING AND FRAMES PRIOR TO ORDER DOORS.
6. REFER TO FLOOR PLANS AND DOOR HARDWARE FOR REMOVABLE MULLIONS.

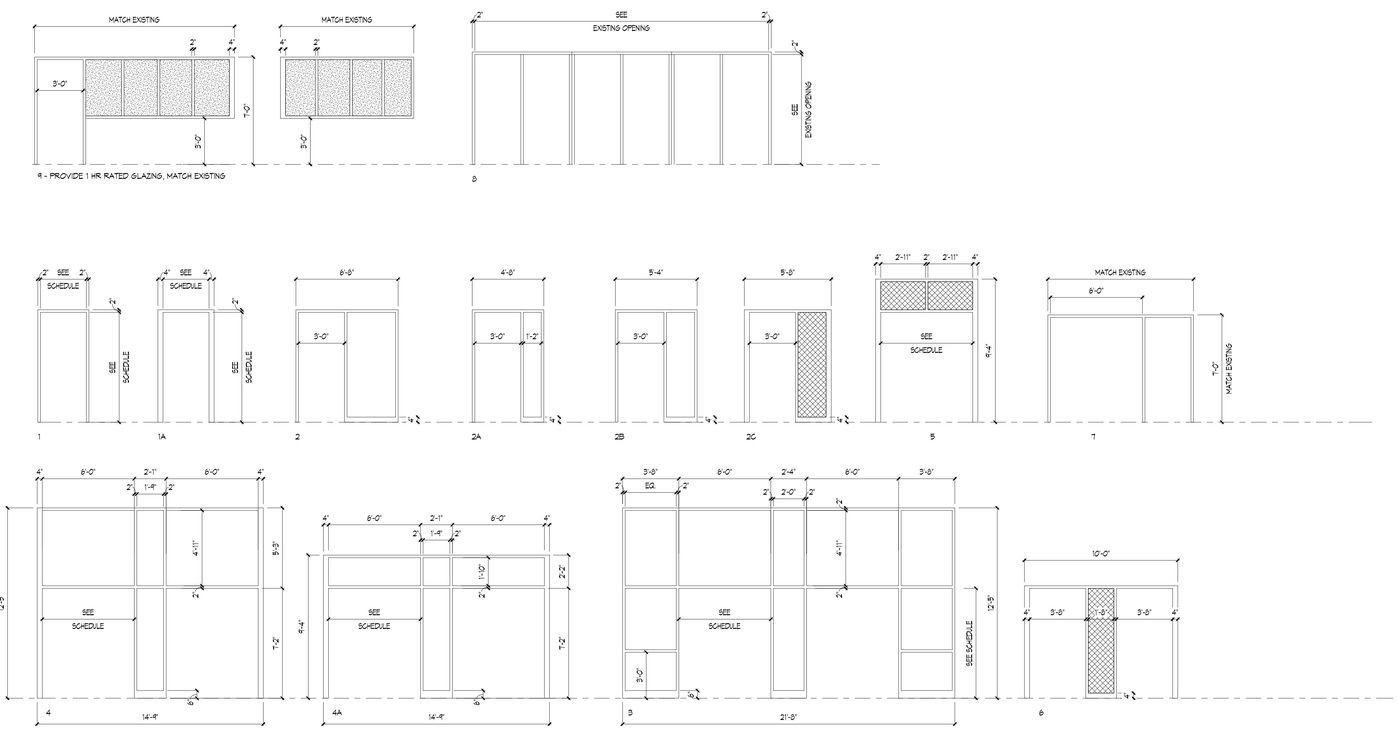
120 MIN FIRE RATED GLAZING

60 MIN FIRE RATED GLAZING



DOOR TYPES

FIELD VERIFY OPENING SIZE PRIOR TO MANUFACTURING



9 - PROVIDE 1 HR RATED GLAZING, MATCH EXISTING

FRAME TYPES

FIELD VERIFY OPENING SIZE AND THROAT WIDTH PRIOR TO MANUFACTURING

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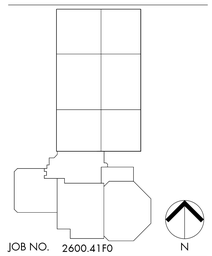

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SHEET TITLE
ARCHITECTURAL SCHEDULES & TYPES - DOORS

SHEET NO.
A051

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LEGEND:

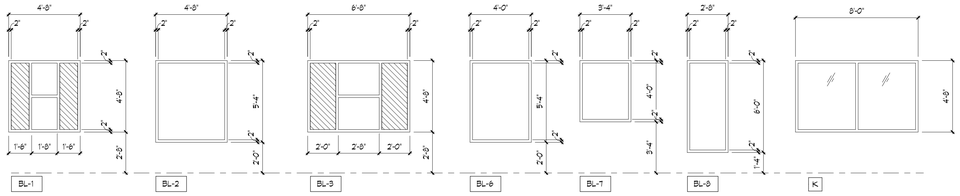
HM - HOLLOW METAL
ALUM - ALUMINUM

NOTES:

1. ALL INTERIOR BORROWED LITE AND SIDE LITE GLAZING SHOULD BE ON CORRIDOR SIDE.
2. FRAMING SHALL BE 2" TYP. U.N.O.
3. VERIFY IN FIELD ALL EXISTING OPENING AND FRAMES.
4. 13 1/2" MULLIONS AT ALL H WINDOW HEAD, JAMB AND SILL. ALL INTERMEDIATE MULLIONS ARE 4 1/2" U.N.O.

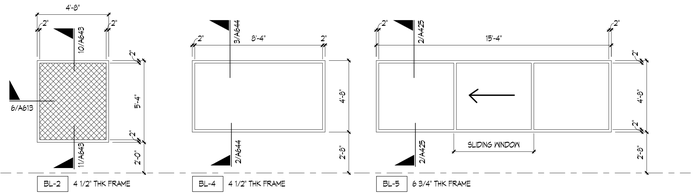
GREEN TINTED GLAZING

120 MIN FIRE RATED GLAZING



BORROWED LITE AND WINDOWS - HM

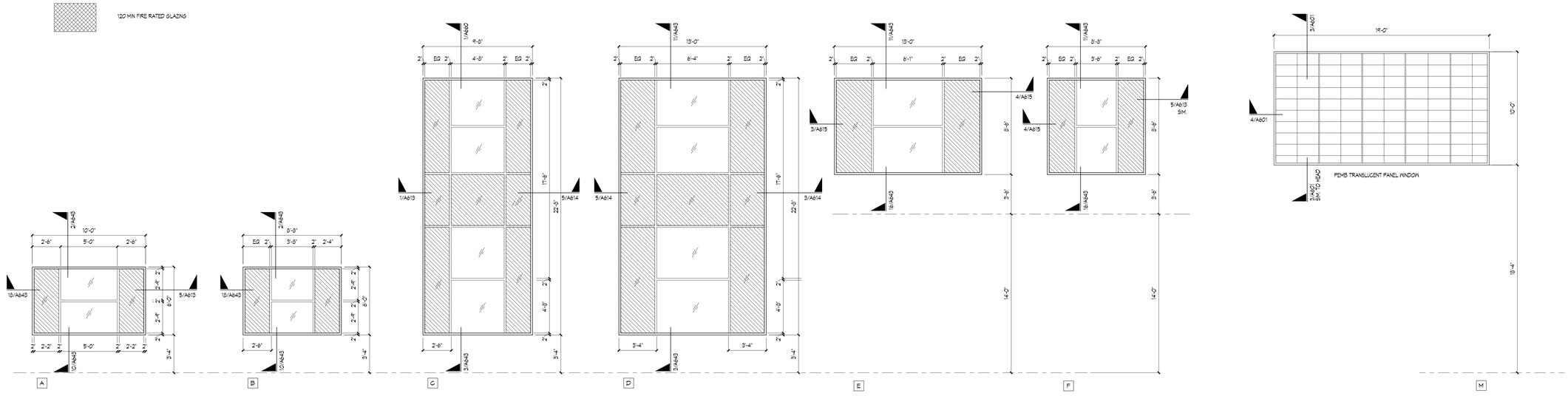
FIELD VERIFY OPENING SIZE PRIOR TO MANUFACTURING

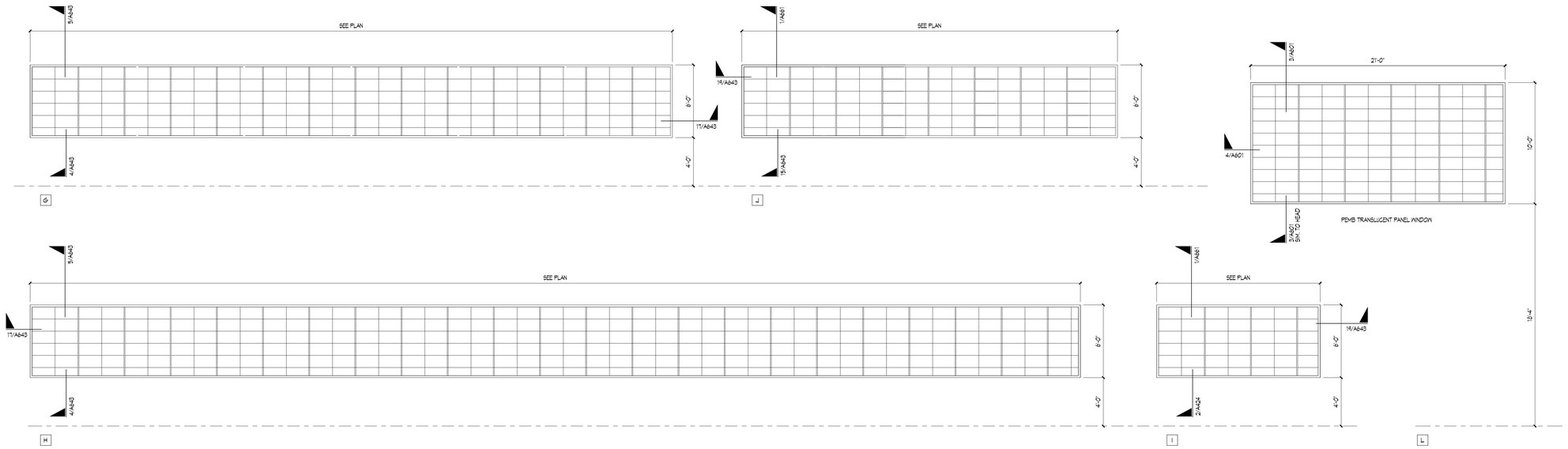


120 MIN GLAZING AT COLUMN LINE P.20

BORROWED LITE AND WINDOWS - ALUM

FIELD VERIFY OPENING SIZE PRIOR TO MANUFACTURING





WINDOW TYPES

FIELD VERIFY OPENING SIZE PRIOR TO MANUFACTURING

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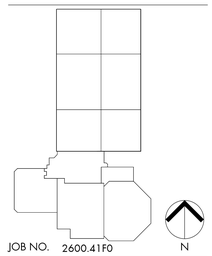
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



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SHEET TITLE

ARCHITECTURAL SCHEDULES & TYPES - WINDOWS

SHEET NO.

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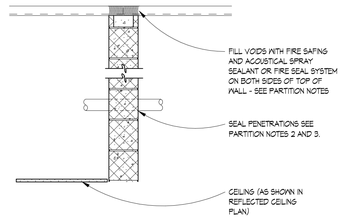
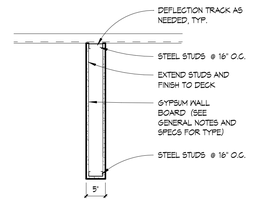
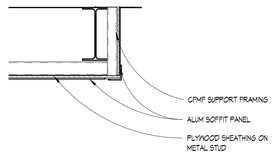


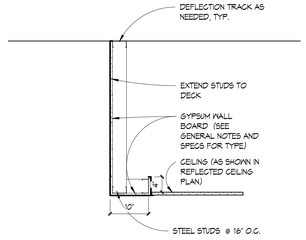
10 BULKHEAD DETAIL
3/4" = 1'-0"



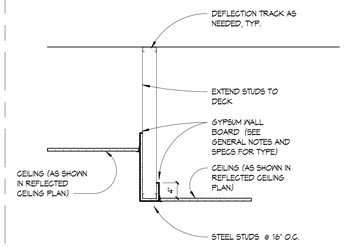
5 BULKHEAD DETAIL
3/4" = 1'-0"



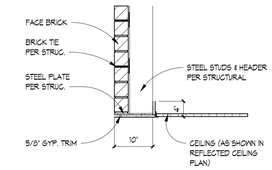
9 METAL SOFFIT RETURN
3/4" = 1'-0"



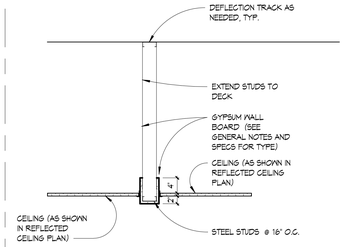
4 BULKHEAD DETAIL
3/4" = 1'-0"



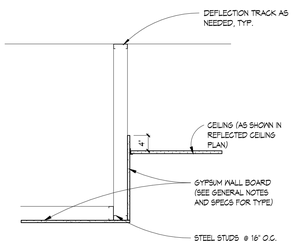
8 BULKHEAD DETAIL
3/4" = 1'-0"



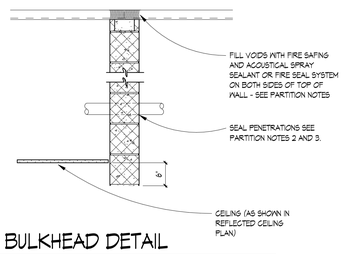
3 BULKHEAD DETAIL
3/4" = 1'-0"



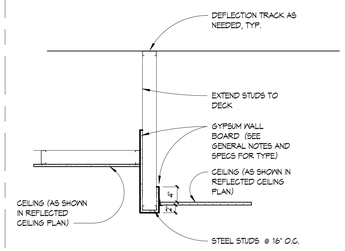
7 BULKHEAD DETAIL
3/4" = 1'-0"



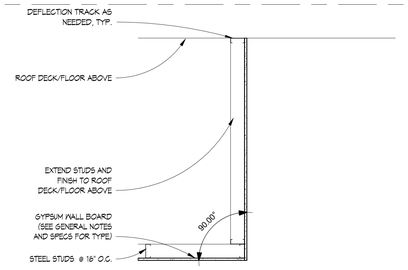
2 BULKHEAD DETAIL
3/4" = 1'-0"



11 BULKHEAD DETAIL
3/4" = 1'-0"



6 BULKHEAD DETAIL
3/4" = 1'-0"



1 BULKHEAD DETAIL
3/4" = 1'-0"

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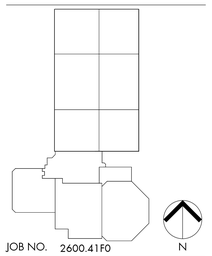

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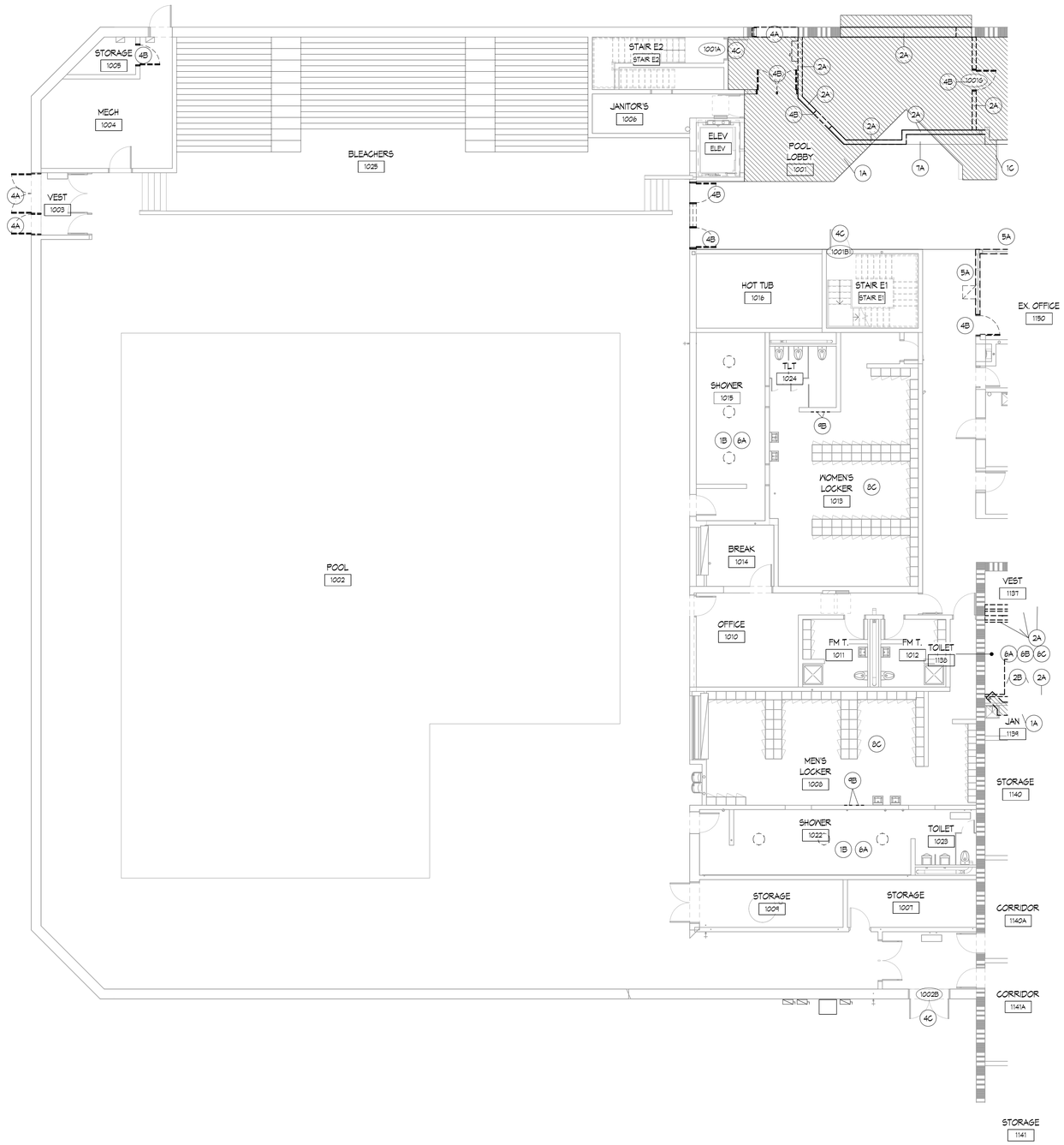
SHEET TITLE
BULKHEAD DETAILS

SHEET NO.
A070



1 FIRST FLOOR DEMOLITION PLAN - UNIT 1000

1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
4. IT IS THE INTENTION OF THESE DOCUMENTS THAT THE DEMOLITION OF PORTIONS OF MASONRY WALLS (BOTH INTERIOR AND EXTERIOR) ARE GENERALLY TO BE DONE ALONG JOINT AND COURSING LINES.
5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
6. ALL DEMOLITION IS TO BE DONE WITH REASONABLE CARE AS TO MINIMIZE DAMAGE TO EXISTING REMAINING SURFACES. CONTRACTOR IS RESPONSIBLE TO PROPERLY DISPOSE OF ALL DEMOLISHED ITEMS NOT INDICATED TO BE RELOCATED OR TURNED OVER TO OWNER.
7. REMOVE AND TURN OVER TO OWNER ALL FIRE EXTINGUISHERS AND CABINETS AT AREAS TO BE DEMOLISHED, IF NOT OTHERWISE INDICATED TO BE RELOCATED.
8. CLEAN AND PREPARE ALL EXISTING SURFACES WHICH ARE TO BE PAINTED/ PATCHED. PREPARATION TO INCLUDE MINOR PATCHING.
9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 **FLOORS**

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 **WALLS**

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION. MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE 1 & 2.

9 MISCELLANEOUS

A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.

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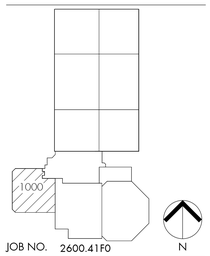

JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION PLAN - FIRST FLOOR - UNIT 1000

SHEET NO.

A121.a

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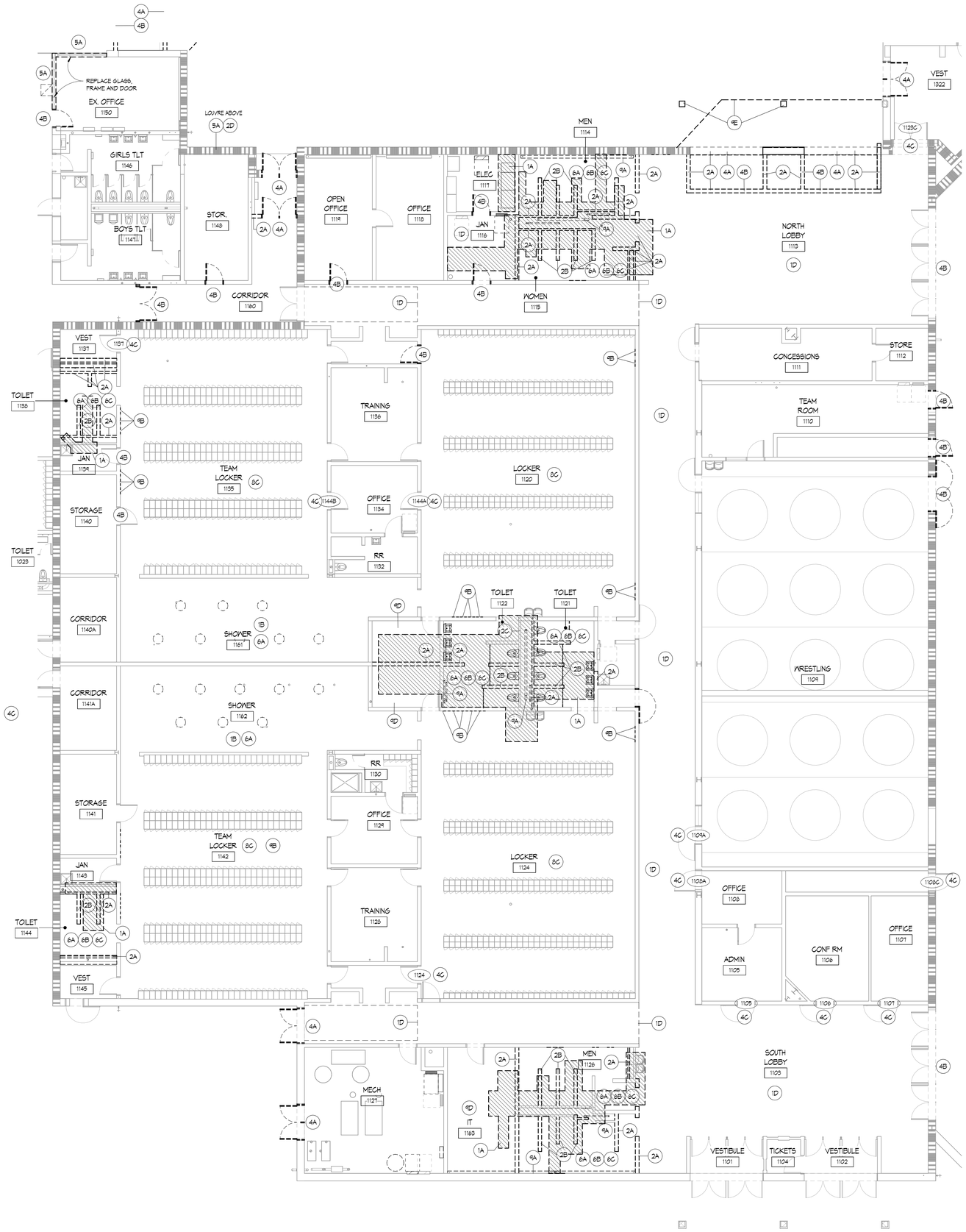

1 FIRST FLOOR DEMOLITION PLAN - UNIT 1100
1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
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5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
6. ALL DEMOLITION IS TO BE DONE WITH REASONABLE CARE AS TO MINIMIZE DAMAGE TO EXISTING REMAINING SURFACES. CONTRACTOR IS RESPONSIBLE TO PROPERLY DISPOSE OF ALL DEMOLISHED ITEMS NOT INDICATED TO BE RELOCATED OR TURNED OVER TO OWNER.
7. REMOVE AND TURN OVER TO OWNER ALL FIRE EXTINGUISHERS AND CABINETS AT AREAS TO BE DEMOLISHED, IF NOT OTHERWISE INDICATED TO BE RELOCATED.
8. CLEAN AND PREPARE ALL EXISTING SURFACES WHICH ARE TO BE PAINTED/ PATCHED. PREPARATION TO INCLUDE MINOR PATCHING.
9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 FLOORS

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 WALLS

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION. MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE 1 & 2.

9 MISCELLANEOUS

A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.

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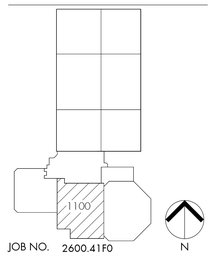

JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION PLAN - FIRST FLOOR - UNIT 1100

SHEET NO.

A121.b

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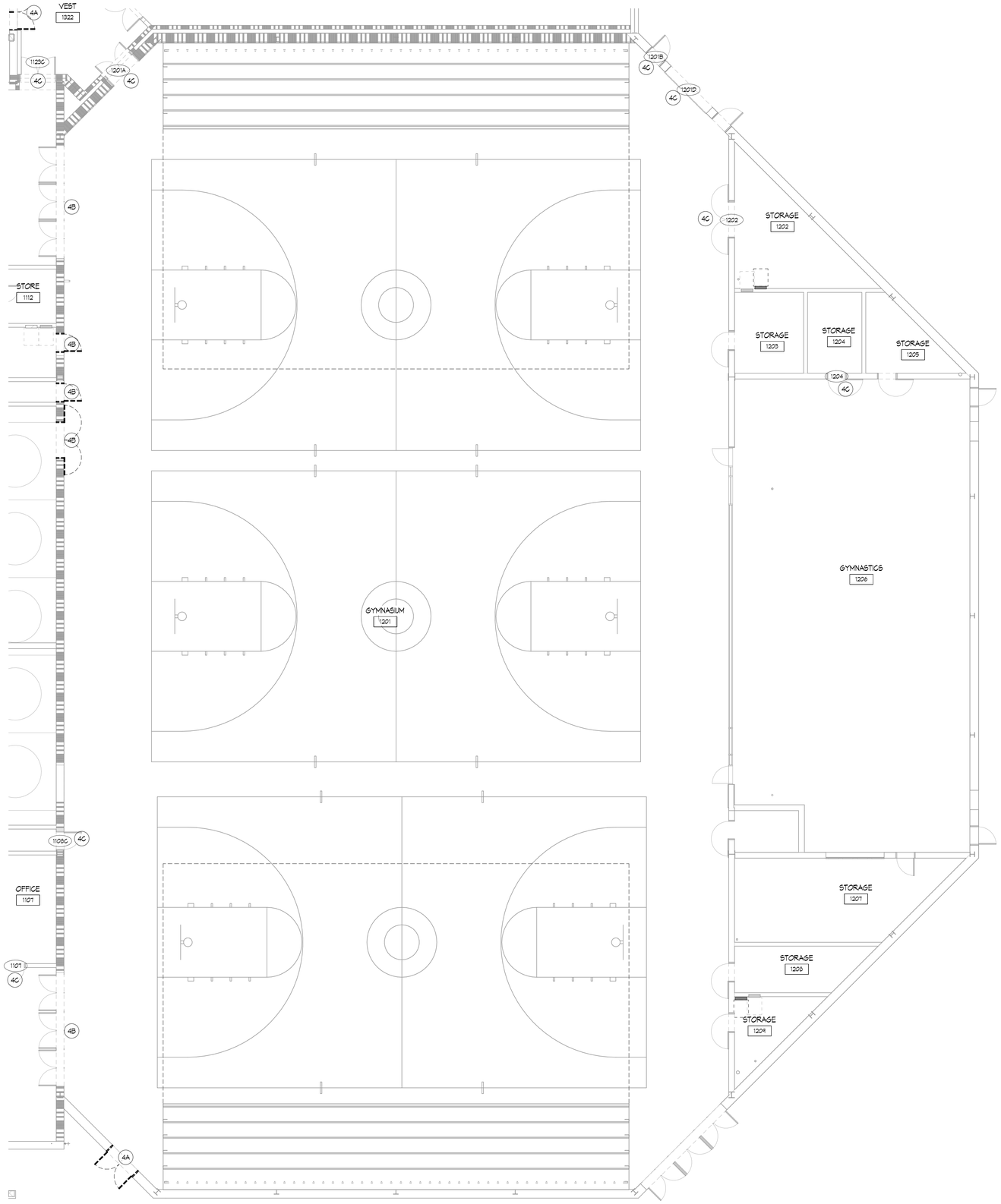

1 FIRST FLOOR DEMOLITION PLAN - UNIT 1200
1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
4. IT IS THE INTENTION OF THESE DOCUMENTS THAT THE DEMOLITION OF PORTIONS OF MASONRY WALLS (BOTH INTERIOR AND EXTERIOR) ARE GENERALLY TO BE DONE ALONG JOINT AND COURSING LINES.
5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
6. ALL DEMOLITION IS TO BE DONE WITH REASONABLE CARE AS TO MINIMIZE DAMAGE TO EXISTING REMAINING SURFACES. CONTRACTOR IS RESPONSIBLE TO PROPERLY DISPOSE OF ALL DEMOLISHED ITEMS NOT INDICATED TO BE RELOCATED OR TURNED OVER TO OWNER.
7. REMOVE AND TURN OVER TO OWNER ALL FIRE EXTINGUISHERS AND CABINETS AT AREAS TO BE DEMOLISHED, IF NOT OTHERWISE INDICATED TO BE RELOCATED.
8. CLEAN AND PREPARE ALL EXISTING SURFACES WHICH ARE TO BE PAINTED/ PATCHED. PREPARATION TO INCLUDE MINOR PATCHING.
9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 FLOORS

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 WALLS

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION. MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MEGH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE 1 & 2.

9 MISCELLANEOUS

A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.

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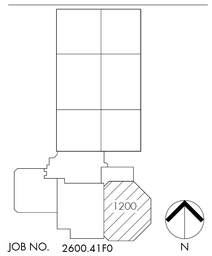
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION PLAN - FIRST FLOOR - UNIT 1200

SHEET NO.

A121.c

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DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
4. IT IS THE INTENTION OF THESE DOCUMENTS THAT THE DEMOLITION OF PORTIONS OF MASONRY WALLS (BOTH INTERIOR AND EXTERIOR) ARE GENERALLY TO BE DONE ALONG JOINT AND COURSING LINES.
5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
6. ALL DEMOLITION IS TO BE DONE WITH REASONABLE CARE AS TO MINIMIZE DAMAGE TO EXISTING REMAINING SURFACES. CONTRACTOR IS RESPONSIBLE TO PROPERLY DISPOSE OF ALL DEMOLISHED ITEMS NOT INDICATED TO BE RELOCATED OR TURNED OVER TO OWNER.
7. REMOVE AND TURN OVER TO OWNER ALL FIRE EXTINGUISHERS AND CABINETS AT AREAS TO BE DEMOLISHED, IF NOT OTHERWISE INDICATED TO BE RELOCATED.
8. CLEAN AND PREPARE ALL EXISTING SURFACES WHICH ARE TO BE PAINTED/ PATCHED. PREPARATION TO INCLUDE MINOR PATCHING.
9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 FLOORS

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 WALLS

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION, MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE # 4.2.

9 MISCELLANEOUS

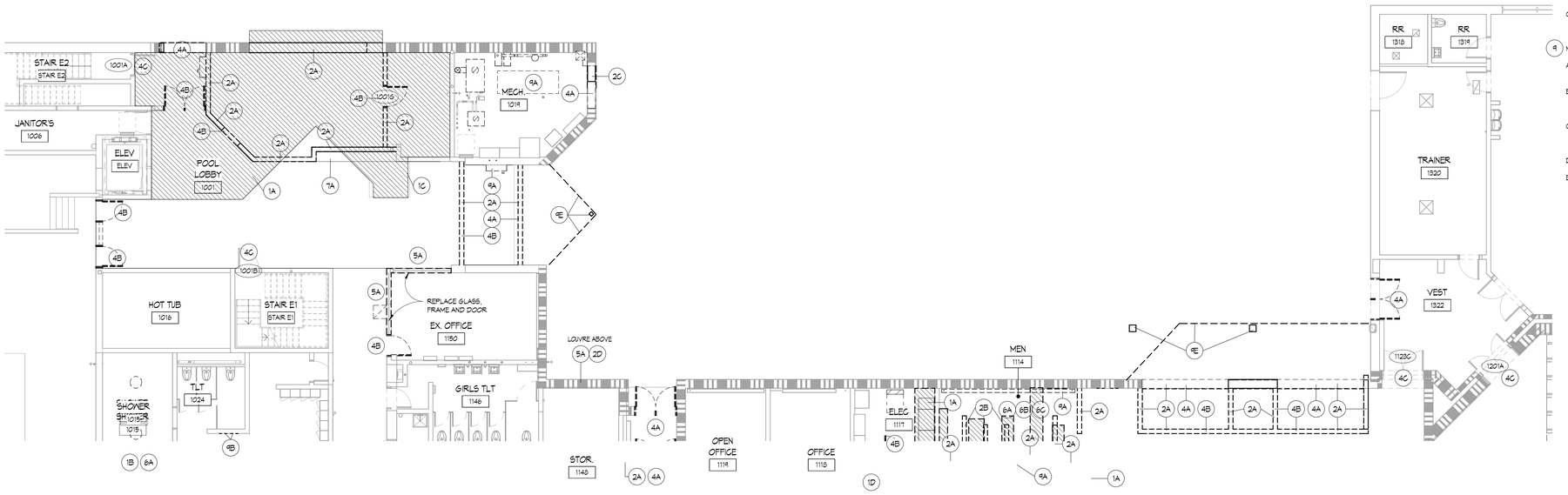
A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH HALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.



1 FIRST FLOOR DEMOLITION PLAN - UNIT 1300
1/8" = 1'-0"

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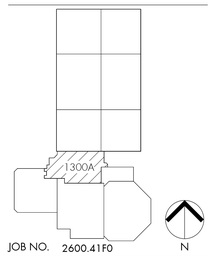
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION PLAN - FIRST FLOOR - UNIT 1300A

SHEET NO.

A121.d

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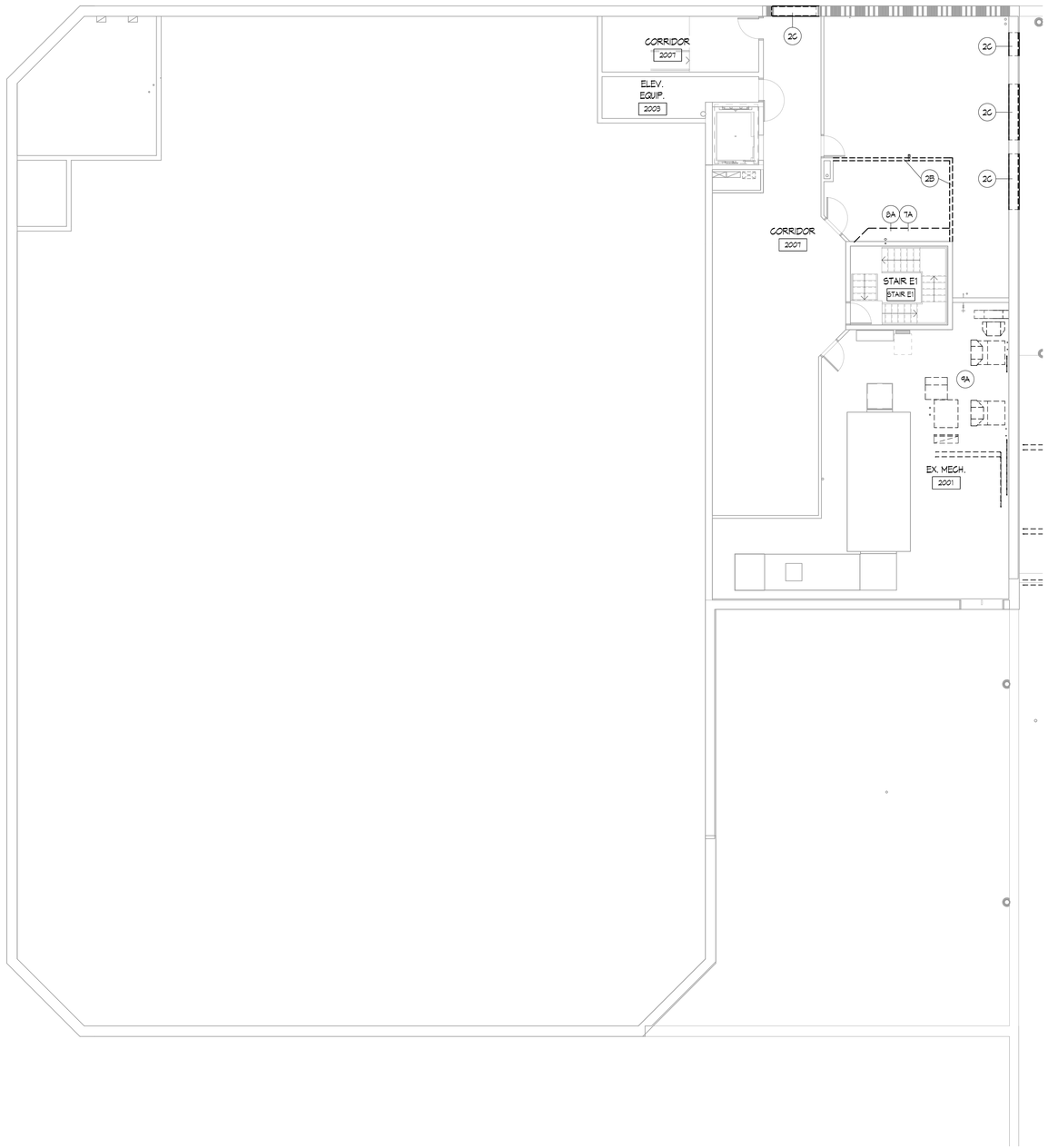

1 SECOND FLOOR DEMOLITION PLAN - UNIT 2000
1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
4. IT IS THE INTENTION OF THESE DOCUMENTS THAT THE DEMOLITION OF PORTIONS OF MASONRY WALLS (BOTH INTERIOR AND EXTERIOR) ARE GENERALLY TO BE DONE ALONG JOINT AND COURSING LINES.
5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
6. ALL DEMOLITION IS TO BE DONE WITH REASONABLE CARE AS TO MINIMIZE DAMAGE TO EXISTING REMAINING SURFACES. CONTRACTOR IS RESPONSIBLE TO PROPERLY DISPOSE OF ALL DEMOLISHED ITEMS NOT INDICATED TO BE RELOCATED OR TURNED OVER TO OWNER.
7. REMOVE AND TURN OVER TO OWNER ALL FIRE EXTINGUISHERS AND CABINETS AT AREAS TO BE DEMOLISHED, IF NOT OTHERWISE INDICATED TO BE RELOCATED.
8. CLEAN AND PREPARE ALL EXISTING SURFACES WHICH ARE TO BE PAINTED/ PATCHED. PREPARATION TO INCLUDE MINOR PATCHING.
9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 FLOORS

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 WALLS

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION, MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE 1 & 2.

9 MISCELLANEOUS

A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.

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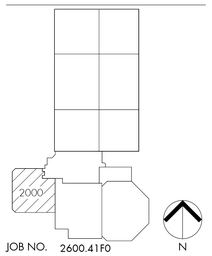
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION PLAN - SECOND FLOOR - UNIT 2000

SHEET NO.

A122.a

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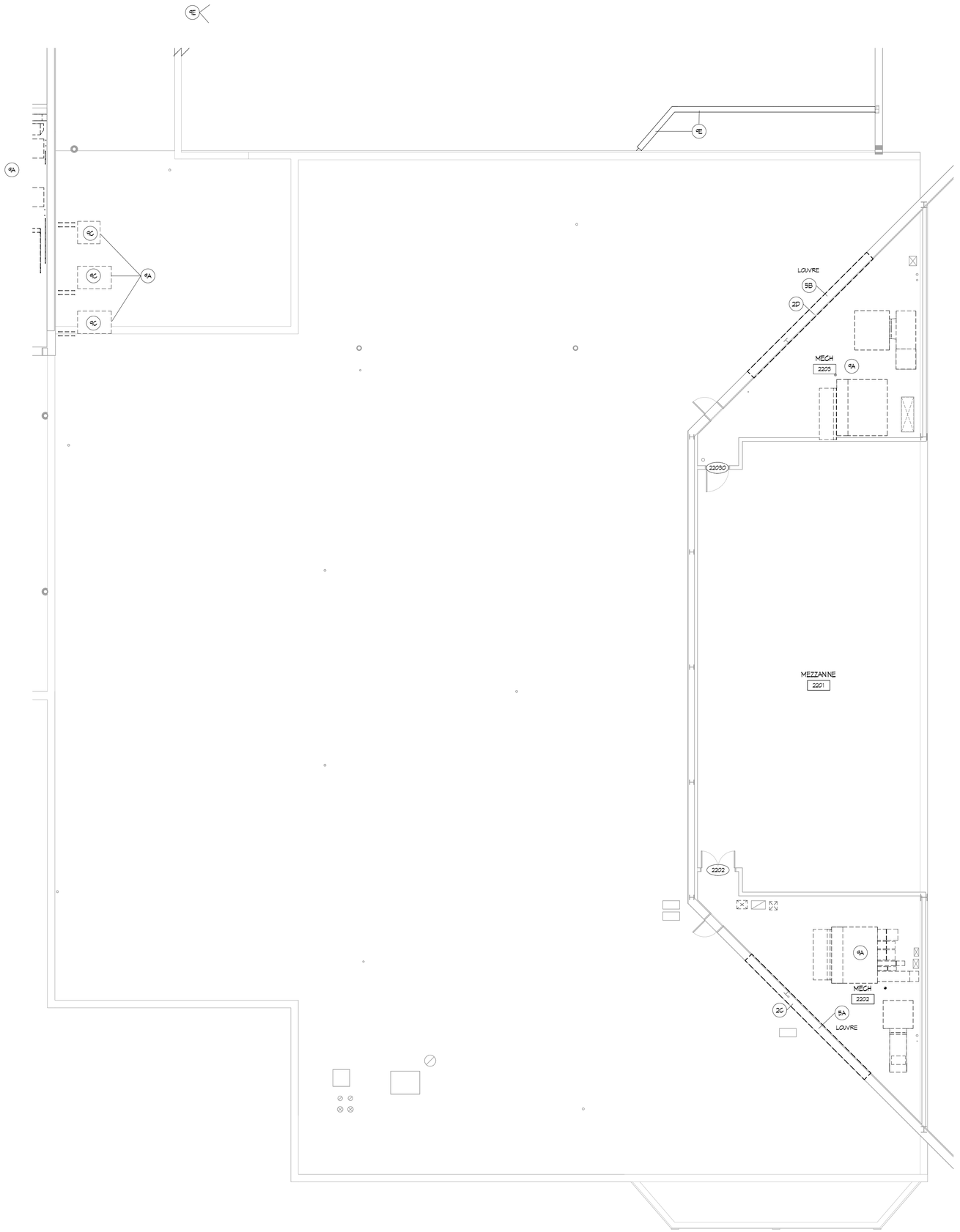

1 SECOND FLOOR DEMOLITION PLAN - UNIT 2100
1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
4. IT IS THE INTENTION OF THESE DOCUMENTS THAT THE DEMOLITION OF PORTIONS OF MASONRY WALLS (BOTH INTERIOR AND EXTERIOR) ARE GENERALLY TO BE DONE ALONG JOINT AND COURSING LINES.
5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
6. ALL DEMOLITION IS TO BE DONE WITH REASONABLE CARE AS TO MINIMIZE DAMAGE TO EXISTING REMAINING SURFACES. CONTRACTOR IS RESPONSIBLE TO PROPERLY DISPOSE OF ALL DEMOLISHED ITEMS NOT INDICATED TO BE RELOCATED OR TURNED OVER TO OWNER.
7. REMOVE AND TURN OVER TO OWNER ALL FIRE EXTINGUISHERS AND CABINETS AT AREAS TO BE DEMOLISHED, IF NOT OTHERWISE INDICATED TO BE RELOCATED.
8. CLEAN AND PREPARE ALL EXISTING SURFACES WHICH ARE TO BE PAINTED/ PATCHED. PREPARATION TO INCLUDE MINOR PATCHING.
9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 FLOORS

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 WALLS

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION. MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE 1 & 2.

9 MISCELLANEOUS

A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.

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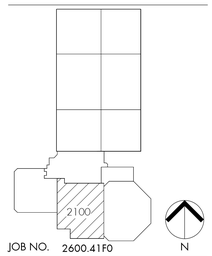

JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION PLAN - SECOND FLOOR - UNIT 2100

SHEET NO.

A122.b

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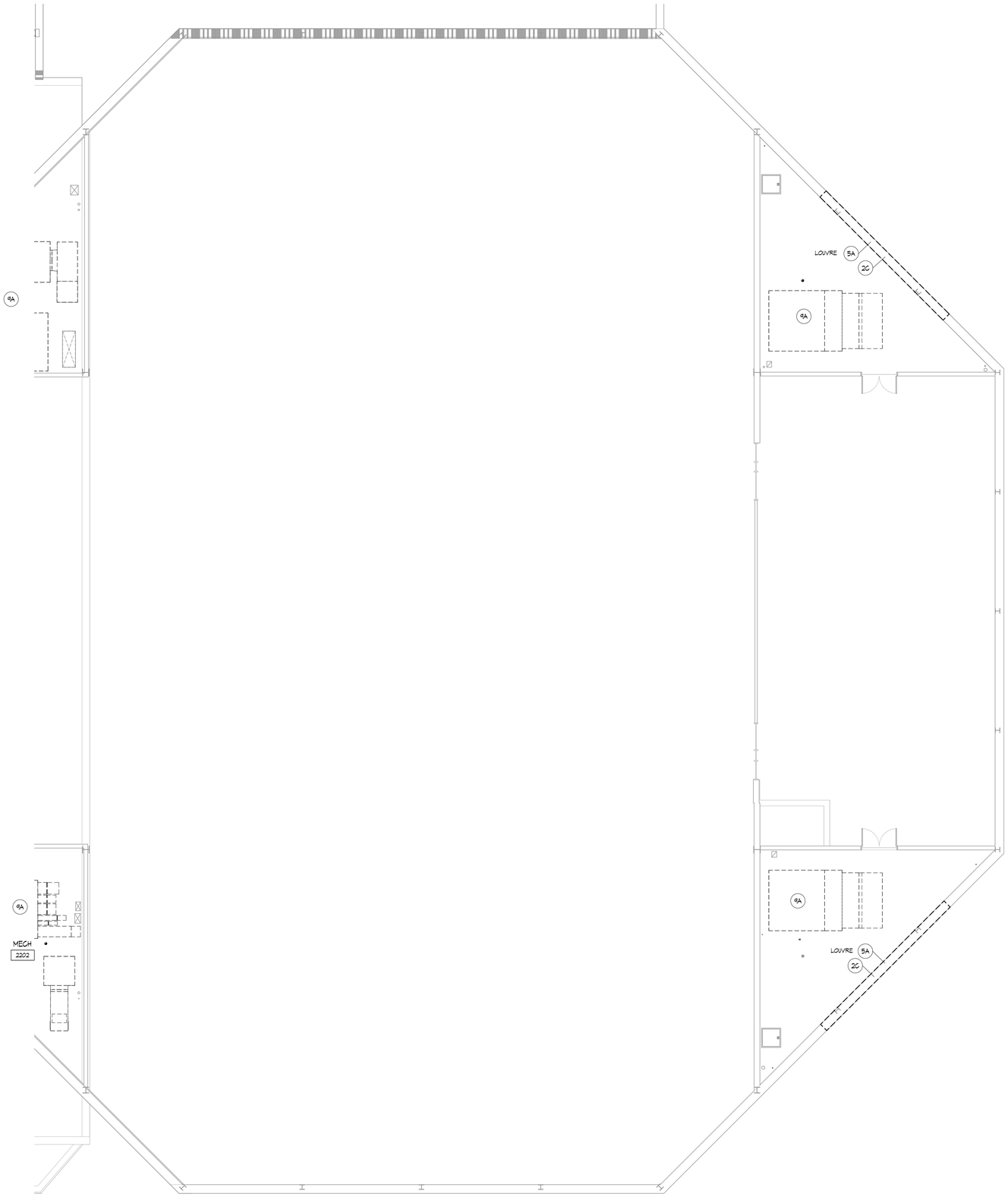

1 SECOND FLOOR DEMOLITION PLAN - UNIT 2200
1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
4. IT IS THE INTENTION OF THESE DOCUMENTS THAT THE DEMOLITION OF PORTIONS OF MASONRY WALLS (BOTH INTERIOR AND EXTERIOR) ARE GENERALLY TO BE DONE ALONG JOINT AND COURSING LINES.
5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
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9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 **FLOORS**

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

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C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

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D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

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B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

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B. NOT USED

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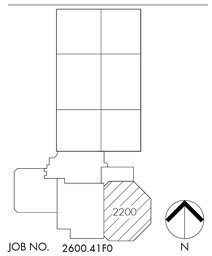

JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION PLAN - SECOND FLOOR - UNIT 2200

SHEET NO.

A122.c

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12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 FLOORS

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 WALLS

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION. MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

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B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE 1 & 2.

9 MISCELLANEOUS

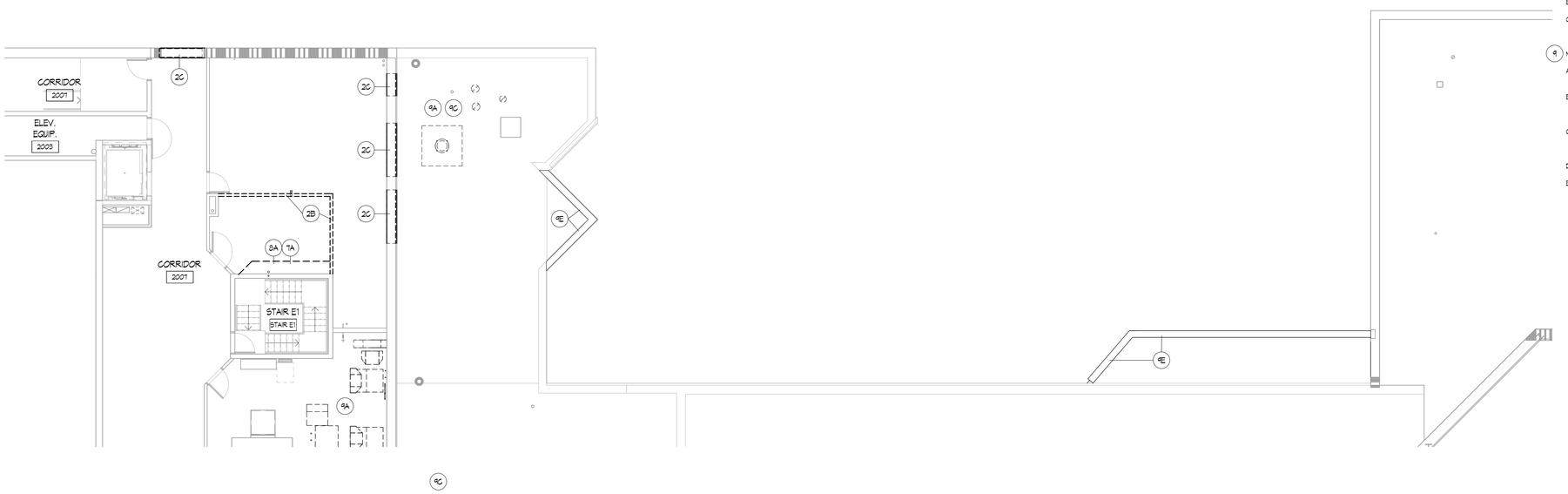
A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH HALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.



1 SECOND FLOOR DEMOLITION PLAN - UNIT 2300
1/8" = 1'-0"

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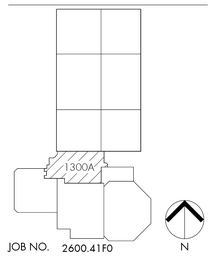
HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
DEMOLITION PLAN - SECOND FLOOR - UNIT 2300A

SHEET NO.
A122.d

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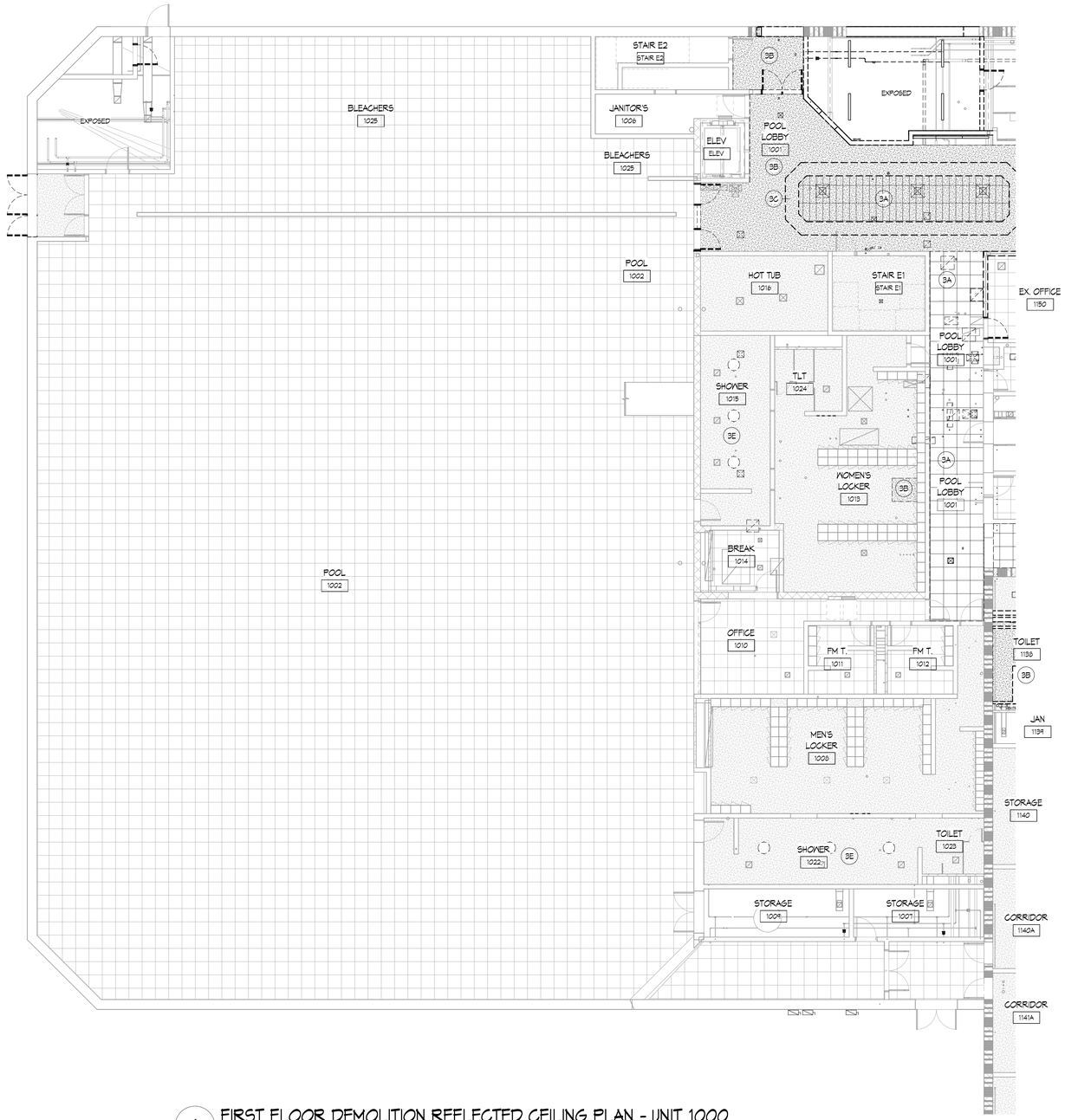

1 FIRST FLOOR DEMOLITION REFLECTED CEILING PLAN - UNIT 1000
1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
4. IT IS THE INTENTION OF THESE DOCUMENTS THAT THE DEMOLITION OF PORTIONS OF MASONRY WALLS (BOTH INTERIOR AND EXTERIOR) ARE GENERALLY TO BE DONE ALONG JOINT AND COURSING LINES.
5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
6. ALL DEMOLITION IS TO BE DONE WITH REASONABLE CARE AS TO MINIMIZE DAMAGE TO EXISTING REMAINING SURFACES. CONTRACTOR IS RESPONSIBLE TO PROPERLY DISPOSE OF ALL DEMOLISHED ITEMS NOT INDICATED TO BE RELOCATED OR TURNED OVER TO OWNER.
7. REMOVE AND TURN OVER TO OWNER ALL FIRE EXTINGUISHERS AND CABINETS AT AREAS TO BE DEMOLISHED, IF NOT OTHERWISE INDICATED TO BE RELOCATED.
8. CLEAN AND PREPARE ALL EXISTING SURFACES WHICH ARE TO BE PAINTED/ PATCHED. PREPARATION TO INCLUDE MINOR PATCHING.
9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 **FLOORS**

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 **WALLS**

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION. MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE 1 & 2.

9 MISCELLANEOUS

A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.

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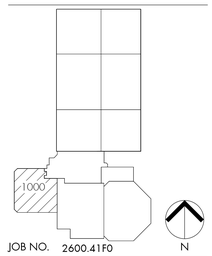

JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1000

SHEET NO.

A171.a

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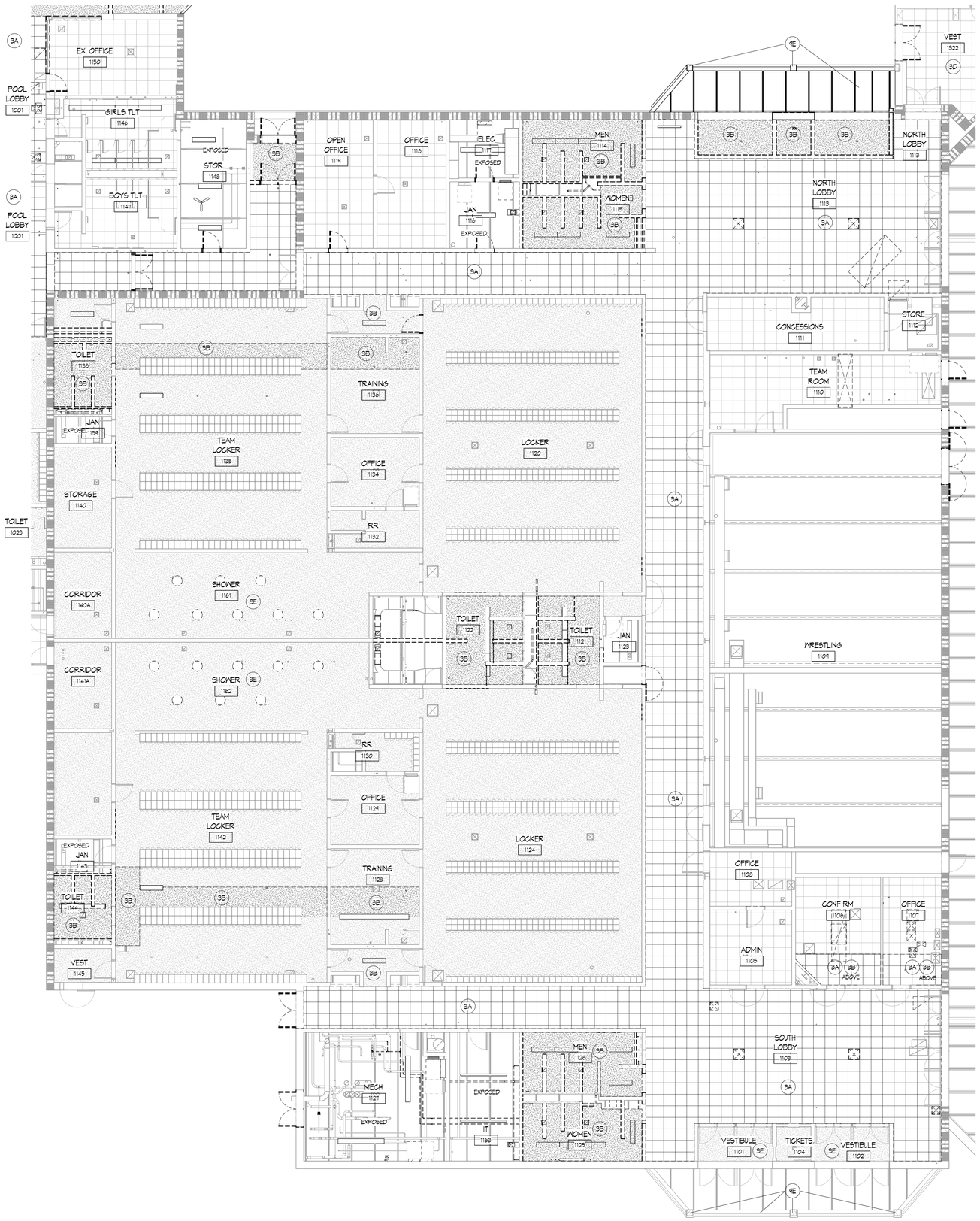

1 FIRST FLOOR DEMOLITION REFLECTED CEILING PLAN - UNIT 1100

1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
4. IT IS THE INTENTION OF THESE DOCUMENTS THAT THE DEMOLITION OF PORTIONS OF MASONRY WALLS (BOTH INTERIOR AND EXTERIOR) ARE GENERALLY TO BE DONE ALONG JOINT AND COURSING LINES.
5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
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8. CLEAN AND PREPARE ALL EXISTING SURFACES WHICH ARE TO BE PAINTED/ PATCHED. PREPARATION TO INCLUDE MINOR PATCHING.
9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 FLOORS

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 WALLS

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION. MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE 1 & 2.

9 MISCELLANEOUS

A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.

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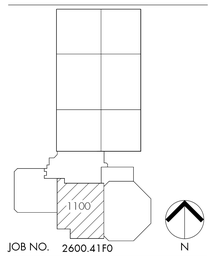

JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1100

SHEET NO.

A171.b

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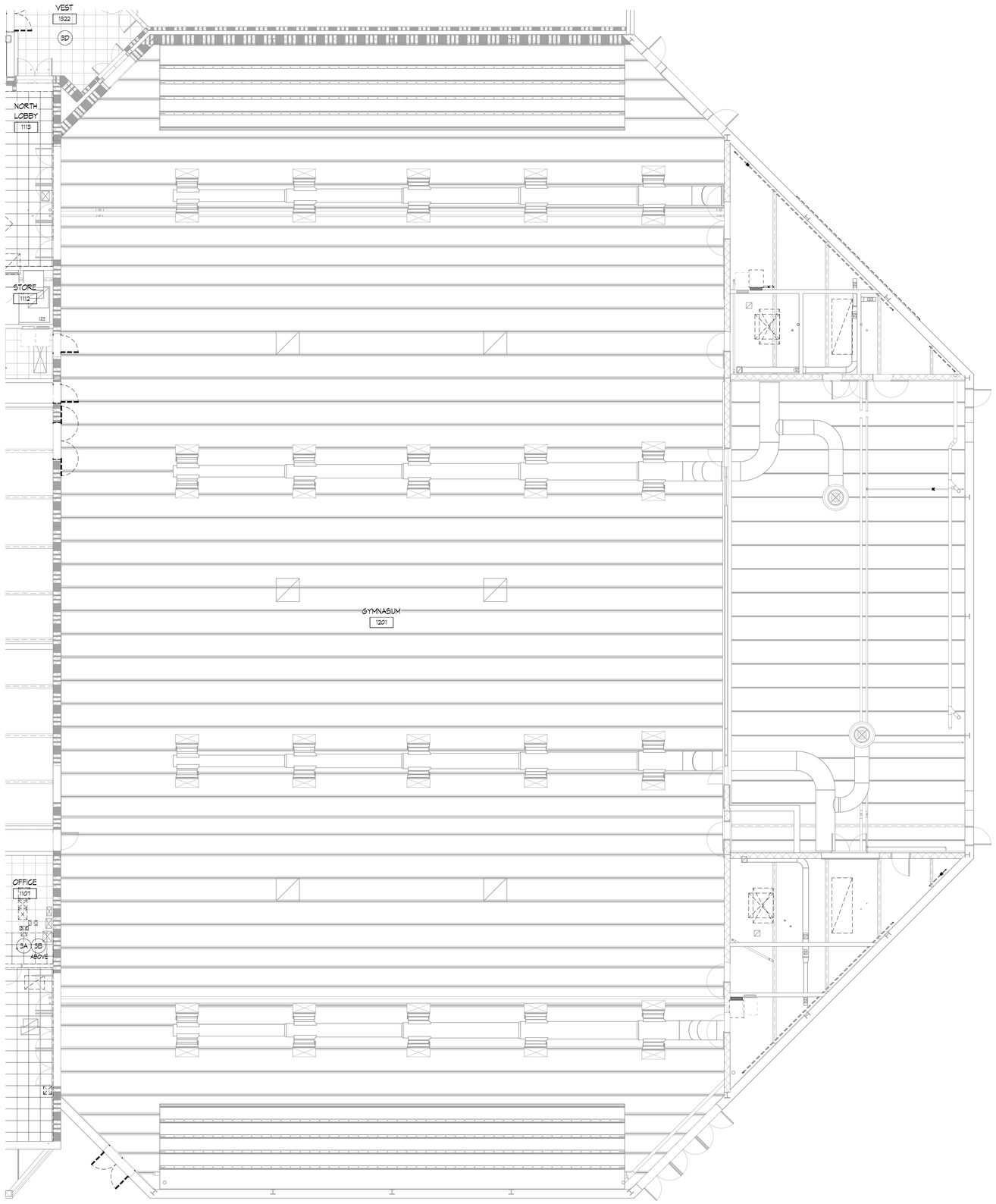

1 FIRST FLOOR DEMOLITION REFLECTED CEILING PLAN - UNIT 1200

1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
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10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 FLOORS

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 WALLS

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

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D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE 1 & 2.

9 MISCELLANEOUS

A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SUPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.

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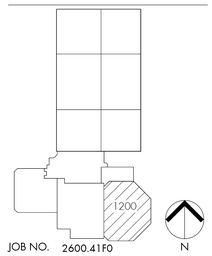
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1200

SHEET NO.

A171.c

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DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
4. IT IS THE INTENTION OF THESE DOCUMENTS THAT THE DEMOLITION OF PORTIONS OF MASONRY WALLS (BOTH INTERIOR AND EXTERIOR) ARE GENERALLY TO BE DONE ALONG JOINT AND COURSING LINES.
5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
6. ALL DEMOLITION IS TO BE DONE WITH REASONABLE CARE AS TO MINIMIZE DAMAGE TO EXISTING REMAINING SURFACES. CONTRACTOR IS RESPONSIBLE TO PROPERLY DISPOSE OF ALL DEMOLISHED ITEMS NOT INDICATED TO BE RELOCATED OR TURNED OVER TO OWNER.
7. REMOVE AND TURN OVER TO OWNER ALL FIRE EXTINGUISHERS AND CABINETS AT AREAS TO BE DEMOLISHED, IF NOT OTHERWISE INDICATED TO BE RELOCATED.
8. CLEAN AND PREPARE ALL EXISTING SURFACES WHICH ARE TO BE PAINTED/ PATCHED. PREPARATION TO INCLUDE MINOR PATCHING.
9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 FLOORS

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 WALLS

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT / LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION. MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINS SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE # 4 2.

9 MISCELLANEOUS

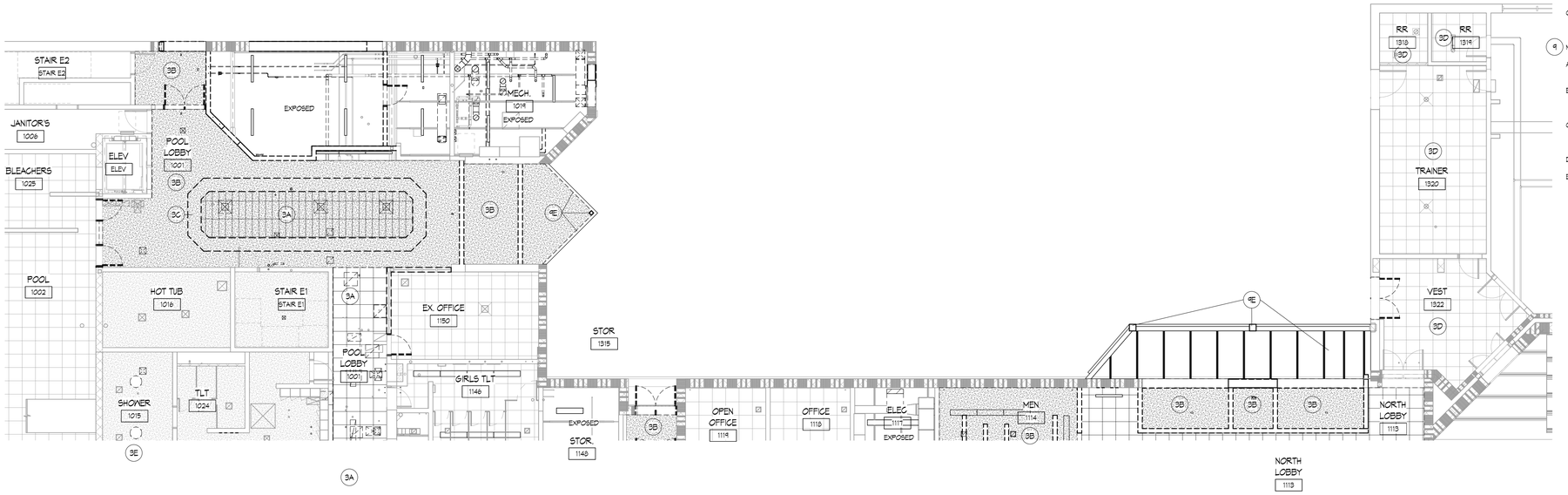
A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.



1 FIRST FLOOR DEMOLITION REFLECTED CEILING PLAN - UNIT 1300A

1/8" = 1'-0"

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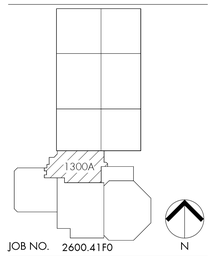

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SHEET TITLE

DEMOLITION REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1300A

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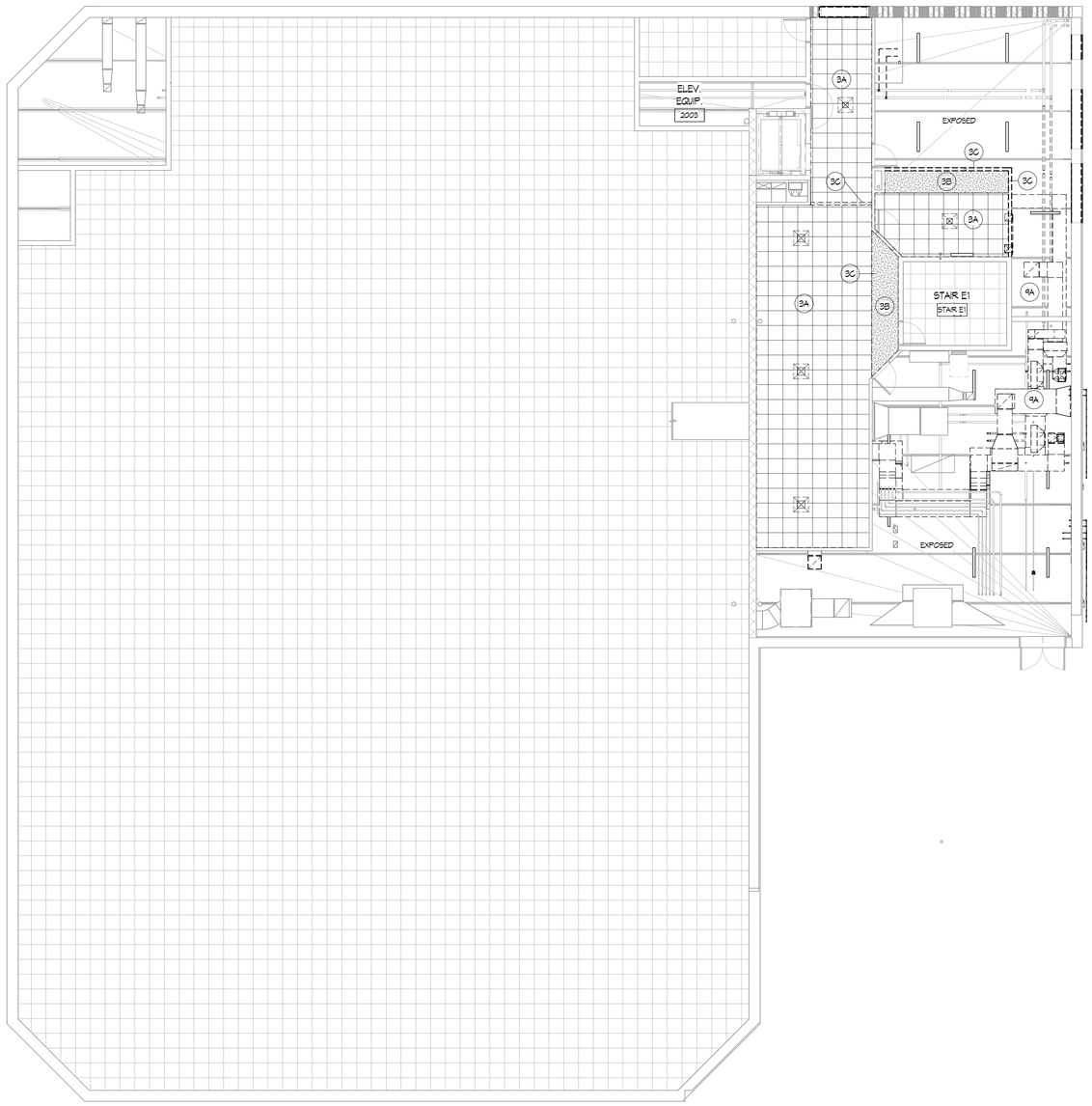

1 SECOND FLOOR DEMOLITION REFLECTED CEILING PLAN - UNIT 1000
1/8" = 1'-0"

DEMOLITION PLAN GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH ALL OTHER DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL AREAS THAT WILL REQUIRE DEMOLITION NOT INDICATED ON THESE SHEETS.
2. THE DEMOLITION PLANS GENERALLY INDICATE AREAS OF EXTENSIVE REMOVALS AND DO NOT INDICATE ALL OF THE WORK. CONTRACTOR SHALL PERFORM ALL DEMOLITION WHICH IS NECESSARY FOR THE PROPER EXECUTION OF THE PROJECT WHETHER OR NOT SAID DEMOLITION IS SPECIFICALLY INDICATED WITHIN THE DOCUMENTS.
3. CONTRACTOR IS RESPONSIBLE TO INFILL, PATCH AND/ OR REPAIR, EXISTING WALL, FLOORS AND CEILINGS TO MATCH EXISTING WHERE DEMOLITION OCCURS OTHER THAN AS DESCRIBED IN THESE DOCUMENTS.
4. IT IS THE INTENTION OF THESE DOCUMENTS THAT THE DEMOLITION OF PORTIONS OF MASONRY WALLS (BOTH INTERIOR AND EXTERIOR) ARE GENERALLY TO BE DONE ALONG JOINT AND COURSING LINES.
5. PATCH AND REPAIR REMAINING ADJACENT SURFACES AT AREAS OF REMOVAL AND/ OR ALTERATION TO MATCH EXISTING. PROVIDE A SOUND AND PROPER SUBSTRATE FOR NEW FINISH. COORDINATE WITH COLOR PLANS. WHERE A NEW FINISH IS NOT INDICATED, MATCH EXISTING ADJACENT FINISHES.
6. ALL DEMOLITION IS TO BE DONE WITH REASONABLE CARE AS TO MINIMIZE DAMAGE TO EXISTING REMAINING SURFACES. CONTRACTOR IS RESPONSIBLE TO PROPERLY DISPOSE OF ALL DEMOLISHED ITEMS NOT INDICATED TO BE RELOCATED OR TURNED OVER TO OWNER.
7. REMOVE AND TURN OVER TO OWNER ALL FIRE EXTINGUISHERS AND CABINETS AT AREAS TO BE DEMOLISHED, IF NOT OTHERWISE INDICATED TO BE RELOCATED.
8. CLEAN AND PREPARE ALL EXISTING SURFACES WHICH ARE TO BE PAINTED/ PATCHED. PREPARATION TO INCLUDE MINOR PATCHING.
9. PROVIDE TEMPORARY SHORING, BRACING, AND/ OR SUPPORTS AS REQUIRED FOR WALL AND/ OR ROOF AT AREAS OF REMOVAL AND ALTERATION.
10. COORDINATE WITH MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR FURTHER DEMOLITION NOTES.
11. ALL EXISTING HYDRATION STATION TO REMAIN.
12. SAVE 10% OF GYM FLOORING FOR A FEATURE WALL.

DEMOLITION PLAN KEYNOTES

1 FLOORS

A. SAWCUT OPENING FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

B. DEMO EXISTING TILE AND MORTAR BED AS REQUIRED TO PREPARE A SOLID SUBSTRATE. EXISTING SLAB IS DEPRESSED 1 1/2" AT THE FIELD HOUSE SHOWERS AND 2 1/2" AT THE POOL SHOWERS.

C. REMOVE AND DISPOSE OF CONCRETE SLAB ON GRADE FOR PLUMBING, MECHANICAL OR ELECTRICAL. COORDINATE LOCATIONS WITH CONTRACTORS.

D. REMOVE CARPET.

2 WALLS

A. REMOVE AND DISPOSE OF MASONRY WALL CONSTRUCTION AND ALL RELATED BRACING / SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

B. REMOVE GYPSUM BOARD WALL CONSTRUCTION, FRAMING, AND ALL ANCHORS AND SUPPORTS. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

C. CUT OPENING INTO WALL AND REMOVE AS REQUIRED FOR THE PROPER INSTALLATION OF A NEW DOOR, WINDOW ASSEMBLY OR MECHANICAL EQUIPMENT/ LOUVER. COORDINATE WITH FLOOR PLANS AND DOOR/WINDOW MANUFACTURERS REQUIREMENTS.

D. PATCH THE WALL TO MATCH EXISTING.

3 CEILINGS

A. REMOVE AND DISPOSE OF ACOUSTICAL PANEL CEILING AND GRID AS REQUIRED FOR NEW CONSTRUCTION. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVALS AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

B. REMOVE AND DISPOSE OF GYPSUM BOARD OR PLASTER CEILING, FURRING, ANCHORS, SUPPORTS AND ATTACHMENTS AS REQUIRED FOR NEW CONSTRUCTION, MECHANICAL, ELECTRICAL OR TECHNOLOGY WORK. COORDINATE ALL NECESSARY ELECTRICAL, TECHNOLOGY AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL CONTRACTORS.

C. REMOVE AND DISPOSE OF BULKHEAD. COORDINATE ALL NECESSARY ELECTRICAL AND MECHANICAL REMOVAL AND REPLACEMENT WITH ELECTRICAL AND MECHANICAL CONTRACTORS.

D. REMOVE A PORTION OF EXISTING ACT CEILING AND REINSTALL FOR NEW FIRE SPRINKLER PIPING AND HEADS.

E. REPAIR CEILING AS NEEDED.

4 DOORS

A. REMOVE AND DISPOSE OF EXTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

B. REMOVE AND DISPOSE OF INTERIOR DOOR, INCLUDING FRAME, SIDELIGHTS AND ALL RELATED ANCHORS AND SUPPORTS. SAWCUT ALL FRAME ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE. SALVAGE HARDWARE & RETURN TO OWNER.

C. REFER TO DOOR SCHEDULE.

5 WINDOWS

A. REMOVE AND DISPOSE OF WINDOW / STOREFRONT / BORROWED LITE / LOUVER INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. SAWCUT ALL ANCHORS - PRYING ANCHORS FROM SUBSTRATES IS UNACCEPTABLE.

B. REMOVE LOUVRE INCLUDING FRAME ASSEMBLY, SILL AND ALL RELATED ANCHORS. THE EXISTING LINTEL TO REMAIN. INFILL CMU BLOCK AND BRICK PER WALL ASSEMBLY AROUND THE NEW DUCTS. COORDINATE WITH MECH.

6 TOILETS / PLUMBING

A. REMOVE & DISPOSE OF PLUMBING FIXTURE - REFER TO PLUMBING DEMOLITION PLANS. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

B. REMOVE ACCESSORIES INCLUDING HAND DRYERS, PAPER TOWEL DISPENSERS, TOILET PAPER DISPENSERS, SOAP DISPENSERS AND ALL RELATED ANCHORS, SUPPORTS, HARDWARE AND ADHESIVES. RETURN TO OWNER.

C. REMOVE & DISPOSE OF TOILET PARTITIONS AND ALL RELATED ANCHORS, SUPPORTS AND HARDWARE. PREP REMAINING SURFACES TO RECEIVE NEW CONSTRUCTION AND/OR FINISHES.

7 CASEWORK

A. REMOVE AND DISPOSE OF UPPER AND/OR BASE CABINETS, COUNTERTOP, SHELVING AND ALL RELATED ANCHORS AND SUPPORTS, UNLESS NOTED OTHERWISE. PREP REMAINING SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION.

8 EQUIPMENT

A. REMOVE WALL MOUNTED ITEMS AND RETURN TO OWNER. REMOVE ALL MASTICS AND ANCHORS AND PREP WALL TO RECEIVE NEW FINISHES.

B. NOT USED

C. REMOVE SELECTED LOCKERS, BASE & ALL ASSOCIATED ANCHORS AND SUPPORTS. PREP SURFACES TO RECEIVE NEW FINISHES AND/OR CONSTRUCTION. REFER TO ALTERNATE 1 & 2.

9 MISCELLANEOUS

A. REMOVE AND DISPOSE OF MECHANICAL EQUIPMENT. REFER TO MECHANICAL DEMOLITION PLAN.

B. REMOVE AND DISPOSE OF ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DEMOLITION PLAN. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH NEW WORK.

C. REMOVE AND DISPOSE METAL COVER, CURB, SLIPPER ETC. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.

D. REMOVE STORAGE AND RETURN TO OWNER.

E. REMOVE CANOPY AND RECTANGULAR COLUMNS.

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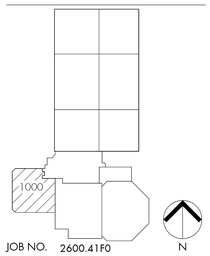

JOB NO. 2600.41F0

SHEET TITLE

DEMOLITION REFLECTED CEILING PLAN - SECOND FLOOR - UNIT 2000

SHEET NO.

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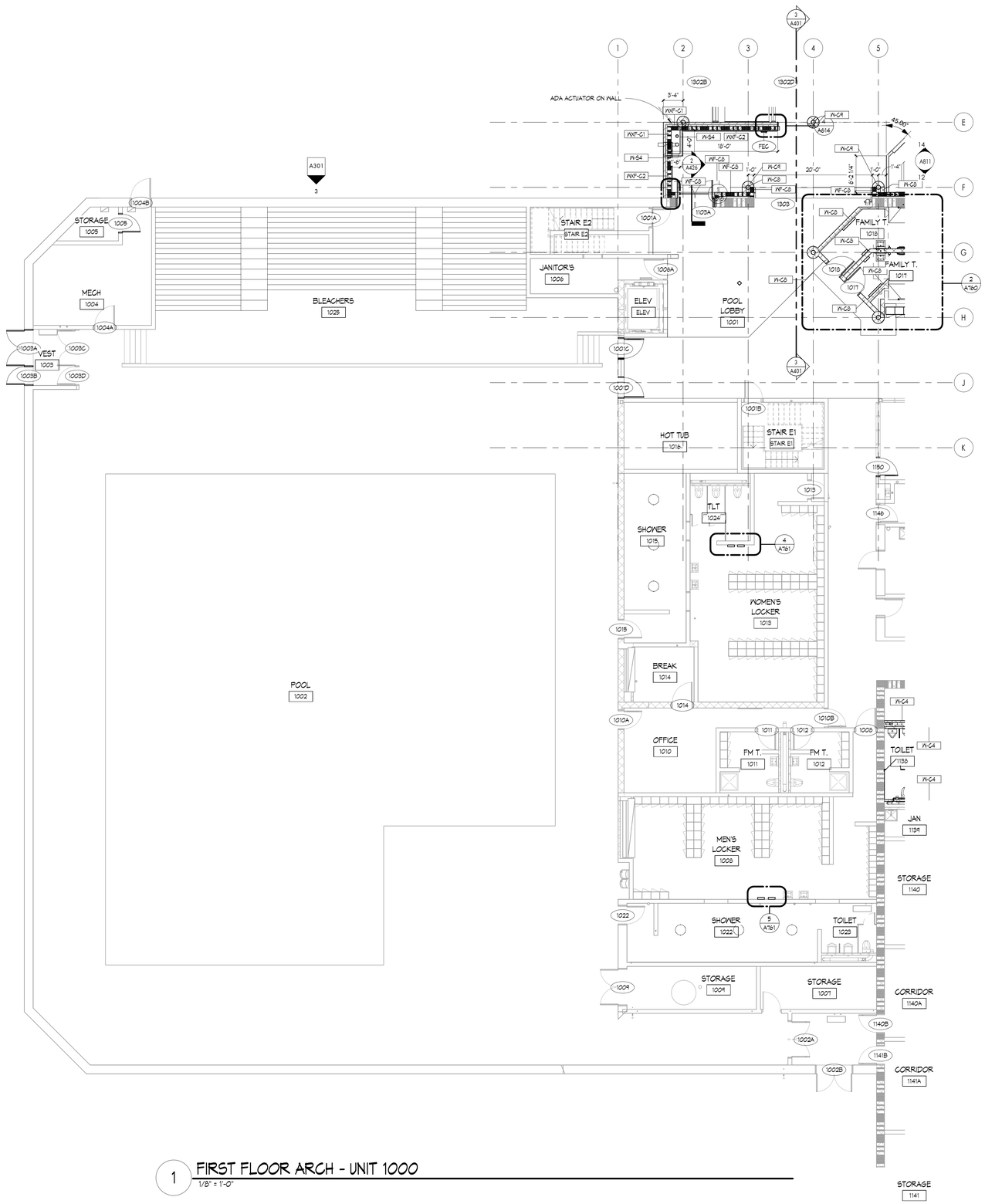

1 FIRST FLOOR ARCH - UNIT 1000
1/8" = 1'-0"

ARCHITECTURAL GENERAL NOTES

1. XX INDICATES CONSTRUCTION DOCUMENT ROOM NUMBERS.
2. REFER TO EQUIPMENT PLANS FOR CASEWORK, VISUAL DISPLAY BOARDS, LOCKERS, SHELVING, ETC.
3. REFER TO COLOR LAYOUT PLANS FOR FLOOR FINISH PATTERNS AND COLORS.
4. CONTRACTOR SHALL COORDINATE LOCATIONS OF FLOOR DRAINS, CLEAN OUTS, ETC, WITH APPROPRIATE TRADES.
5. REFER TO ENLARGED PLANS FOR ADDITIONAL NOTES AND DIMENSIONS.
6. MASONRY CONTRACTOR TO INSTALL LOOSE LINTELS FOR MISCELLANEOUS OPENINGS NOT INDICATED ON DRAWINGS BUT REQUIRED FOR MECHANICAL, ELECTRICAL, FOOD SERVICE EQUIPMENT OR OTHER ITEMS THAT PASS THROUGH A WALL. STEEL LINTELS SHALL BE SUPPLIED BY THE STEEL CONTRACTOR.
7. ALL PARTITION WALLS TO RUN TIGHT TO DECK, U.N.O.
8. REFER TO PARTITION TYPES SHOWN ON FLOOR PLANS AND ARCHITECTURAL ASSEMBLIES SHEET.
9. REFER TO SHEET G020 FOR ARCHITECTURAL SYMBOLS LEGEND.
10. ALL CMU PARTITION WALLS SHALL BE 8" NOMINAL UNLESS NOTED OTHERWISE.
11. DIMENSIONS SHOWN ARE TO FACE OF CMU WALL, FACE OF NEW FRAMING MEMBER, OR FACE OF EXISTING ASSEMBLY.
12. FILL/SEAL ALL PENETRATIONS THROUGH WALLS & VOIDS AT STRUCTURAL MEMBERS. PROVIDE CONT. SEAL AT PEMB TURF.
13. ALL EXPOSED C.M.U. CORNERS SHALL BE BULLNOSE CORNERS, U.N.O.
14. CAULK & SEAL AROUND ALL NEW CABINET HEATER LOUVERS INSTALLED IN EXTERIOR WALLS.
15. NEW OPENINGS IN EXISTING MASONRY WALLS SHALL BE TOOTHED IN TO MATCH EXISTING COURSING AND MASONRY SIZES, U.N.O.
16. PROVIDE NEW EPOXY FLOORING AT LOCKER ROOMS 1008, 1013, 1120, 1124, 1135, 1142 ON EXISTING FLOORING. REMOVE CARPET AND PROVIDE NEW EPOXY FLOORING AT CORRIDOR 1160, NORTH LOBBY 1113, SOUTH LOBBY 1103 INCLUDING THE CORRIDORS. SEE INTERIORS.
17. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH ELECTRICAL.

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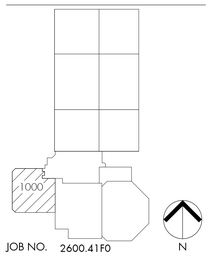

JOB NO. 2600.41F0

SHEET TITLE
ARCHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1000

SHEET NO.
A210.a

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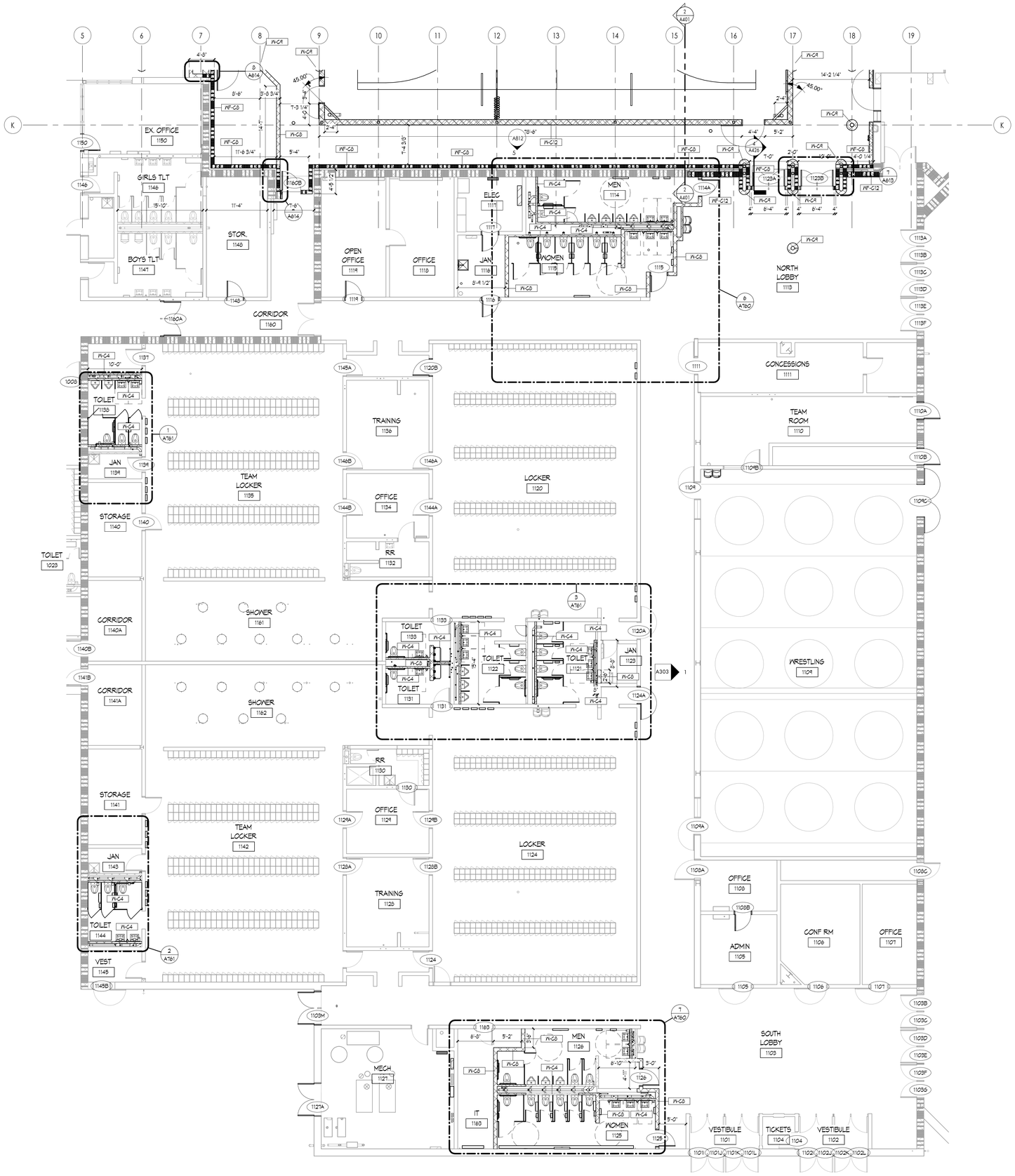

1 FIRST FLOOR ARCH - UNIT 1100

1/8" = 1'-0"

ARCHITECTURAL GENERAL NOTES

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3. REFER TO COLOR LAYOUT PLANS FOR FLOOR FINISH PATTERNS AND COLORS.
4. CONTRACTOR SHALL COORDINATE LOCATIONS OF FLOOR DRAINS, CLEAN OUTS, ETC, WITH APPROPRIATE TRADES.
5. REFER TO ENLARGED PLANS FOR ADDITIONAL NOTES AND DIMENSIONS.
6. MASONRY CONTRACTOR TO INSTALL LOOSE LINTELS FOR MISCELLANEOUS OPENINGS NOT INDICATED ON DRAWINGS BUT REQUIRED FOR MECHANICAL, ELECTRICAL, FOOD SERVICE EQUIPMENT OR OTHER ITEMS THAT PASS THROUGH A WALL. STEEL LINTELS SHALL BE SUPPLIED BY THE STEEL CONTRACTOR.
7. ALL PARTITION WALLS TO RUN TIGHT TO DECK, U.N.O.
8. REFER TO PARTITION TYPES SHOWN ON FLOOR PLANS AND ARCHITECTURAL ASSEMBLIES SHEET.
9. REFER TO SHEET G020 FOR ARCHITECTURAL SYMBOLS LEGEND.
10. ALL CMU PARTITION WALLS SHALL BE 8" NOMINAL UNLESS NOTED OTHERWISE.
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13. ALL EXPOSED C.M.U. CORNERS SHALL BE BULLNOSE CORNERS, U.N.O.
14. CAULK & SEAL AROUND ALL NEW CABINET HEATER LOUVERS INSTALLED IN EXTERIOR WALLS.
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17. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH ELECTRICAL.

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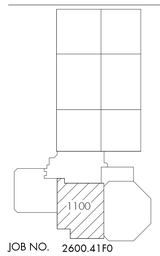
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1100

SHEET NO.

A210.b

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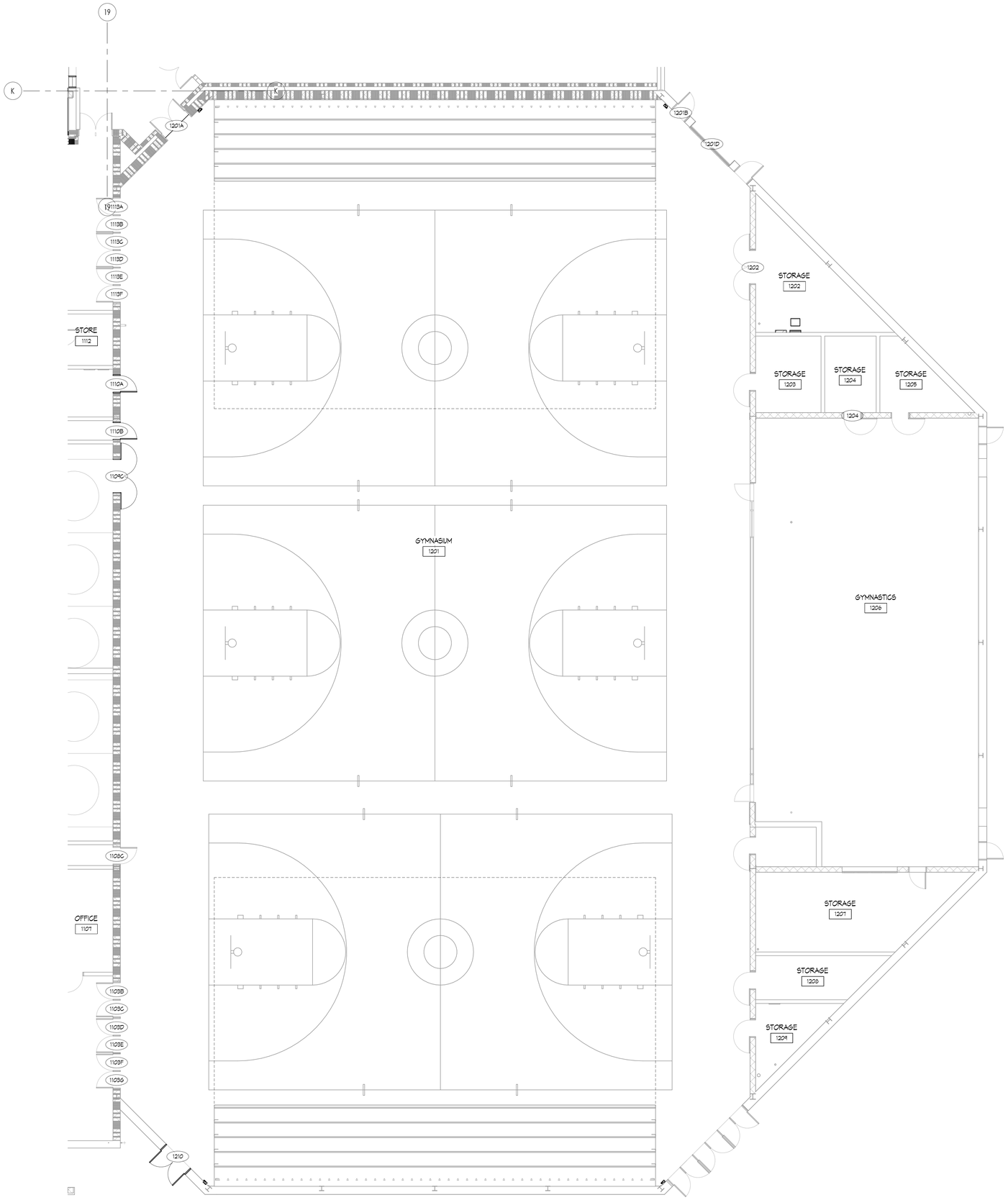

1 FIRST FLOOR ARCH - UNIT 1200
1/8" = 1'-0"

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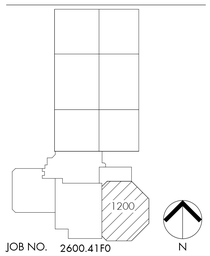
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
ARCHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1200

SHEET NO.
A210.c

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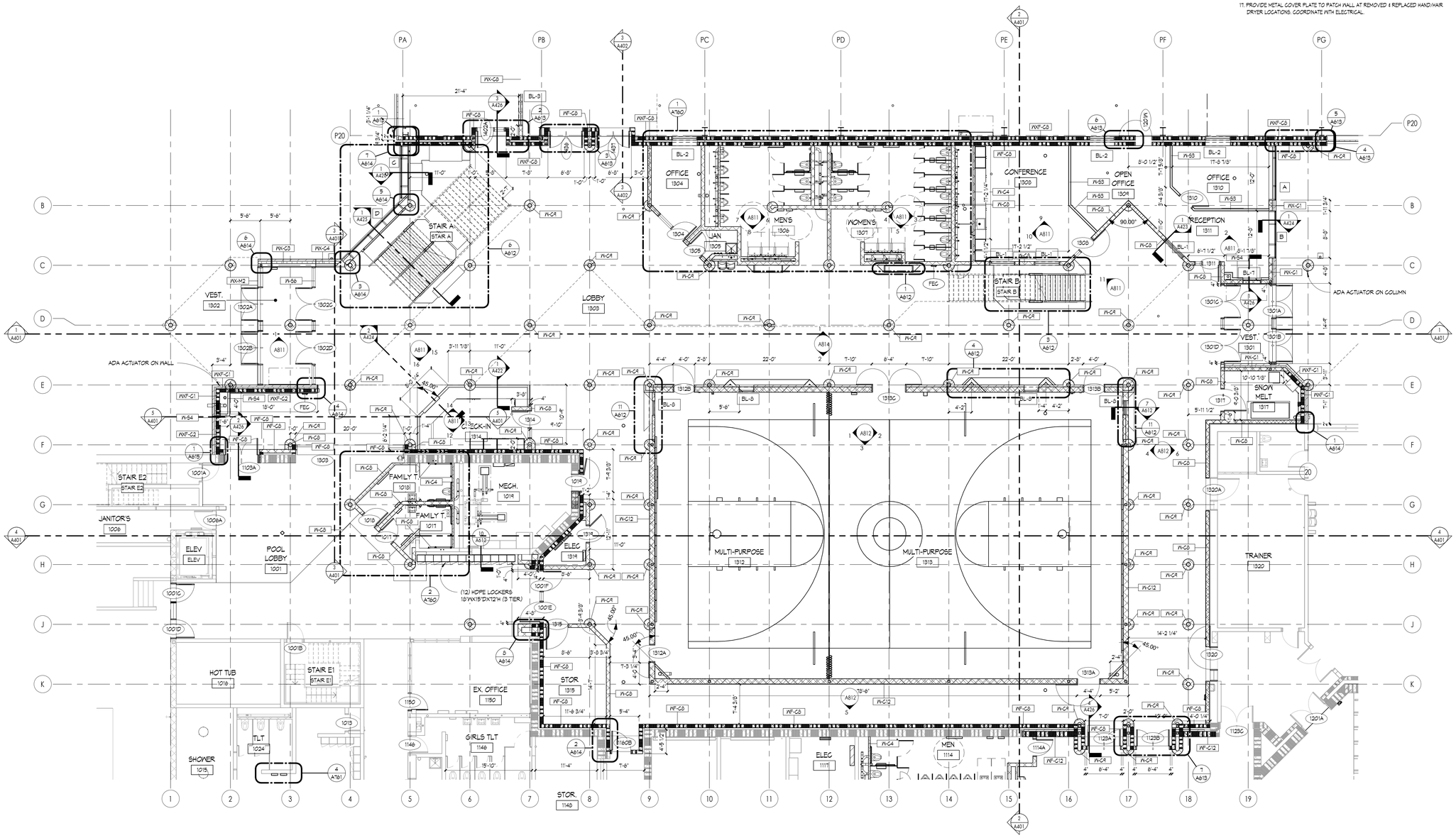

1 FIRST FLOOR ARCH - UNIT 1300A
1/8" = 1'-0"

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Author: Doug Howell
Filename: Community Center_Arch_2025.rvt

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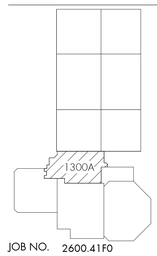
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
ARCHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1300A

SHEET NO.
A210.d

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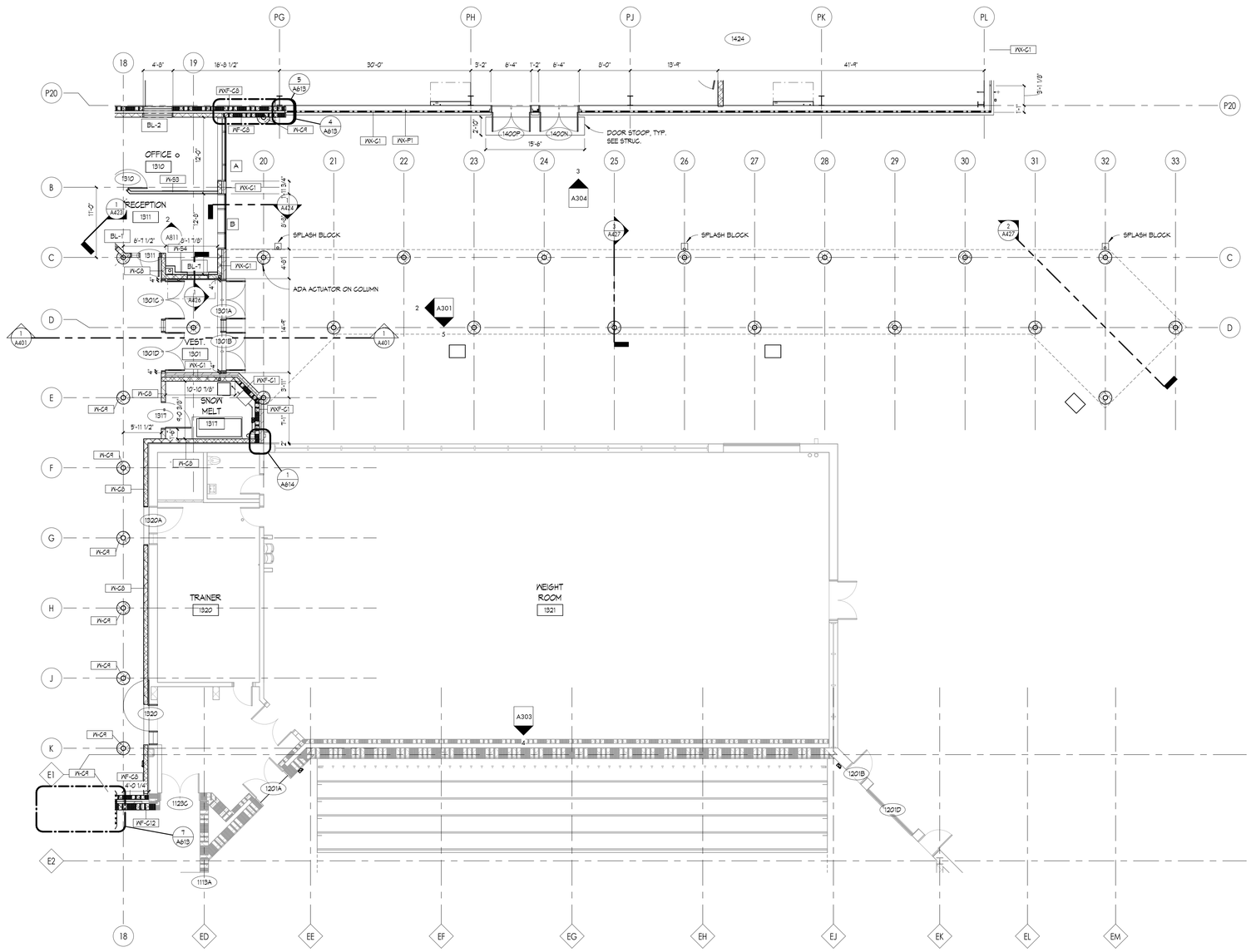

1 FIRST FLOOR ARCH - UNIT 1300B
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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

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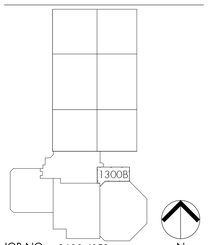
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
ARCHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1300B

SHEET NO.
A210.e

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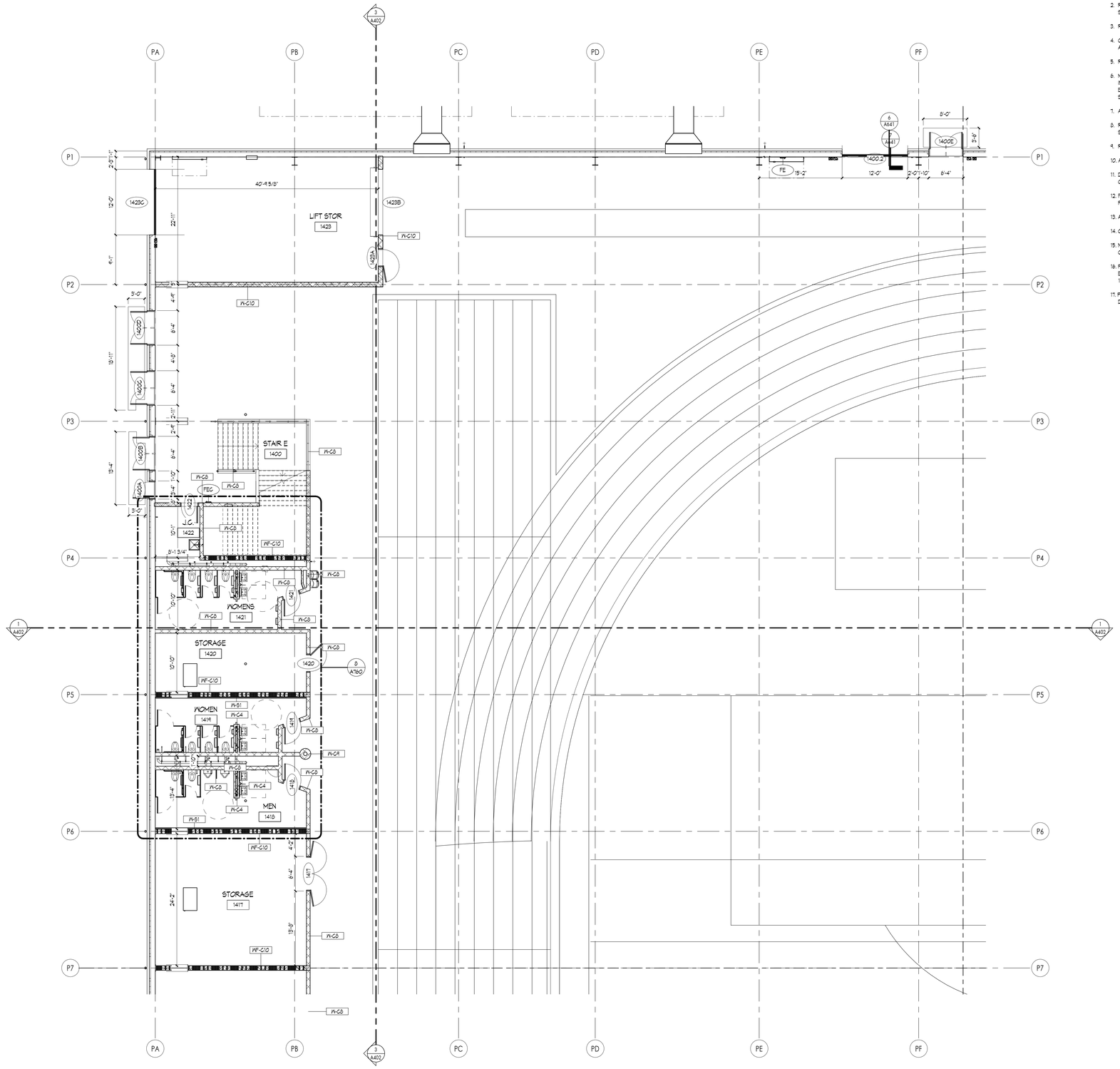

1 FIRST FLOOR ARCH - UNIT 1400A
1/8" = 1'-0"

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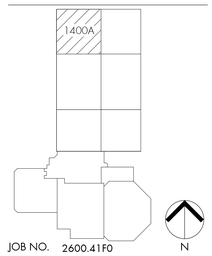
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
ARCHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1400A

SHEET NO.
A210.f

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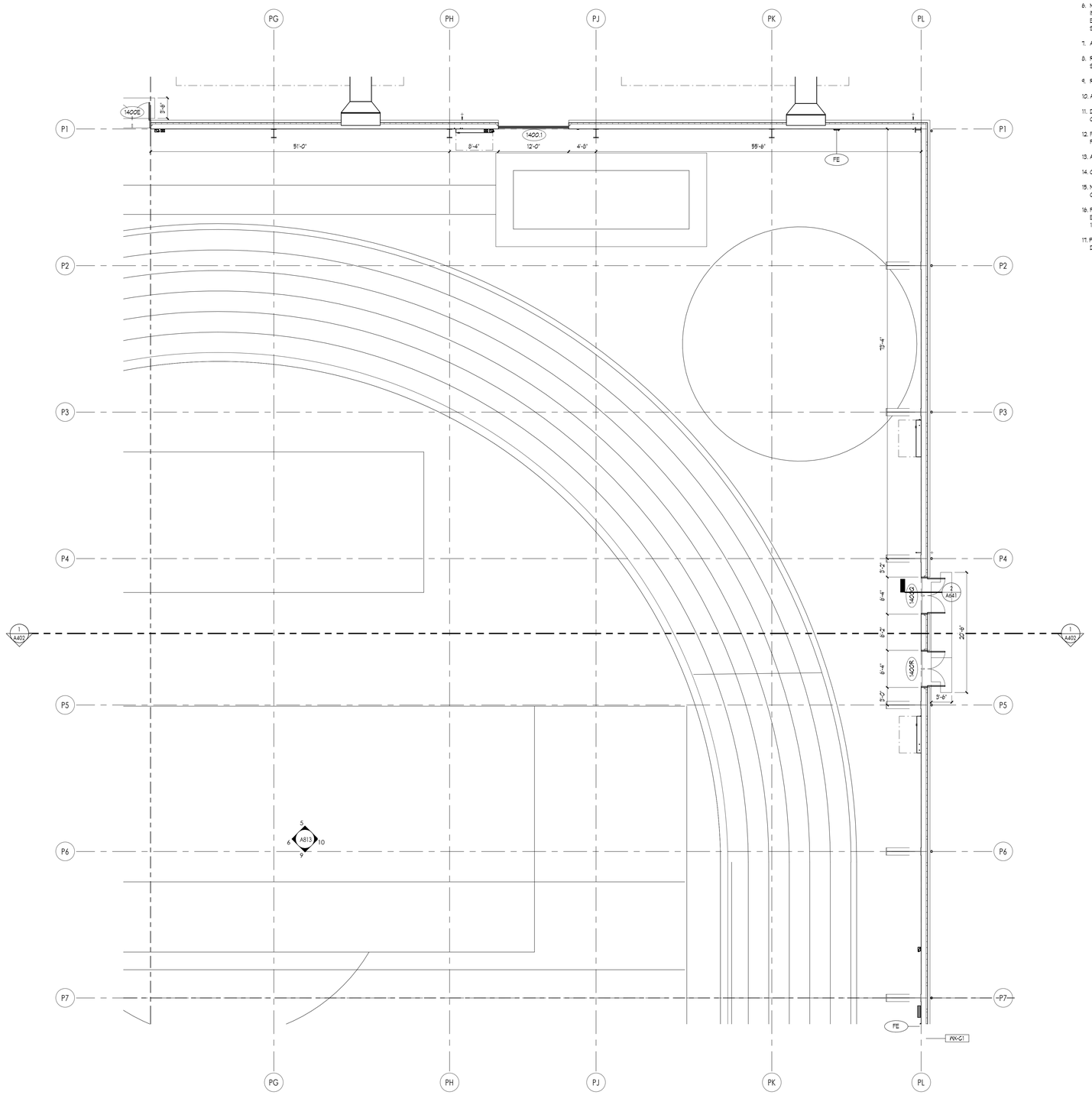

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HOWELL PUBLIC SCHOOLS
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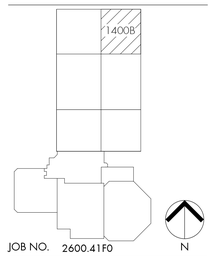

JOB NO. 2600.41F0

SHEET TITLE
ARCHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1400B

SHEET NO.
A210.g

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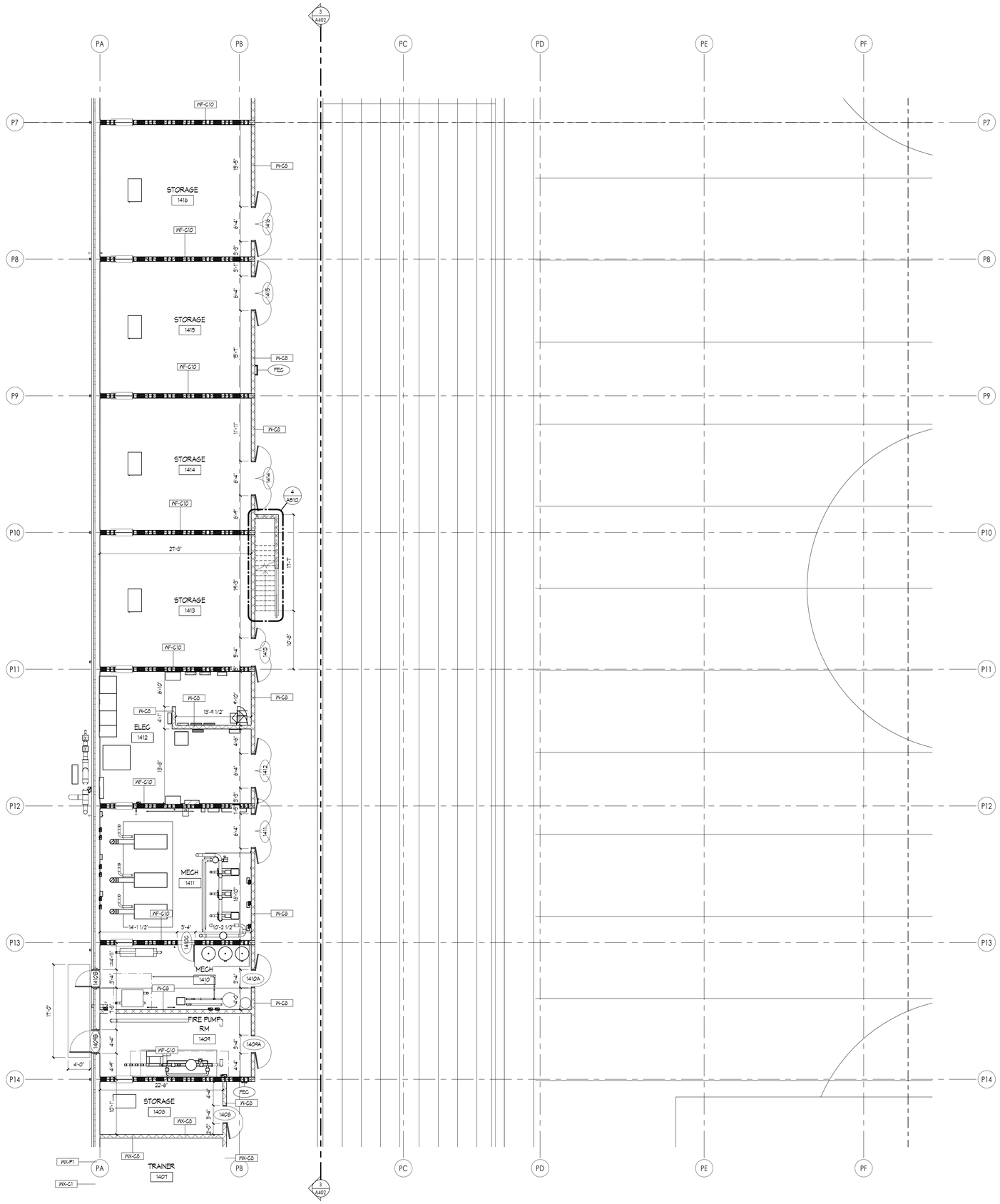

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11. DIMENSIONS SHOWN ARE TO FACE OF CMU WALL, FACE OF NEW FRAMING MEMBER, OR FACE OF EXISTING ASSEMBLY.
12. FILL/SEAL ALL PENETRATIONS THROUGH WALLS & VOIDS AT STRUCTURAL MEMBERS. PROVIDE CONT. SEAL AT PEMB TURF.
13. ALL EXPOSED C.M.U. CORNERS SHALL BE BULLNOSE CORNERS, U.N.O.
14. CAULK & SEAL AROUND ALL NEW CABINET HEATER LOUVERS INSTALLED IN EXTERIOR WALLS.
15. NEW OPENINGS IN EXISTING MASONRY WALLS SHALL BE TOOTHED IN TO MATCH EXISTING COURSING AND MASONRY SIZES, U.N.O.
16. PROVIDE NEW EPOXY FLOORING AT LOCKER ROOMS 1008, 1013, 1120, 1124, 1135, 1142 ON EXISTING FLOORING. REMOVE CARPET AND PROVIDE NEW EPOXY FLOORING AT CORRIDOR 1160, NORTH LOBBY 1113, SOUTH LOBBY 1103 INCLUDING THE CORRIDORS. SEE INTERIORS.
17. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH ELECTRICAL.

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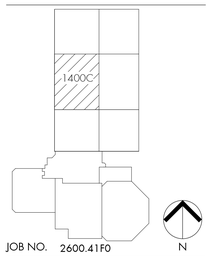
HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1400C

SHEET NO.

A210.h

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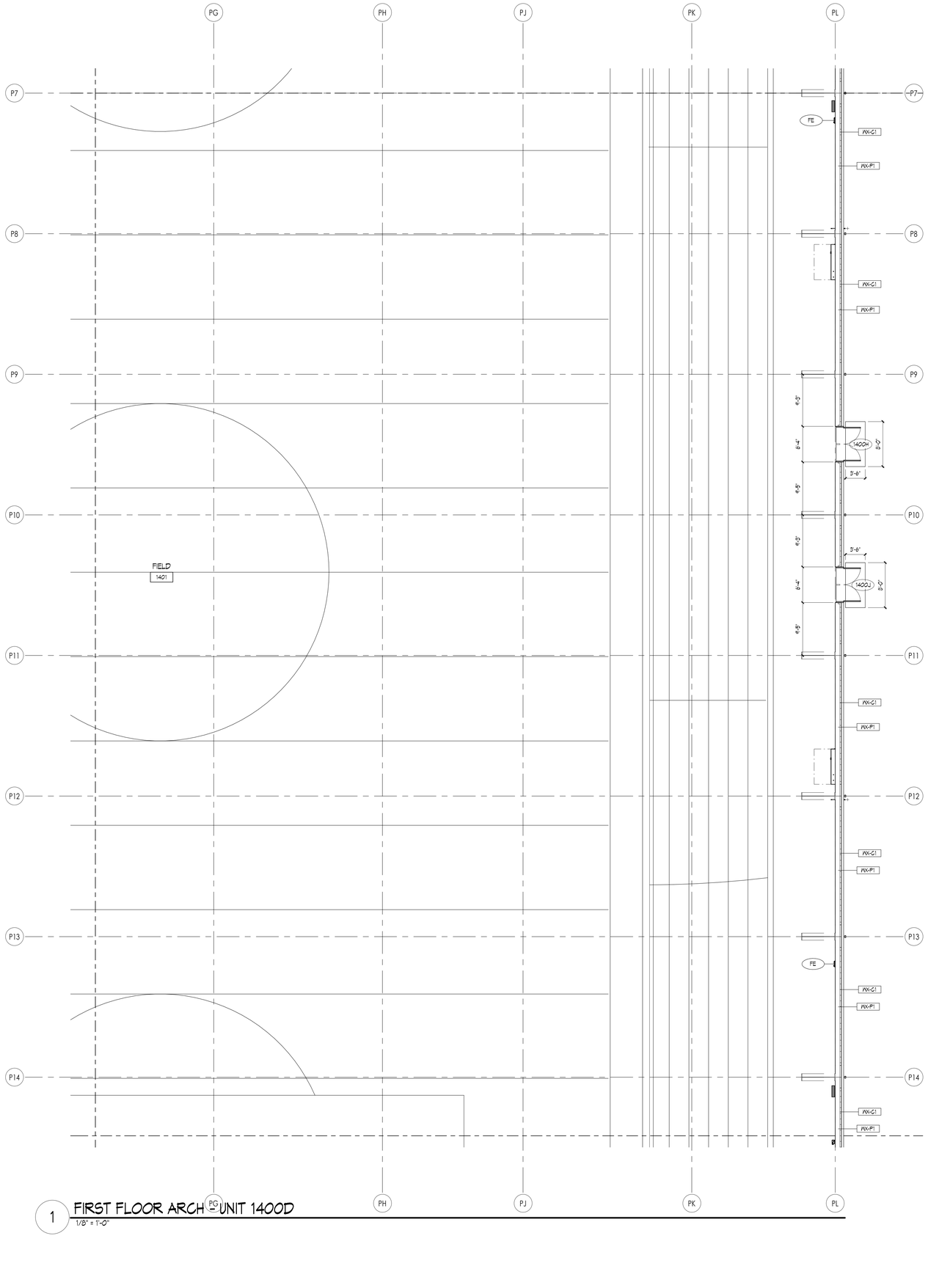

1 FIRST FLOOR ARCH - UNIT 1400D
1/8" = 1'-0"

ARCHITECTURAL GENERAL NOTES

1. XX INDICATES CONSTRUCTION DOCUMENT ROOM NUMBERS.
2. REFER TO EQUIPMENT PLANS FOR CASEWORK, VISUAL DISPLAY BOARDS, LOCKERS, SHELVING, ETC.
3. REFER TO COLOR LAYOUT PLANS FOR FLOOR FINISH PATTERNS AND COLORS.
4. CONTRACTOR SHALL COORDINATE LOCATIONS OF FLOOR DRAINS, CLEAN OUTS, ETC, WITH APPROPRIATE TRADES.
5. REFER TO ENLARGED PLANS FOR ADDITIONAL NOTES AND DIMENSIONS.
6. MASONRY CONTRACTOR TO INSTALL LOOSE LINTELS FOR MISCELLANEOUS OPENINGS NOT INDICATED ON DRAWINGS BUT REQUIRED FOR MECHANICAL, ELECTRICAL, FOOD SERVICE EQUIPMENT OR OTHER ITEMS THAT PASS THROUGH A WALL. STEEL LINTELS SHALL BE SUPPLIED BY THE STEEL CONTRACTOR.
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HOWELL PUBLIC SCHOOLS

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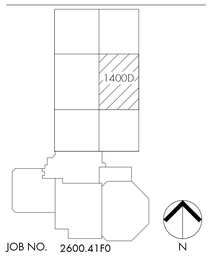

JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1400D

SHEET NO.

A210.i

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1 FIRST FLOOR ARCH - UNIT 1400E
1/8" = 1'-0"

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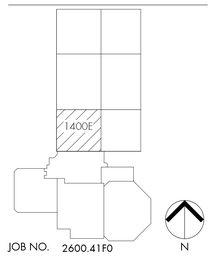

JOB NO. 2600.41F0

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SHEET TITLE

ARCHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1400E

SHEET NO.

A210.k

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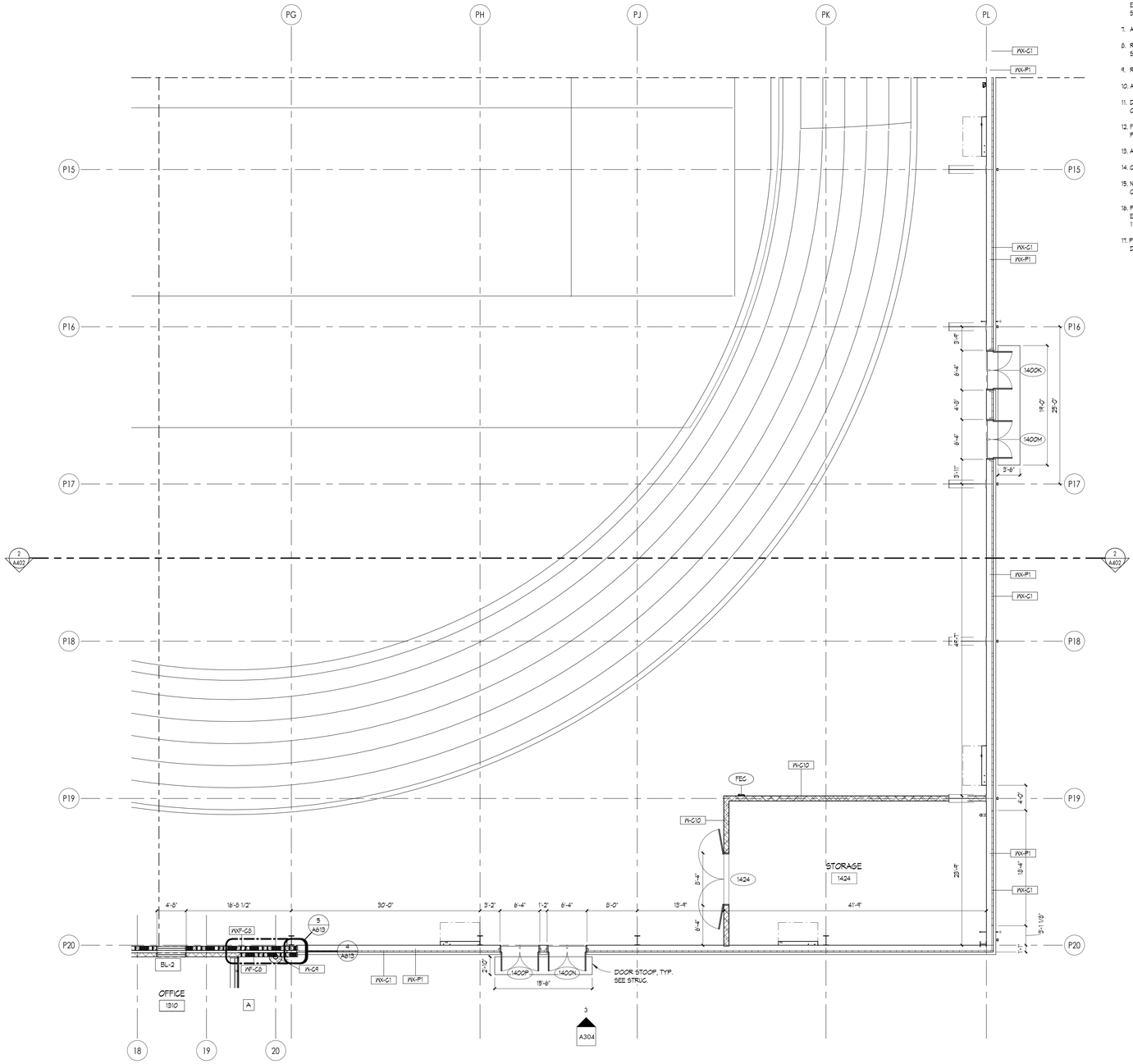

1 FIRST FLOOR ARCH - UNIT 1400F
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HOWELL PUBLIC SCHOOLS

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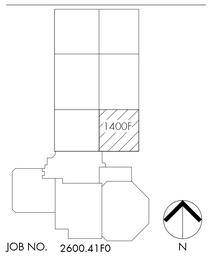

JOB NO. 2600.41F0

SHEET TITLE
ARHITECTURAL FLOOR PLAN - FIRST FLOOR - UNIT 1400F

SHEET NO.
A210.m

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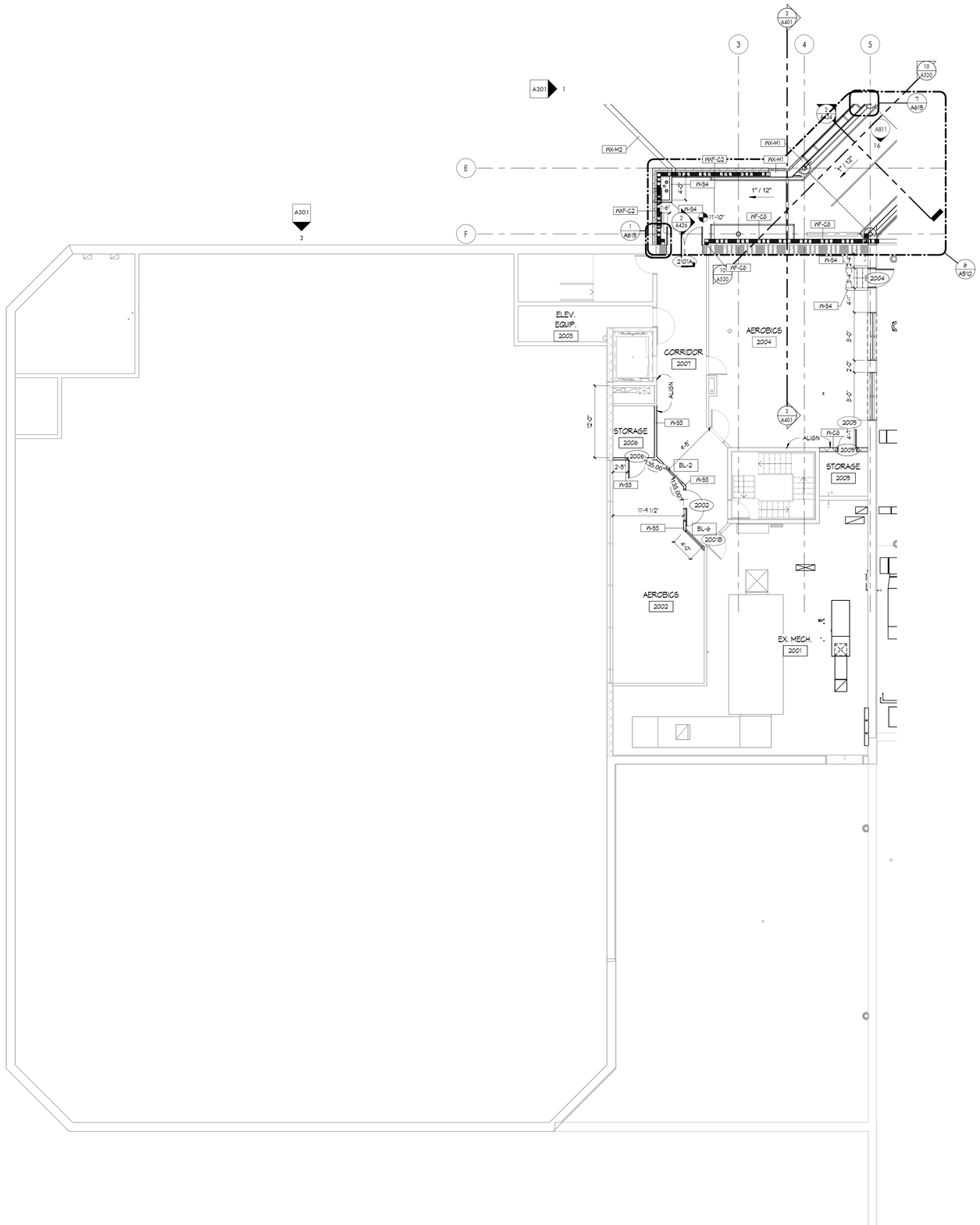

1 SECOND FLOOR ARCH - UNIT 2000
1/8" = 1'-0"

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HOWELL
PUBLIC SCHOOLS

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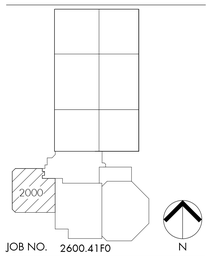

JOB NO. 2600.41F0

SHEET TITLE

ARHITECTURAL FLOOR PLAN - SECOND FLOOR - UNIT 2000

SHEET NO.

A220.a

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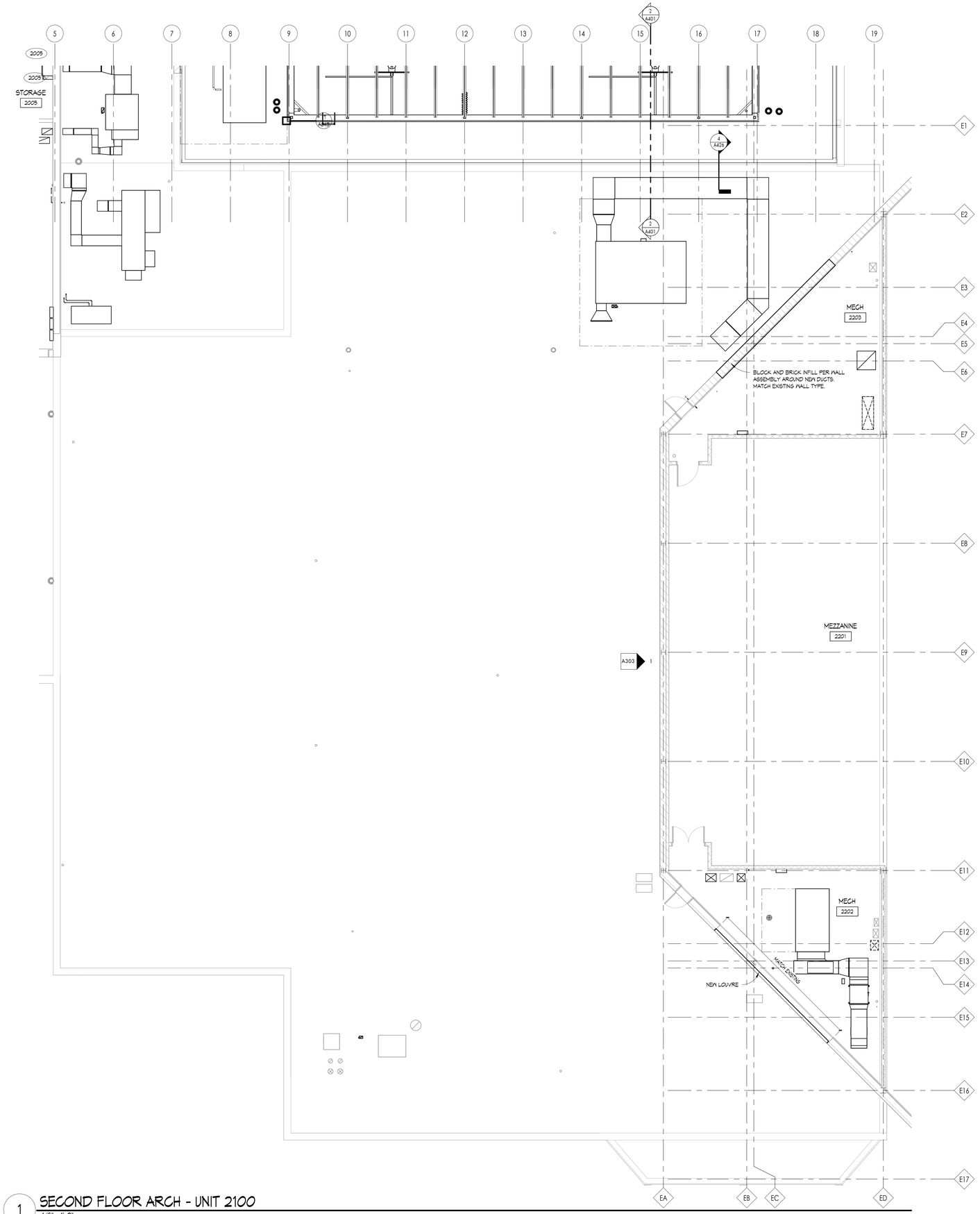

1 SECOND FLOOR ARCH - UNIT 2100
1/8" = 1'-0"

ARCHITECTURAL GENERAL NOTES

1. XX INDICATES CONSTRUCTION DOCUMENT ROOM NUMBERS.
2. REFER TO EQUIPMENT PLANS FOR CASEWORK, VISUAL DISPLAY BOARDS, LOCKERS, SHELVING, ETC.
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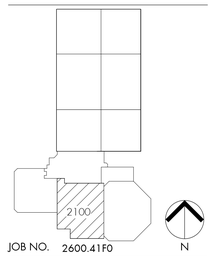

JOB NO. 2600.41F0

SHEET TITLE

ARHITECTURAL FLOOR PLAN - SECOND FLOOR - UNIT 2100

SHEET NO.

A220.b

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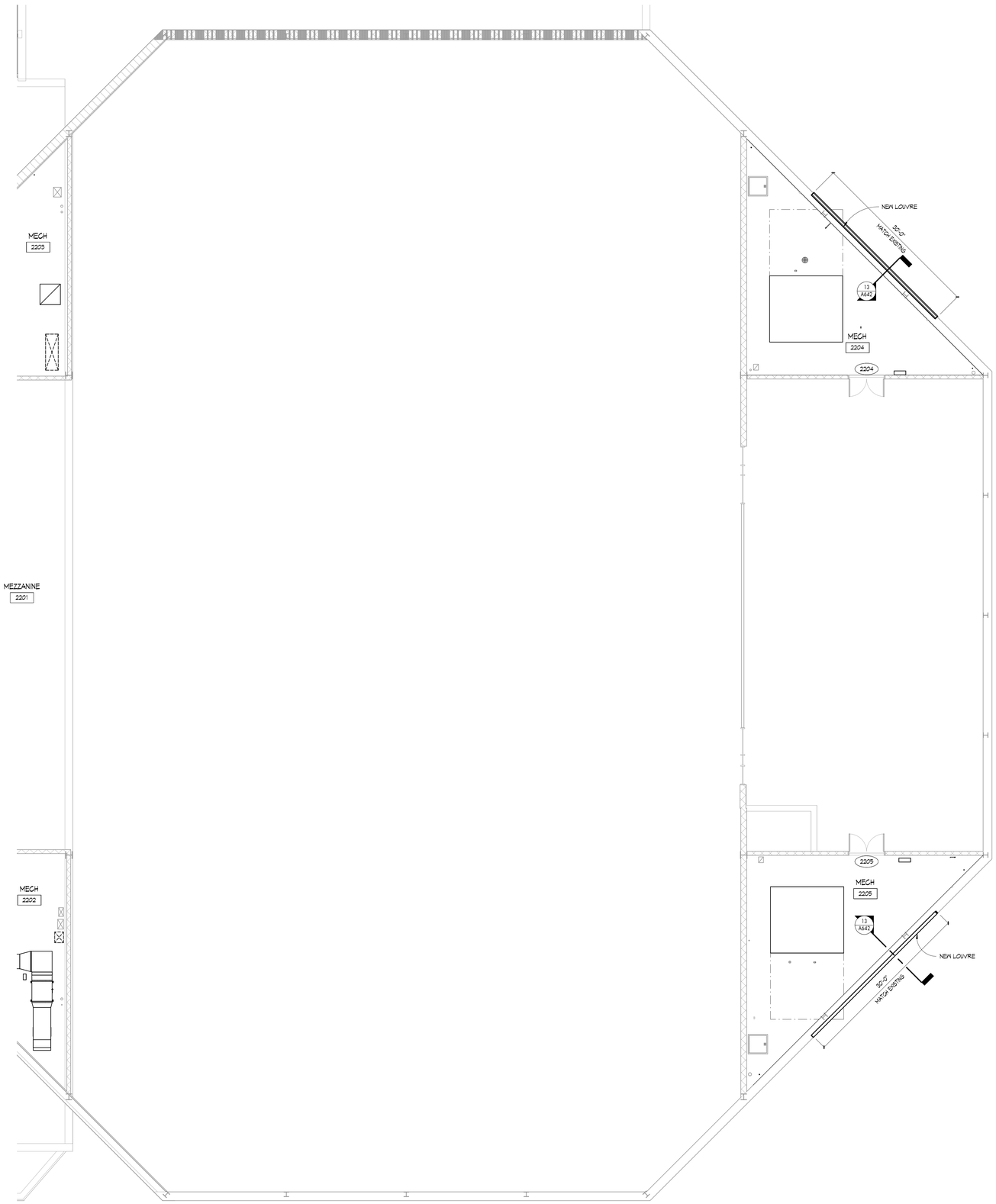

1 SECOND FLOOR ARCH - UNIT 2200
1/8" = 1'-0"

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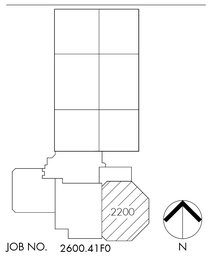

JOB NO. 2600.41F0

SHEET TITLE
ARHITECTURAL FLOOR PLAN - SECOND FLOOR - UNIT 2200

SHEET NO.
A220.c

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ARCHITECTURAL GENERAL NOTES

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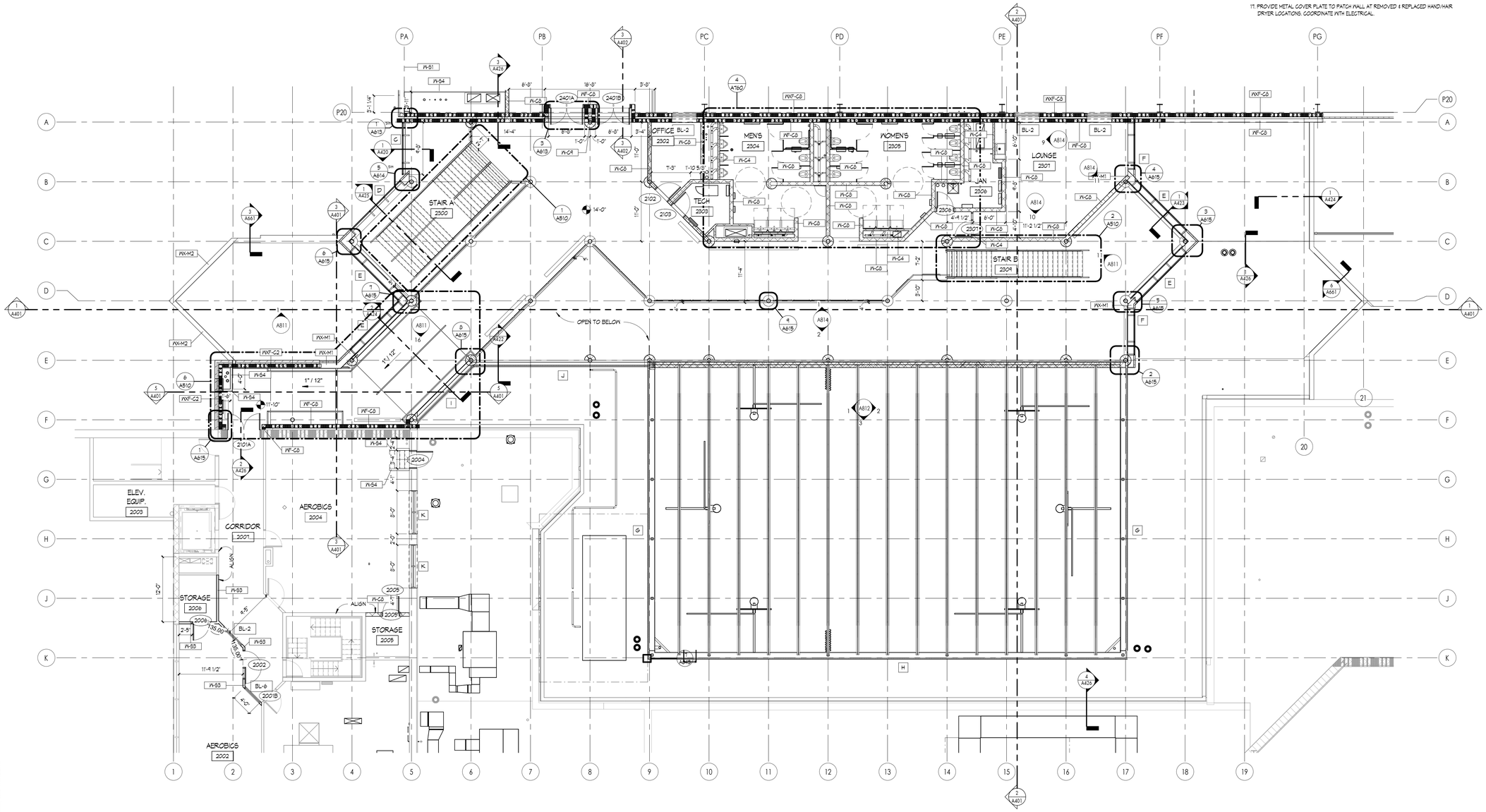

1 SECOND FLOOR ARCH - UNIT 2300A
1/8" = 1'-0"

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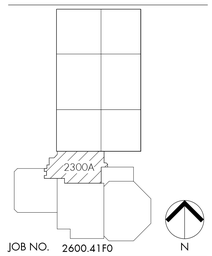
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
ARHITECTURAL FLOOR PLAN - SECOND FLOOR - UNIT 2300A

SHEET NO.
A220.d

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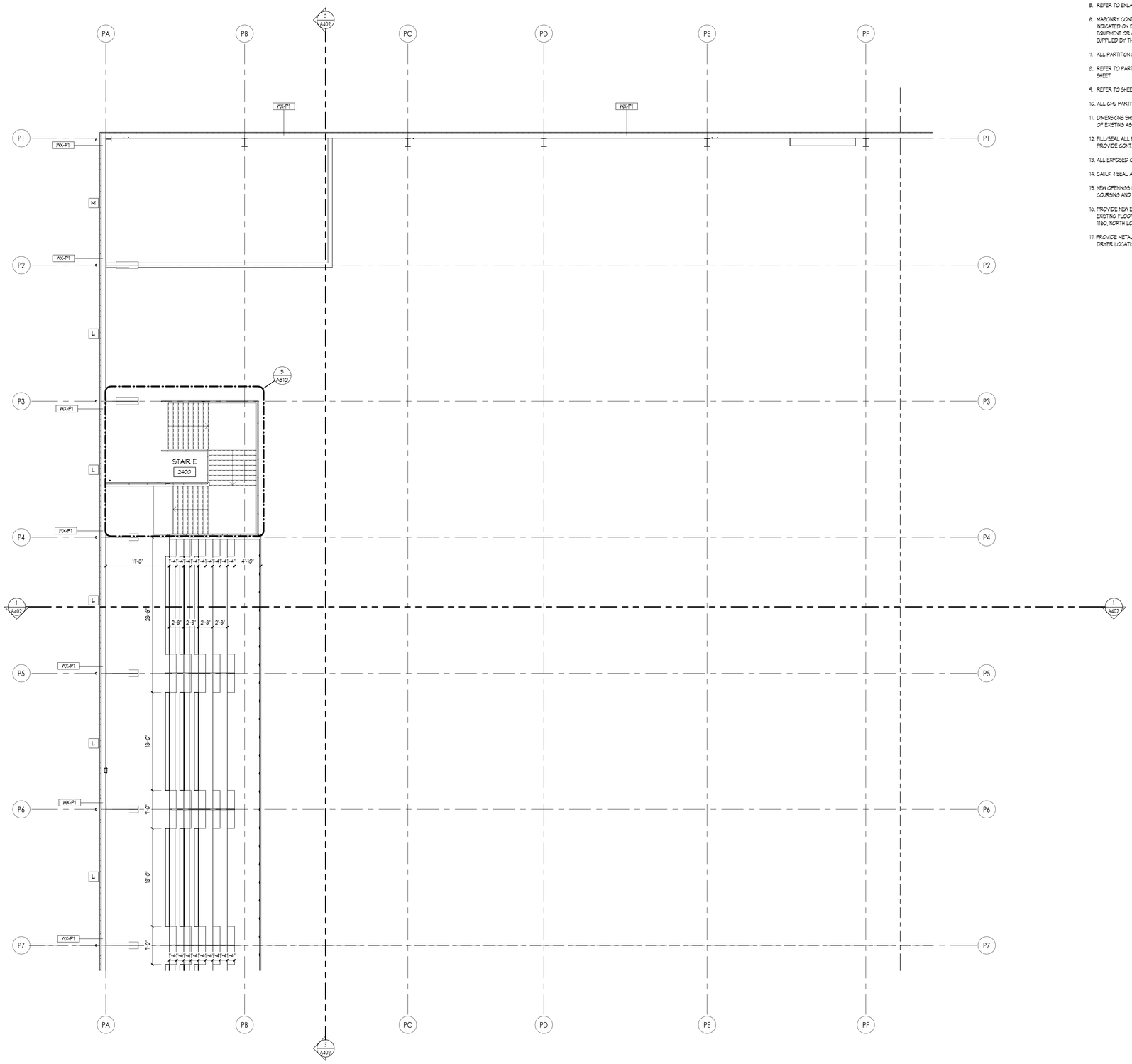

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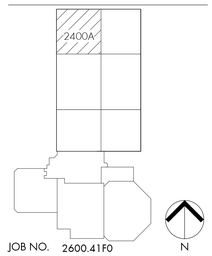

JOB NO. 2600.41F0

SHEET TITLE
ARHITECTURAL FLOOR PLAN - SECOND FLOOR - UNIT 2400A

SHEET NO.
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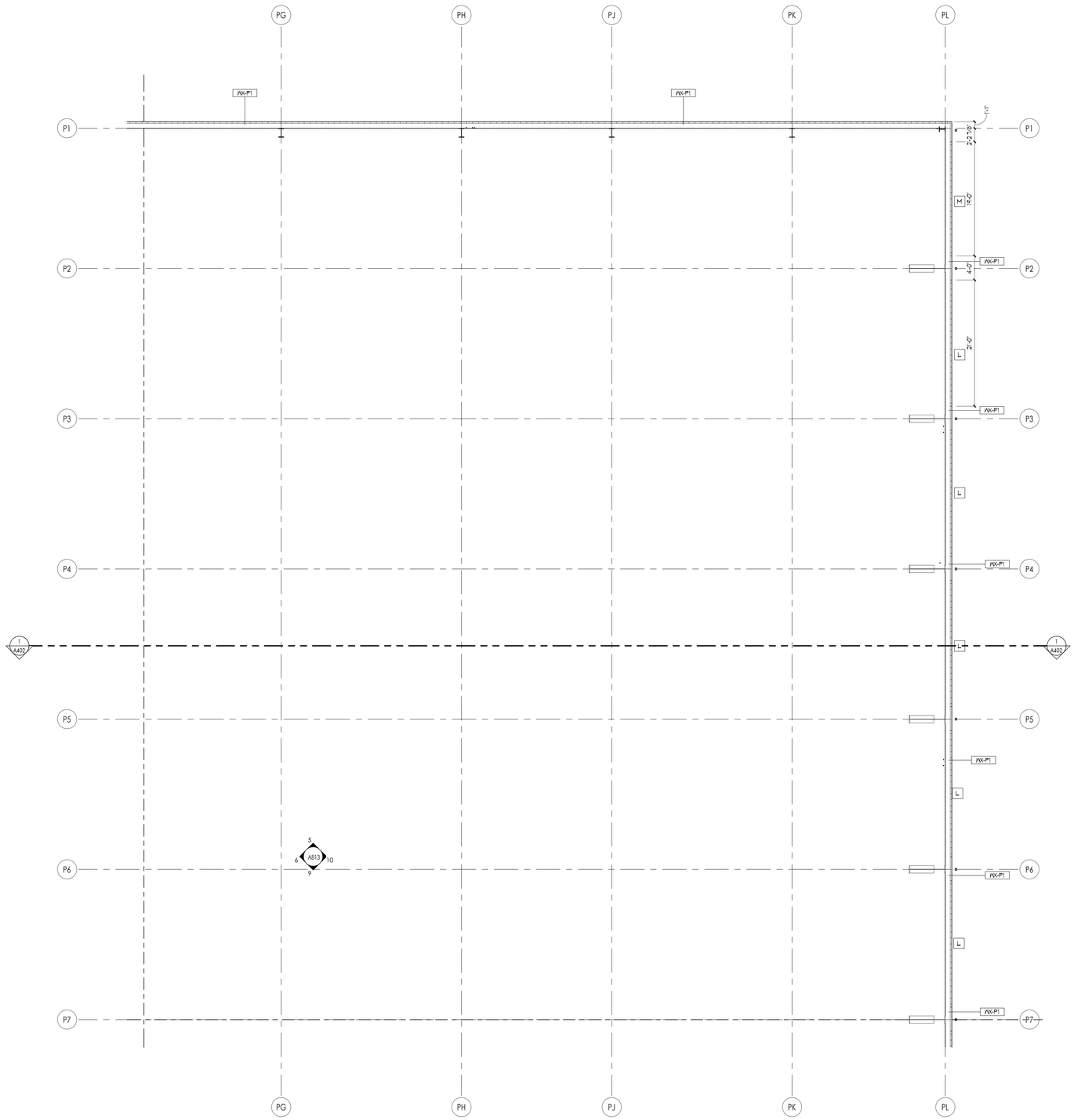

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HOWELL PUBLIC SCHOOLS

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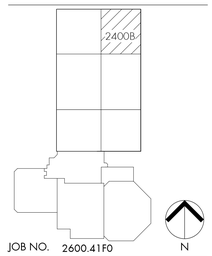

JOB NO. 2600.41F0

SHEET TITLE
ARHITECTURAL FLOOR PLAN - SECOND FLOOR - UNIT 2400B

SHEET NO.
A220.g

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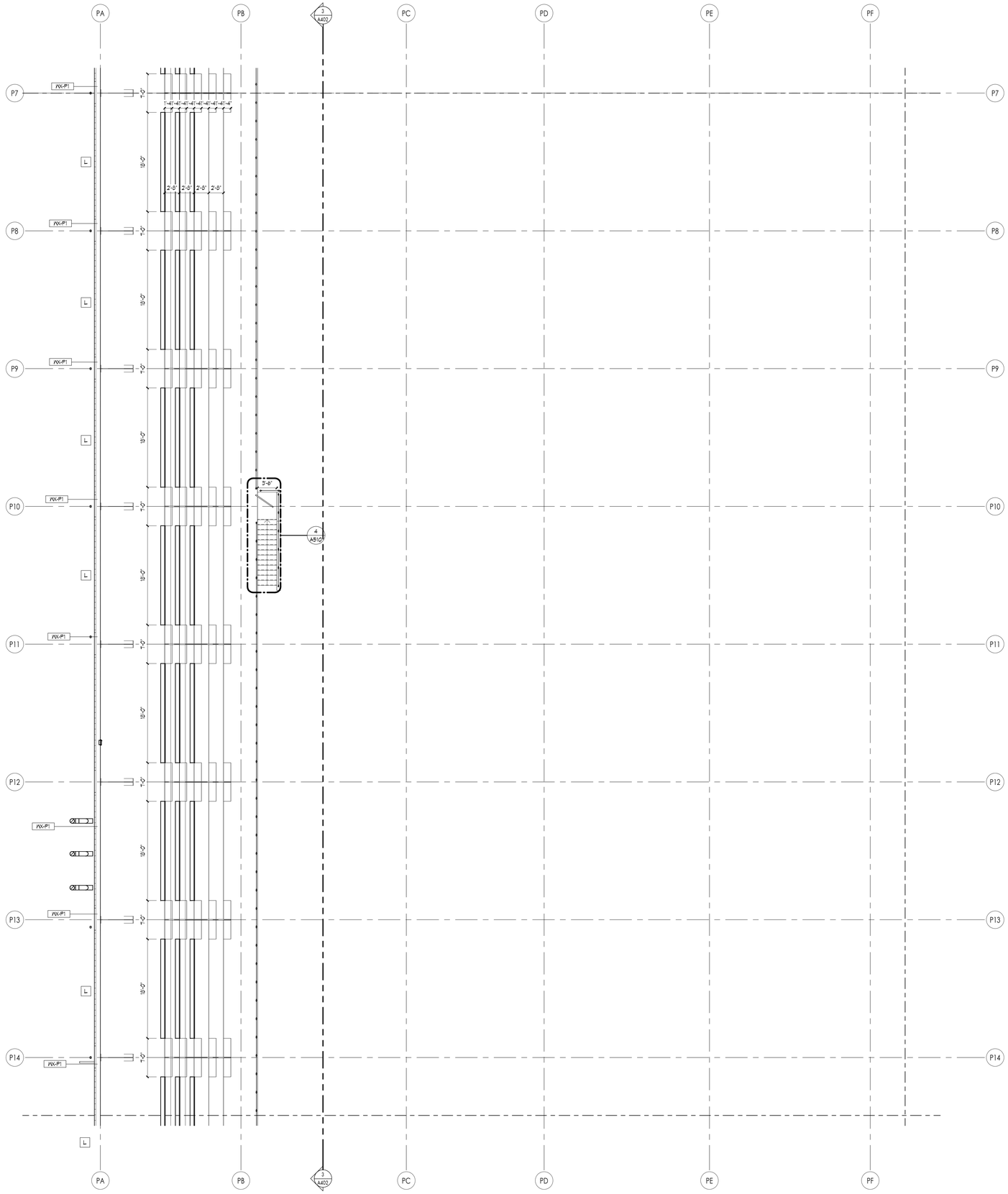

1 SECOND FLOOR ARCH - UNIT 2400C
1/8" = 1'-0"

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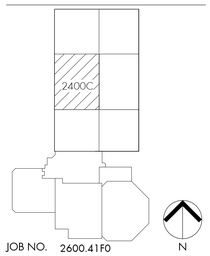

JOB NO. 2600.41F0

SHEET TITLE
ARHITECTURAL FLOOR PLAN - SECOND FLOOR - UNIT 2400C

SHEET NO.
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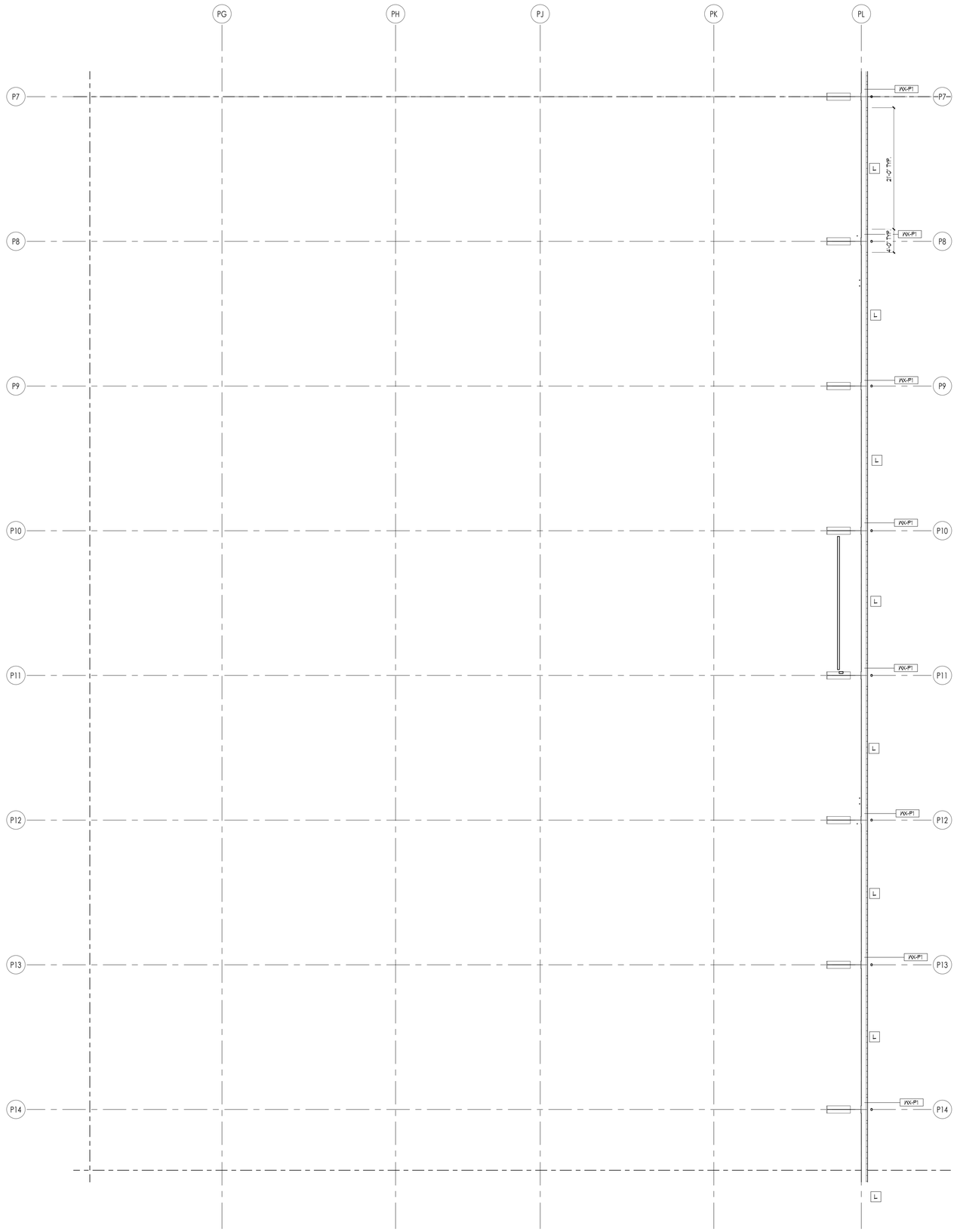

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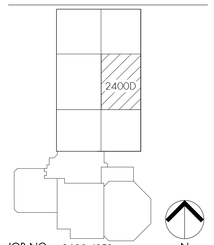

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SHEET TITLE
ARHITECTURAL FLOOR PLAN - SECOND FLOOR - UNIT 2400D

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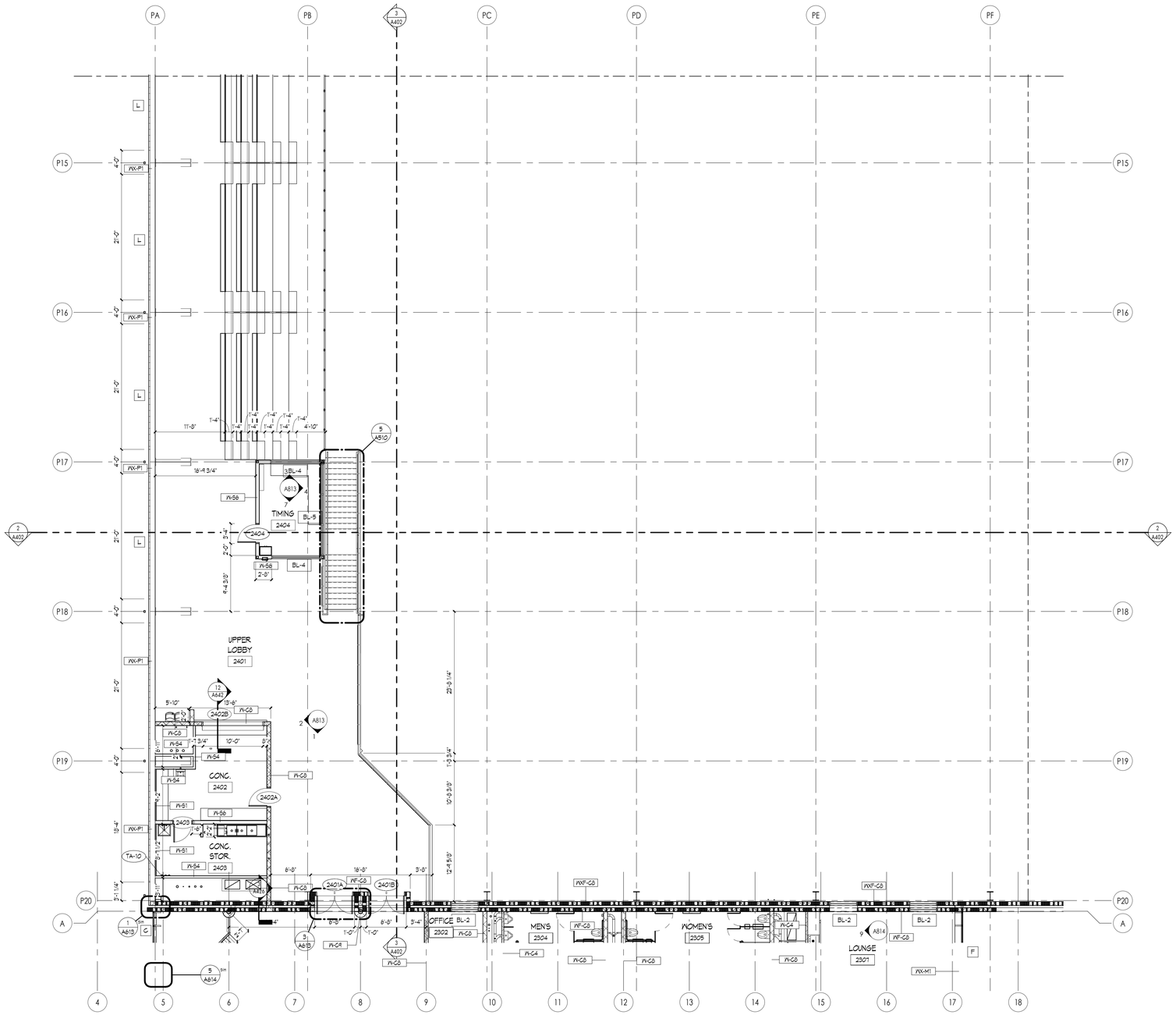

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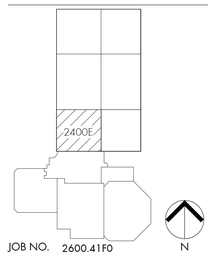

JOB NO. 2600.41F0

N

SHEET TITLE

ARHITECTURAL FLOOR PLAN - SECOND FLOOR - UNIT 2400E

SHEET NO.

A220.k

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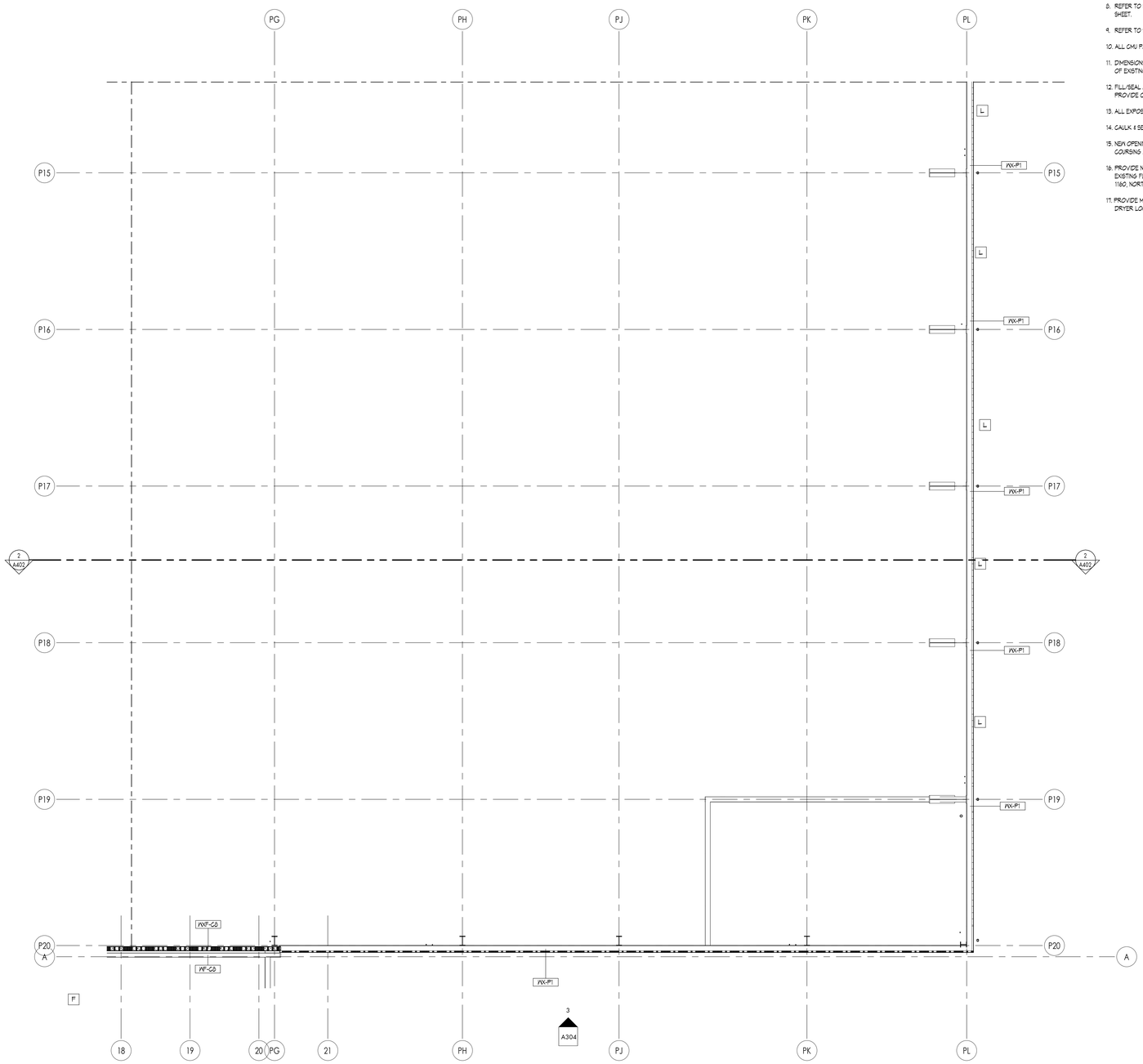

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7. ALL PARTITION WALLS TO RUN TIGHT TO DECK, U.N.O.
8. REFER TO PARTITION TYPES SHOWN ON FLOOR PLANS AND ARCHITECTURAL ASSEMBLIES SHEET.
9. REFER TO SHEET G020 FOR ARCHITECTURAL SYMBOLS LEGEND.
10. ALL CMU PARTITION WALLS SHALL BE 8" NOMINAL UNLESS NOTED OTHERWISE.
11. DIMENSIONS SHOWN ARE TO FACE OF CMU WALL, FACE OF NEW FRAMING MEMBER, OR FACE OF EXISTING ASSEMBLY.
12. FILL/SEAL ALL PENETRATIONS THROUGH WALLS & VOIDS AT STRUCTURAL MEMBERS. PROVIDE CONT. SEAL AT PEMB TURF.
13. ALL EXPOSED C.M.U. CORNERS SHALL BE BULLNOSE CORNERS, U.N.O.
14. CAULK & SEAL AROUND ALL NEW CABINET HEATER LOUVERS INSTALLED IN EXTERIOR WALLS.
15. NEW OPENINGS IN EXISTING MASONRY WALLS SHALL BE TOOTHED IN TO MATCH EXISTING COURSING AND MASONRY SIZES, U.N.O.
16. PROVIDE NEW EPOXY FLOORING AT LOCKER ROOMS 1008, 1013, 1120, 1124, 1135, 1142 ON EXISTING FLOORING. REMOVE CARPET AND PROVIDE NEW EPOXY FLOORING AT CORRIDOR 1160, NORTH LOBBY 1113, SOUTH LOBBY 1103 INCLUDING THE CORRIDORS. SEE INTERIORS.
17. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS. COORDINATE WITH ELECTRICAL.

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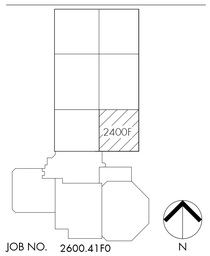

JOB NO. 2600.41F0

SHEET TITLE
ARHITECTURAL FLOOR PLAN - SECOND FLOOR - UNIT 2400F

SHEET NO.
A220.m

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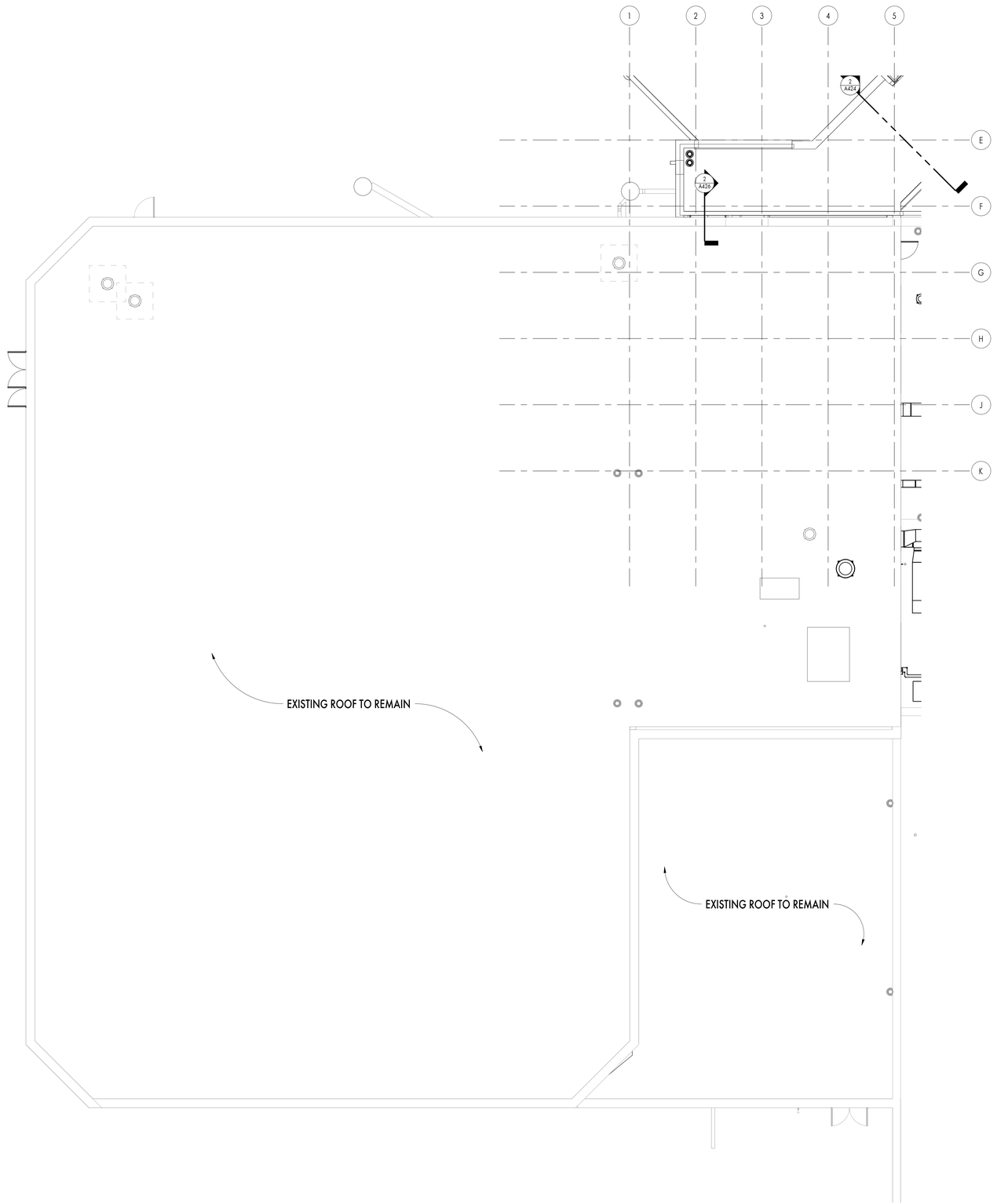

1 ROOF PLAN - AREA ROOF UNIT 1000
1/8" = 1'-0"

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
2. PROVIDE TREATED WOOD CURB RAILS ON WALK PADS FOR SMALL CONDENSER UNIT ASSOCIATED W/ FAN COIL UNITS. SEE MECHANICAL FOR LOCATIONS. SEE STRUCTURAL STANDARD DETAILING FOR PLACEMENT AND JOIST REINFORCEMENT.
3. ROOF SLOPES TO BE A MINIMUM OF 1/4" PER FOOT. TAPERED INSULATION ROOF SADDLES TO SLOPE TO ROOF DRAINS AS REQUIRED TO MAKE A COMPLETE SYSTEM OF 1/4" PER FOOT SLOPE.
4. TAPERED INSULATION INDICATED IS FOR DESIGN INTENT ONLY. ROOFING CONTRACTOR IS RESPONSIBLE FOR ALL SITE VERIFICATION AND FINAL INSULATION LAYOUTS TO ENSURE POSITIVE DRAINAGE. SUBMIT SHOP DRAWINGS OF TAPER AND INSULATION PLAN AT ALL NEW ROOF AREAS.
5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
6. OVERFLOW DRAINS (OD) SHALL BE INSTALLED WITH INLET 2" ABOVE ROOF DRAIN (RD) INLET. OVERFLOW DRAINS SHALL NOT ACCEPT WATER UNTIL ROOF DRAIN BECOMES PLUGGED AND 2" OF STORM WATER ACCUMULATES ON ROOF SURFACE.
7. REFER TO ROOF TYPES ON SHEET A021.
8. PROVIDE AT LEAST 30" PARAPET AT 2 HR RATED WALL LOCATIONS.
9. PATCH AREAS OF ROOF TO MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING MANUFACTURER. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.
10. REFER TO ARCHITECTURAL ROOF, CURB AND PIPE PENETRATION DETAILS ON A611.

ROOF PLAN LEGEND

- 2-HOUR RATED FIRE WALL
- COMBINATION ROOF DRAIN AND OVERFLOW DRAIN
- ROOF STRUCTURE SLOPE DIRECTION
- TAPERED INSULATION SLOPE DIRECTION
- STANDING SEAM INSULATED METAL PANEL ROOF
- TRANSLUCENT ROOF PANEL
- WALK PAD

ROOF PLAN KEYNOTES

1. 2 HOUR RATED FIRE WALL.
2. TRANSLUCENT ROOF PANEL - SKYLIGHT.
3. GUTTER. REFER TO SHEET A611.
4. DOWNSPOUT TO GRADE. REFER TO SHEET A611. PROVIDE SPLASH BLOCKS.
5. EXTERIOR WALL LADDER AND HOIST. REFER TO A611.
6. ROOF SCREEN PANEL. REFER TO 1/A670.
7. EXTERIOR WALL BELOW.
8. 2 HR RATED EXPANSION JOINT.
9. GUTTER BY PEMB MANUFACTURER.
10. DOWNSPOUT BY PEMB MANUFACTURER.
11. NOT USED.
12. SNOW RETENTION SYSTEM - DESIGN AND INSTALL PER PEMB MANUFACTURER.
13. PEMB RAKE TRIM PER MANUFACTURER.
14. FALL PROTECTION ANCHOR POINTS AT RIDGE PER MANUFACTURER.
15. DOWNSPOUT TO ROOF. PROVIDE SPLASH BLOCKS.
16. 4"x5" PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
17. SCUPPER BOX WITH DOWNSPOUT. PROVIDE SPLASH BLOCKS.
18. 4"x16" PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
19. GLT DECK WITH TAPERED INSULATION AND EPDM ROOFING ABOVE.

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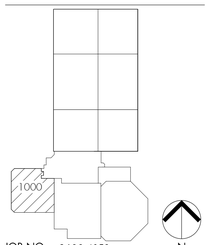

JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL ROOF PLAN - UNIT 1000

SHEET NO.

A290.a

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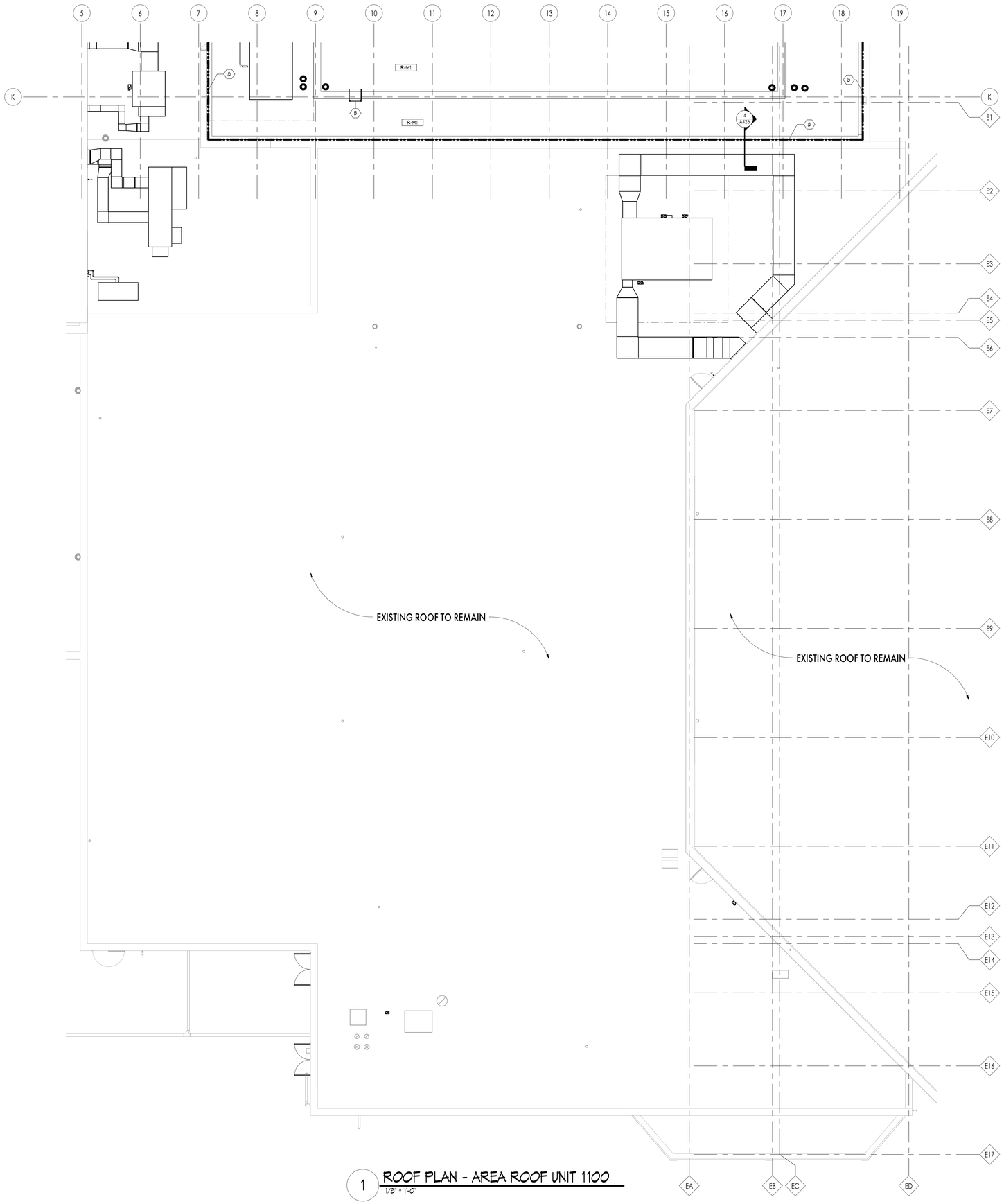

1 ROOF PLAN - AREA ROOF UNIT 1100
1/8" = 1'-0"

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
2. PROVIDE TREATED WOOD CURB RAILS ON WALK PADS FOR SMALL CONDENSER UNIT ASSOCIATED W/ FAN COIL UNITS. SEE MECHANICAL FOR LOCATIONS. SEE STRUCTURAL STANDARD DETAILING FOR PLACEMENT AND JOIST REINFORCEMENT.
3. ROOF SLOPES TO BE A MINIMUM OF 1/4" PER FOOT. TAPERED INSULATION ROOF SADDLES TO SLOPE TO ROOF DRAINS AS REQUIRED TO MAKE A COMPLETE SYSTEM OF 1/4" PER FOOT SLOPE.
4. TAPERED INSULATION INDICATED IS FOR DESIGN INTENT ONLY. ROOFING CONTRACTOR IS RESPONSIBLE FOR ALL SITE VERIFICATION AND FINAL INSULATION LAYOUTS TO ENSURE POSITIVE DRAINAGE. SUBMIT SHOP DRAWINGS OF TAPER AND INSULATION PLAN AT ALL NEW ROOF AREAS.
5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
6. OVERFLOW DRAINS (OD) SHALL BE INSTALLED WITH INLET 2" ABOVE ROOF DRAIN (RD) INLET. OVERFLOW DRAINS SHALL NOT ACCEPT WATER UNTIL ROOF DRAIN BECOMES PLUGGED AND 2" OF STORM WATER ACCUMULATES ON ROOF SURFACE.
7. REFER TO ROOF TYPES ON SHEET A021.
8. PROVIDE AT LEAST 30" PARAPET AT 2 HR RATED WALL LOCATIONS.
9. PATCH AREAS OF ROOF TO MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING MANUFACTURER. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.
10. REFER TO ARCHITECTURAL ROOF, CURB AND PIPE PENETRATION DETAILS ON A611.

ROOF PLAN LEGEND

- 2-HOUR RATED FIRE WALL
- COMBINATION ROOF DRAIN AND OVERFLOW DRAIN
- ROOF STRUCTURE SLOPE DIRECTION
- TAPERED INSULATION SLOPE DIRECTION
- STANDING SEAM INSULATED METAL PANEL ROOF
- TRANSLUCENT ROOF PANEL
- WALK PAD

ROOF PLAN KEYNOTES

1. 2 HOUR RATED FIRE WALL.
2. TRANSLUCENT ROOF PANEL - SKYLIGHT.
3. GUTTER. REFER TO SHEET A611.
4. DOWNSPOUT TO GRADE. REFER TO SHEET A611. PROVIDE SPLASH BLOCKS.
5. EXTERIOR WALL LADDER AND HOIST. REFER TO A611.
6. ROOF SCREEN PANEL. REFER TO 1/A670.
7. EXTERIOR WALL BELOW.
8. 2 HR RATED EXPANSION JOINT.
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10. DOWNSPOUT BY PEMB MANUFACTURER.
11. NOT USED.
12. SNOW RETENTION SYSTEM - DESIGN AND INSTALL PER PEMB MANUFACTURER.
13. PEMB RAKE TRIM PER MANUFACTURER.
14. FALL PROTECTION ANCHOR POINTS AT RIDGE PER MANUFACTURER.
15. DOWNSPOUT TO ROOF. PROVIDE SPLASH BLOCKS.
16. 4"x5" PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
17. SCUPPER BOX WITH DOWNSPOUT. PROVIDE SPLASH BLOCKS.
18. 4"x16" PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
19. GLT DECK WITH TAPERED INSULATION AND EPDM ROOFING ABOVE.

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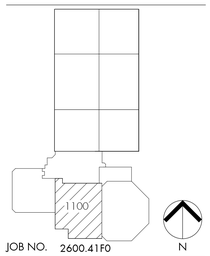

JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL ROOF PLAN - UNIT 1100

SHEET NO.

A290.b

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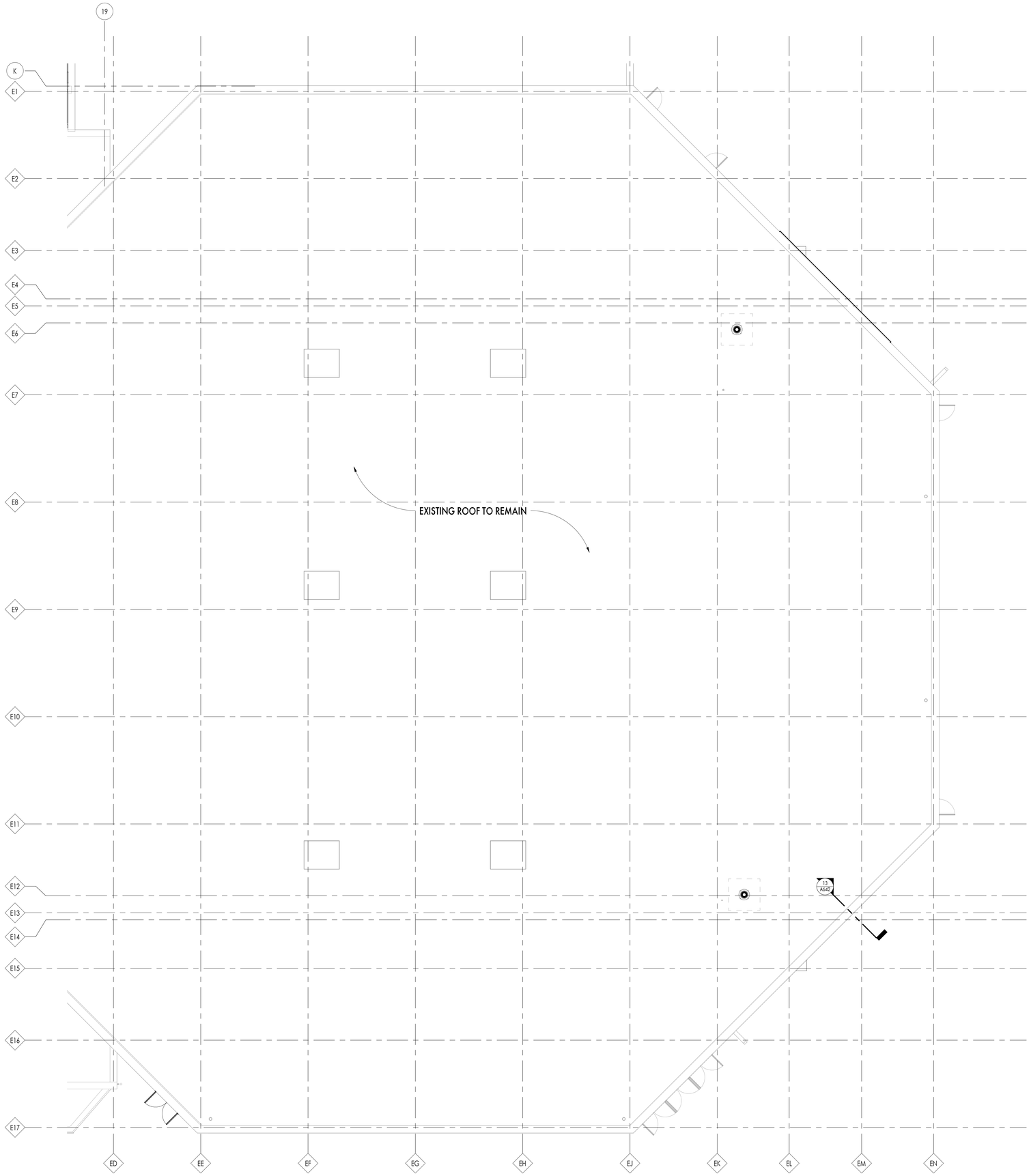

1 ROOF PLAN - AREA ROOF UNIT 1200
1/8" = 1'-0"

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
2. PROVIDE TREATED WOOD CURB RAILS ON WALK PADS FOR SMALL CONDENSER UNIT ASSOCIATED w/ FAN COIL UNITS. SEE MECHANICAL FOR LOCATIONS. SEE STRUCTURAL STANDARD DETAILING FOR PLACEMENT AND JOIST REINFORCEMENT.
3. ROOF SLOPES TO BE A MINIMUM OF 1/4" PER FOOT. TAPERED INSULATION ROOF SADDLES TO SLOPE TO ROOF DRAINS AS REQUIRED TO MAKE A COMPLETE SYSTEM OF 1/4" PER FOOT SLOPE.
4. TAPERED INSULATION INDICATED IS FOR DESIGN INTENT ONLY. ROOFING CONTRACTOR IS RESPONSIBLE FOR ALL SITE VERIFICATION AND FINAL INSULATION LAYOUTS TO ENSURE POSITIVE DRAINAGE. SUBMIT SHOP DRAWINGS OF TAPER AND INSULATION PLAN AT ALL NEW ROOF AREAS.
5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
6. OVERFLOW DRAINS (OD) SHALL BE INSTALLED WITH INLET 2" ABOVE ROOF DRAIN (RD) INLET. OVERFLOW DRAINS SHALL NOT ACCEPT WATER UNTIL ROOF DRAIN BECOMES PLUGGED AND 2" OF STORM WATER ACCUMULATES ON ROOF SURFACE.
7. REFER TO ROOF TYPES ON SHEET A021.
8. PROVIDE AT LEAST 30" PARAPET AT 2 HR RATED WALL LOCATIONS.
9. PATCH AREAS OF ROOF TO MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING MANUFACTURER. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.
10. REFER TO ARCHITECTURAL ROOF, CURB AND PIPE PENETRATION DETAILS ON A611.

ROOF PLAN LEGEND

- 2-HOUR RATED FIRE WALL
- COMBINATION ROOF DRAIN AND OVERFLOW DRAIN
- ROOF STRUCTURE SLOPE DIRECTION
- TAPERED INSULATION SLOPE DIRECTION
- STANDING SEAM INSULATED METAL PANEL ROOF
- TRANSLUCENT ROOF PANEL
- WALK PAD

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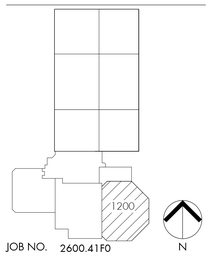

JOB NO. 2600.41F0

SHEET TITLE
ARCHITECTURAL ROOF PLAN - UNIT 1200

SHEET NO.
A290.c

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ROOF PLAN LEGEND

- 2-HOUR RATED FIRE WALL
- COMBINATION ROOF DRAIN AND OVERFLOW DRAIN
- ROOF STRUCTURE SLOPE DIRECTION
- TAPERED INSULATION SLOPE DIRECTION
- STANDING SEAM INSULATED METAL PANEL ROOF
- TRANSLUCENT ROOF PANEL
- WALK PAD

ROOF PLAN KEYNOTES

1. 2 HOUR RATED FIRE WALL.
2. TRANSLUCENT ROOF PANEL - SKYLIGHT.
3. GUTTER. REFER TO SHEET A611.
4. DOWNSPOUT TO GRADE. REFER TO SHEET A611. PROVIDE SPLASH BLOCKS.
5. EXTERIOR WALL LADDER AND HOIST. REFER TO A611.
6. ROOF SCREEN PANEL. REFER TO 1/A670.
7. EXTERIOR WALL BELOW.
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11. NOT USED.
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13. PEMB RAKE TRIM PER MANUFACTURER.
14. FALL PROTECTION ANCHOR POINTS AT RIDGE PER MANUFACTURER.
15. DOWNSPOUT TO ROOF. PROVIDE SPLASH BLOCKS.
16. 4'x8' PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
17. SCUPPER BOX WITH DOWNSPOUT. PROVIDE SPLASH BLOCKS.
18. 4'x16' PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
19. CLT DECK WITH TAPERED INSULATION AND EPDM ROOFING ABOVE.

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
2. PROVIDE TREATED WOOD CURB RAILS ON WALK PADS FOR SMALL CONDENSER UNIT ASSOCIATED W/ FAN COIL UNITS. SEE MECHANICAL FOR LOCATIONS. SEE STRUCTURAL STANDARD DETAILING FOR PLACEMENT AND JOIST REINFORCEMENT.
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5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
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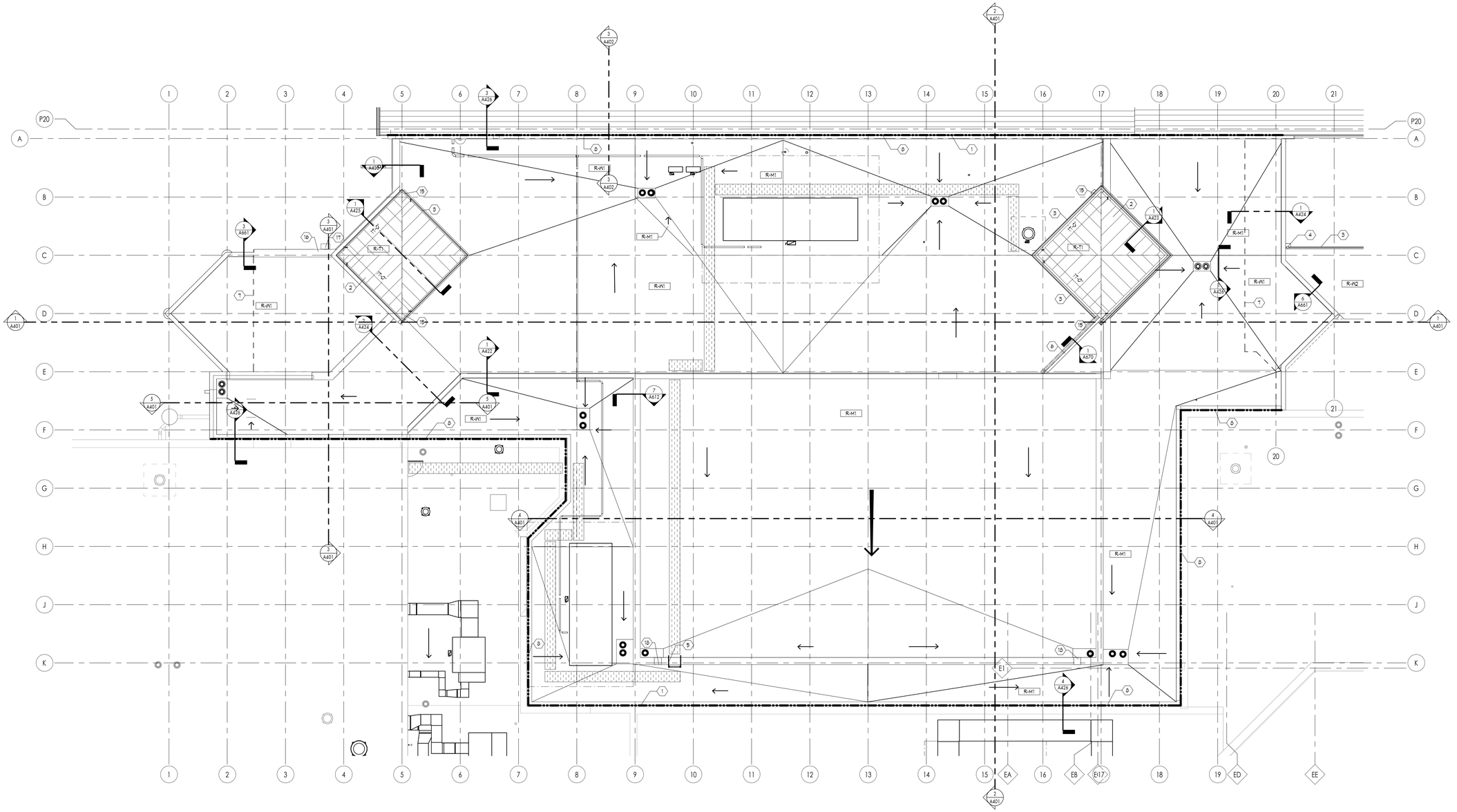
7. REFER TO ROOF TYPES ON SHEET A021.
8. PROVIDE AT LEAST 30" PARAPET AT 2 HR RATED WALL LOCATIONS.
9. PATCH AREAS OF ROOF TO MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING MANUFACTURER. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.
10. REFER TO ARCHITECTURAL ROOF, CURB AND PIPE PENETRATION DETAILS ON A611.



1 ROOF PLAN - AREA ROOF UNIT 1300A
1/8" = 1'-0"

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JOB NO. 2600.41F0

SHEET TITLE
ARCHITECTURAL ROOF PLAN - UNIT 1300A

SHEET NO.
A290.d

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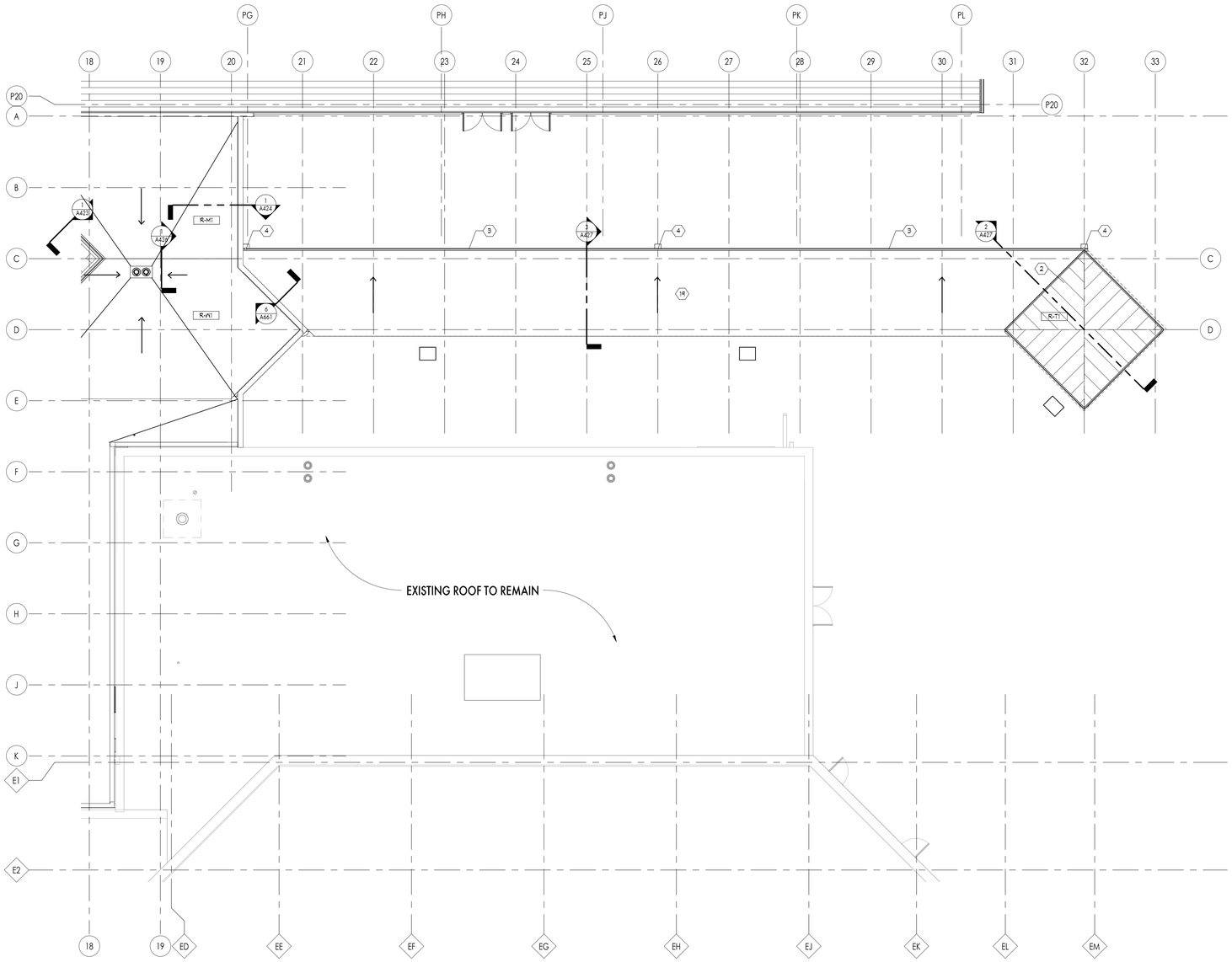

1 ROOF PLAN - AREA ROOF UNIT 1300B
1/8" = 1'-0"

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
2. PROVIDE TREATED WOOD CURB RAILS ON WALK PADS FOR SMALL CONDENSER UNIT ASSOCIATED W/ FAN COIL UNITS. SEE MECHANICAL FOR LOCATIONS. SEE STRUCTURAL STANDARD DETAILING FOR PLACEMENT AND JOIST REINFORCEMENT.
3. ROOF SLOPES TO BE A MINIMUM OF 1/4" PER FOOT. TAPERED INSULATION ROOF SADDLES TO SLOPE TO ROOF DRAINS AS REQUIRED TO MAKE A COMPLETE SYSTEM OF 1/4" PER FOOT SLOPE.
4. TAPERED INSULATION INDICATED IS FOR DESIGN INTENT ONLY. ROOFING CONTRACTOR IS RESPONSIBLE FOR ALL SITE VERIFICATION AND FINAL INSULATION LAYOUTS TO ENSURE POSITIVE DRAINAGE. SUBMIT SHOP DRAWINGS OF TAPER AND INSULATION PLAN AT ALL NEW ROOF AREAS.
5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
6. OVERFLOW DRAINS (OD) SHALL BE INSTALLED WITH INLET 2" ABOVE ROOF DRAIN (RD) INLET. OVERFLOW DRAINS SHALL NOT ACCEPT WATER UNTIL ROOF DRAIN BECOMES PLUGGED AND 2" OF STORM WATER ACCUMULATES ON ROOF SURFACE.
7. REFER TO ROOF TYPES ON SHEET A021.
8. PROVIDE AT LEAST 30" PARAPET AT 2 HR RATED WALL LOCATIONS.
9. PATCH AREAS OF ROOF TO MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING MANUFACTURER. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.
10. REFER TO ARCHITECTURAL ROOF, CURB AND PIPE PENETRATION DETAILS ON A611.

ROOF PLAN LEGEND

- 2-HOUR RATED FIRE WALL
- COMBINATION ROOF DRAIN AND OVERFLOW DRAIN
- ROOF STRUCTURE SLOPE DIRECTION
- TAPERED INSULATION SLOPE DIRECTION
- STANDING SEAM INSULATED METAL PANEL ROOF
- TRANSLUCENT ROOF PANEL
- WALK PAD

ROOF PLAN KEYNOTES

1. 2 HOUR RATED FIRE WALL.
2. TRANSLUCENT ROOF PANEL - SKYLIGHT.
3. GUTTER. REFER TO SHEET A611.
4. DOWNSPOUT TO GRADE. REFER TO SHEET A611. PROVIDE SPLASH BLOCKS.
5. EXTERIOR WALL LADDER AND HOIST. REFER TO A611.
6. ROOF SCREEN PANEL. REFER TO 1/A670.
7. EXTERIOR WALL BELOW.
8. 2 HR RATED EXPANSION JOINT.
9. GUTTER BY PEMB MANUFACTURER.
10. DOWNSPOUT BY PEMB MANUFACTURER.
11. NOT USED.
12. SNOW RETENTION SYSTEM - DESIGN AND INSTALL PER PEMB MANUFACTURER.
13. PEMB RAKE TRIM PER MANUFACTURER.
14. FALL PROTECTION ANCHOR POINTS AT RIDGE PER MANUFACTURER.
15. DOWNSPOUT TO ROOF. PROVIDE SPLASH BLOCKS.
16. 4'x5' PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
17. SCUPPER BOX WITH DOWNSPOUT. PROVIDE SPLASH BLOCKS.
18. 4'x16' PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
19. GLT DECK WITH TAPERED INSULATION AND EPDM ROOFING ABOVE.

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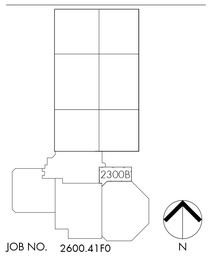
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
ARCHITECTURAL ROOF PLAN - UNIT 1300B

SHEET NO.
A290.e

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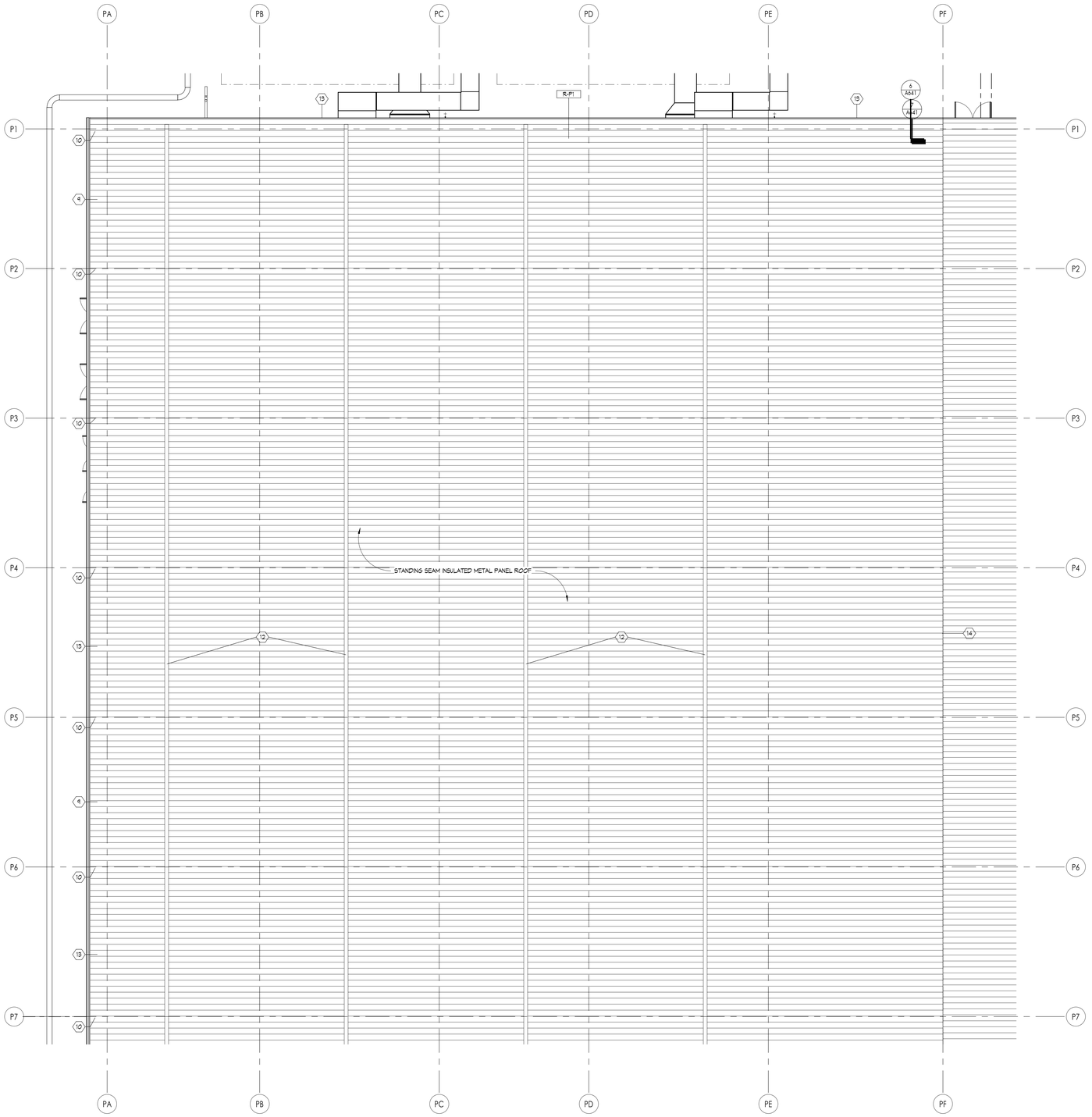

1 ROOF PLAN - AREA ROOF UNIT 1400A
1/8" = 1'-0"

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
2. PROVIDE TREATED WOOD CURB RAILS ON WALK PADS FOR SMALL CONDENSER UNIT ASSOCIATED W/ FAN COIL UNITS. SEE MECHANICAL FOR LOCATIONS. SEE STRUCTURAL STANDARD DETAILING FOR PLACEMENT AND JOIST REINFORCEMENT.
3. ROOF SLOPES TO BE A MINIMUM OF 1/4" PER FOOT. TAPERED INSULATION ROOF SADDLES TO SLOPE TO ROOF DRAINS AS REQUIRED TO MAKE A COMPLETE SYSTEM OF 1/4" PER FOOT SLOPE.
4. TAPERED INSULATION INDICATED IS FOR DESIGN INTENT ONLY. ROOFING CONTRACTOR IS RESPONSIBLE FOR ALL SITE VERIFICATION AND FINAL INSULATION LAYOUTS TO ENSURE POSITIVE DRAINAGE. SUBMIT SHOP DRAWINGS OF TAPER AND INSULATION PLAN AT ALL NEW ROOF AREAS.
5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
6. OVERFLOW DRAINS (OD) SHALL BE INSTALLED WITH INLET 2" ABOVE ROOF DRAIN (RD) INLET. OVERFLOW DRAINS SHALL NOT ACCEPT WATER UNTIL ROOF DRAIN BECOMES PLUGGED AND 2" OF STORM WATER ACCUMULATES ON ROOF SURFACE.
7. REFER TO ROOF TYPES ON SHEET A021.
8. PROVIDE AT LEAST 30" PARAPET AT 2 HR RATED WALL LOCATIONS.
9. PATCH AREAS OF ROOF TO MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING MANUFACTURER. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.
10. REFER TO ARCHITECTURAL ROOF, CURB AND PIPE PENETRATION DETAILS ON A811.

ROOF PLAN LEGEND

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- ROOF STRUCTURE SLOPE DIRECTION
- TAPERED INSULATION SLOPE DIRECTION
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- TRANSLUCENT ROOF PANEL
- WALK PAD

ROOF PLAN KEYNOTES

1. 2 HOUR RATED FIRE WALL.
2. TRANSLUCENT ROOF PANEL - SKYLIGHT.
3. GUTTER. REFER TO SHEET A811.
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19. GLT DECK WITH TAPERED INSULATION AND EPDM ROOFING ABOVE.

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HOWELL PUBLIC SCHOOLS

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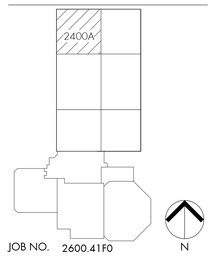

JOB NO. 2600.41F0

SHEET TITLE
ARCHITECTURAL ROOF PLAN - UNIT 1400A

SHEET NO.
A290.f

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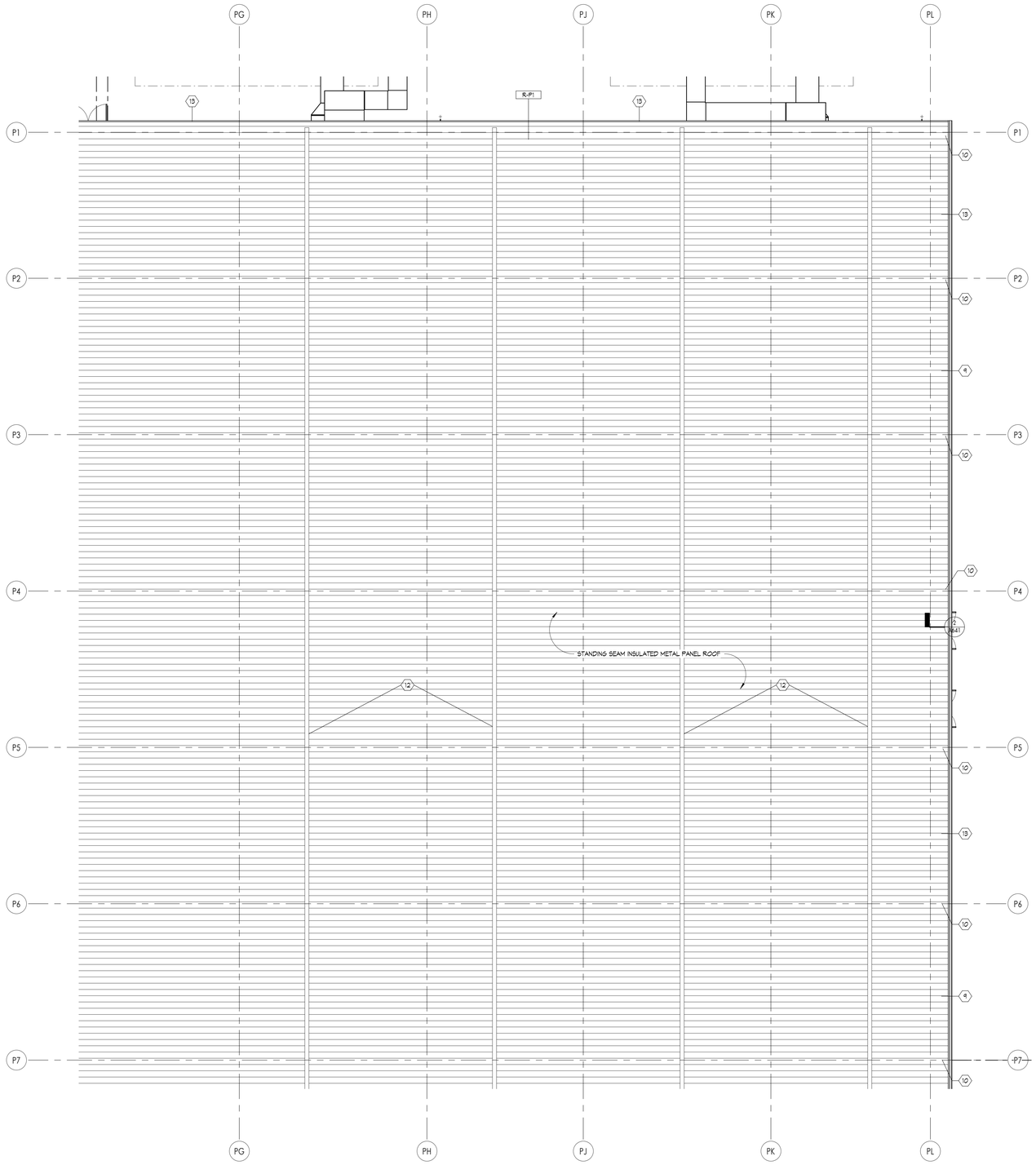

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1/8" = 1'-0"

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
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3. ROOF SLOPES TO BE A MINIMUM OF 1/4" PER FOOT. TAPERED INSULATION ROOF SADDLES TO SLOPE TO ROOF DRAINS AS REQUIRED TO MAKE A COMPLETE SYSTEM OF 1/4" PER FOOT SLOPE.
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5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
6. OVERFLOW DRAINS (OD) SHALL BE INSTALLED WITH INLET 2" ABOVE ROOF DRAIN (RD) INLET. OVERFLOW DRAINS SHALL NOT ACCEPT WATER UNTIL ROOF DRAIN BECOMES PLUGGED AND 2" OF STORM WATER ACCUMULATES ON ROOF SURFACE.
7. REFER TO ROOF TYPES ON SHEET A021.
8. PROVIDE AT LEAST 30" PARAPET AT 2 HR RATED WALL LOCATIONS.
9. PATCH AREAS OF ROOF TO MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING MANUFACTURER. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.
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ROOF PLAN LEGEND

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HOWELL PUBLIC SCHOOLS

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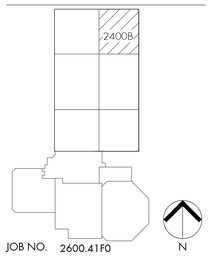

JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL ROOF PLAN - UNIT 1400B

SHEET NO.

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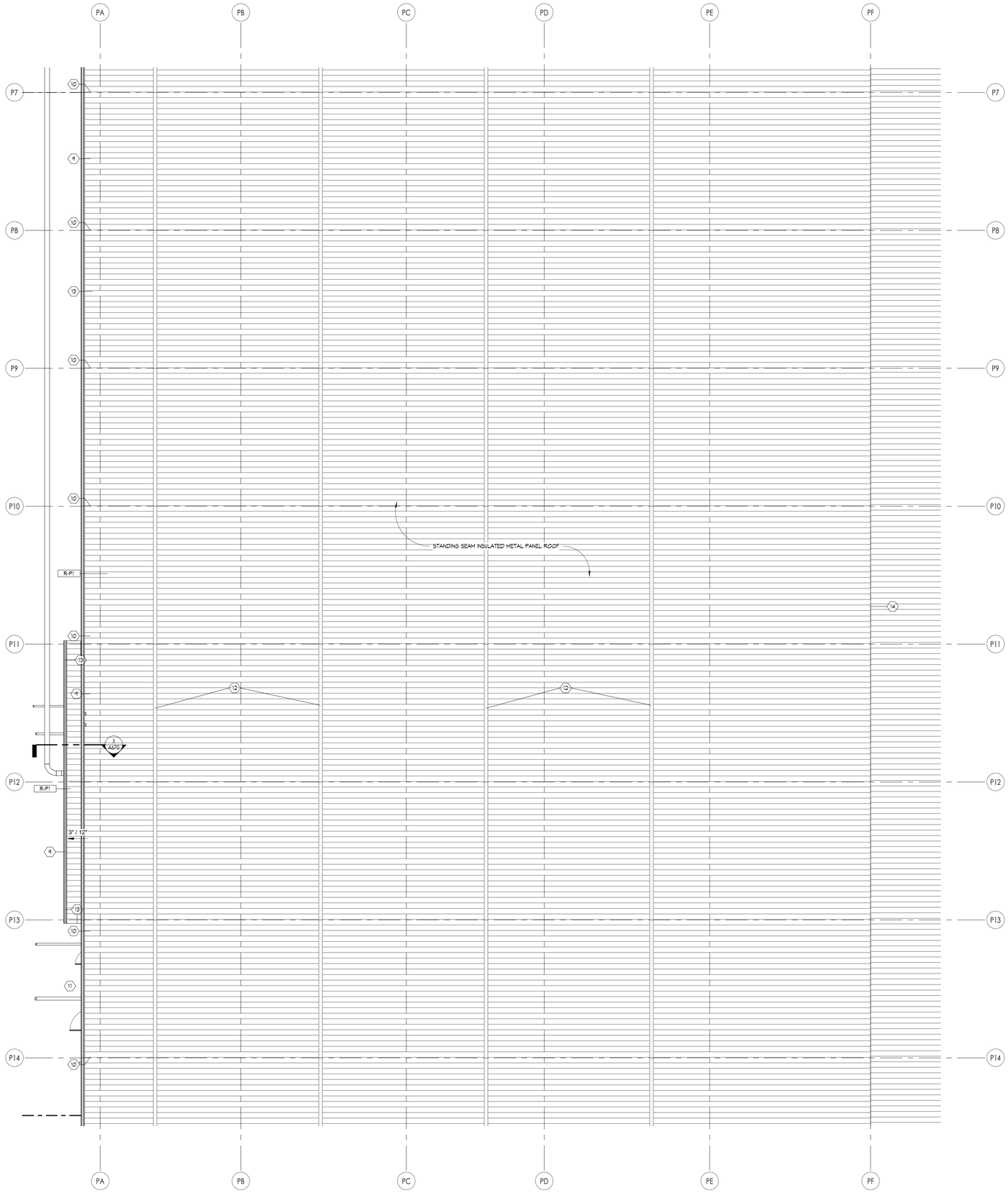

1 ROOF PLAN - AREA ROOF UNIT 1400C
1/8" = 1'-0"

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
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HOWELL COMMUNITY CENTER

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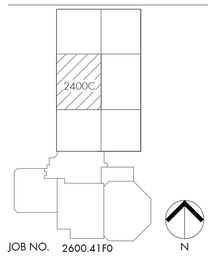

JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL ROOF PLAN - UNIT 1400C

SHEET NO.

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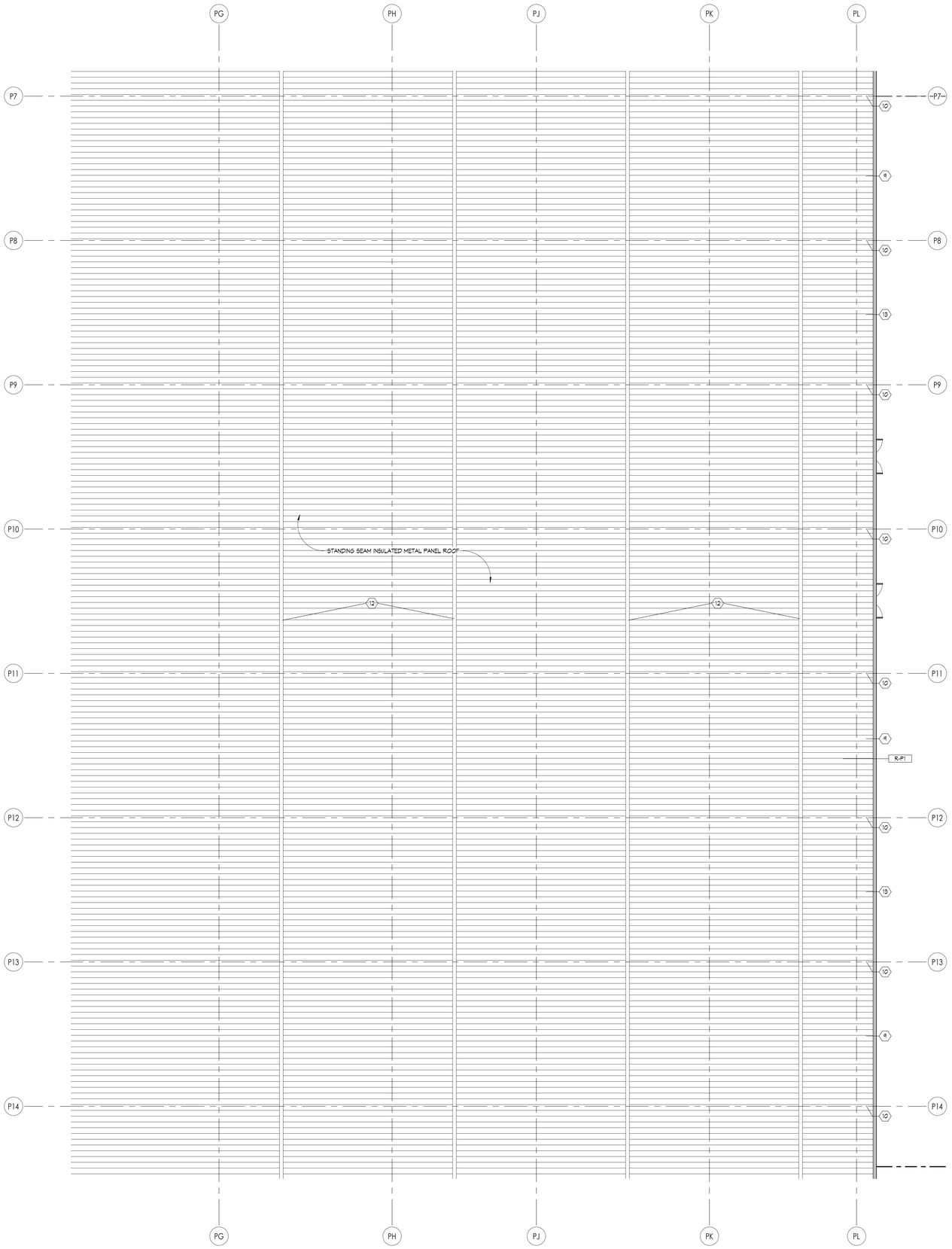

1 ROOF PLAN - AREA ROOF UNIT 1400D
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ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
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HOWELL COMMUNITY CENTER

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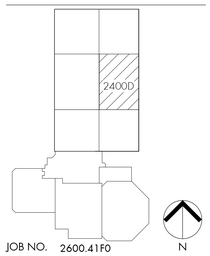

JOB NO. 2600.41F0

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SHEET TITLE

ARCHITECTURAL ROOF PLAN - UNIT 1400D

SHEET NO.

A290.i

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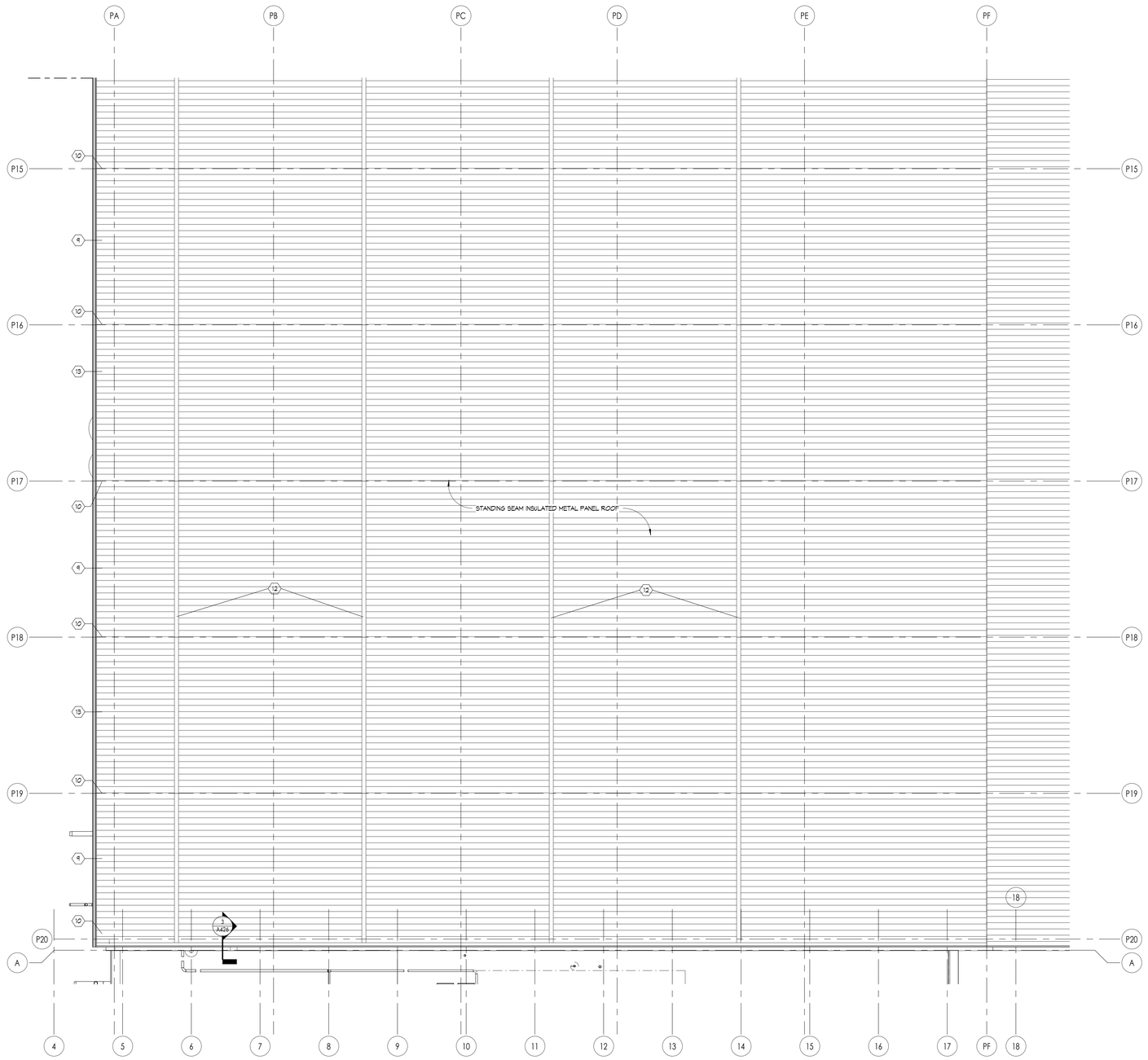

1 ROOF PLAN - AREA ROOF UNIT 1400E

1/8" = 1'-0"

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTEE.
2. PROVIDE TREATED WOOD CURB RAILS ON WALK PADS FOR SMALL CONDENSER UNIT ASSOCIATED W/ FAN COIL UNITS. SEE MECHANICAL FOR LOCATIONS. SEE STRUCTURAL STANDARD DETAILING FOR PLACEMENT AND JOIST REINFORCEMENT.
3. ROOF SLOPES TO BE A MINIMUM OF 1/4" PER FOOT. TAPERED INSULATION ROOF SADDLES TO SLOPE TO ROOF DRAINS AS REQUIRED TO MAKE A COMPLETE SYSTEM OF 1/4" PER FOOT SLOPE.
4. TAPERED INSULATION INDICATED IS FOR DESIGN INTENT ONLY. ROOFING CONTRACTOR IS RESPONSIBLE FOR ALL SITE VERIFICATION AND FINAL INSULATION LAYOUTS TO ENSURE POSITIVE DRAINAGE. SUBMIT SHOP DRAWINGS OF TAPER AND INSULATION PLAN AT ALL NEW ROOF AREAS.
5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
6. OVERFLOW DRAINS (OD) SHALL BE INSTALLED WITH INLET 2" ABOVE ROOF DRAIN (RD) INLET. OVERFLOW DRAINS SHALL NOT ACCEPT WATER UNTIL ROOF DRAIN BECOMES PLUGGED AND 2" OF STORM WATER ACCUMULATES ON ROOF SURFACE.
7. REFER TO ROOF TYPES ON SHEET A021.
8. PROVIDE AT LEAST 30" PARAPET AT 2 HR RATED WALL LOCATIONS.
9. PATCH AREAS OF ROOF TO MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING MANUFACTURER. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.
10. REFER TO ARCHITECTURAL ROOF, CURB AND PIPE PENETRATION DETAILS ON A611.

ROOF PLAN LEGEND

- 2-HOUR RATED FIRE WALL
- COMBINATION ROOF DRAIN AND OVERFLOW DRAIN
- ROOF STRUCTURE SLOPE DIRECTION
- TAPERED INSULATION SLOPE DIRECTION
- STANDING SEAM INSULATED METAL PANEL ROOF
- TRANSLUCENT ROOF PANEL
- WALK PAD

ROOF PLAN KEYNOTES

1. 2 HOUR RATED FIRE WALL.
2. TRANSLUCENT ROOF PANEL - SKYLIGHT.
3. GUTTER. REFER TO SHEET A611.
4. DOWNSPOUT TO GRADE. REFER TO SHEET A611. PROVIDE SPLASH BLOCKS.
5. EXTERIOR WALL LADDER AND HOIST. REFER TO A611.
6. ROOF SCREEN PANEL. REFER TO 1/A670.
7. EXTERIOR WALL BELOW.
8. 2 HR RATED EXPANSION JOINT.
9. GUTTER BY PEMB MANUFACTURER.
10. DOWNSPOUT BY PEMB MANUFACTURER.
11. NOT USED.
12. SNOW RETENTION SYSTEM - DESIGN AND INSTALL PER PEMB MANUFACTURER.
13. PEMB RAKE TRIM PER MANUFACTURER.
14. FALL PROTECTION ANCHOR POINTS AT RIDGE PER MANUFACTURER.
15. DOWNSPOUT TO ROOF. PROVIDE SPLASH BLOCKS.
16. 4'x6' PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
17. SCUPPER BOX WITH DOWNSPOUT. PROVIDE SPLASH BLOCKS.
18. 4'x16' PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
19. GLT DECK WITH TAPERED INSULATION AND EPDM ROOFING ABOVE.

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

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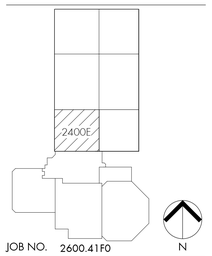
HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL ROOF PLAN - UNIT 1400E

SHEET NO.

A290.k

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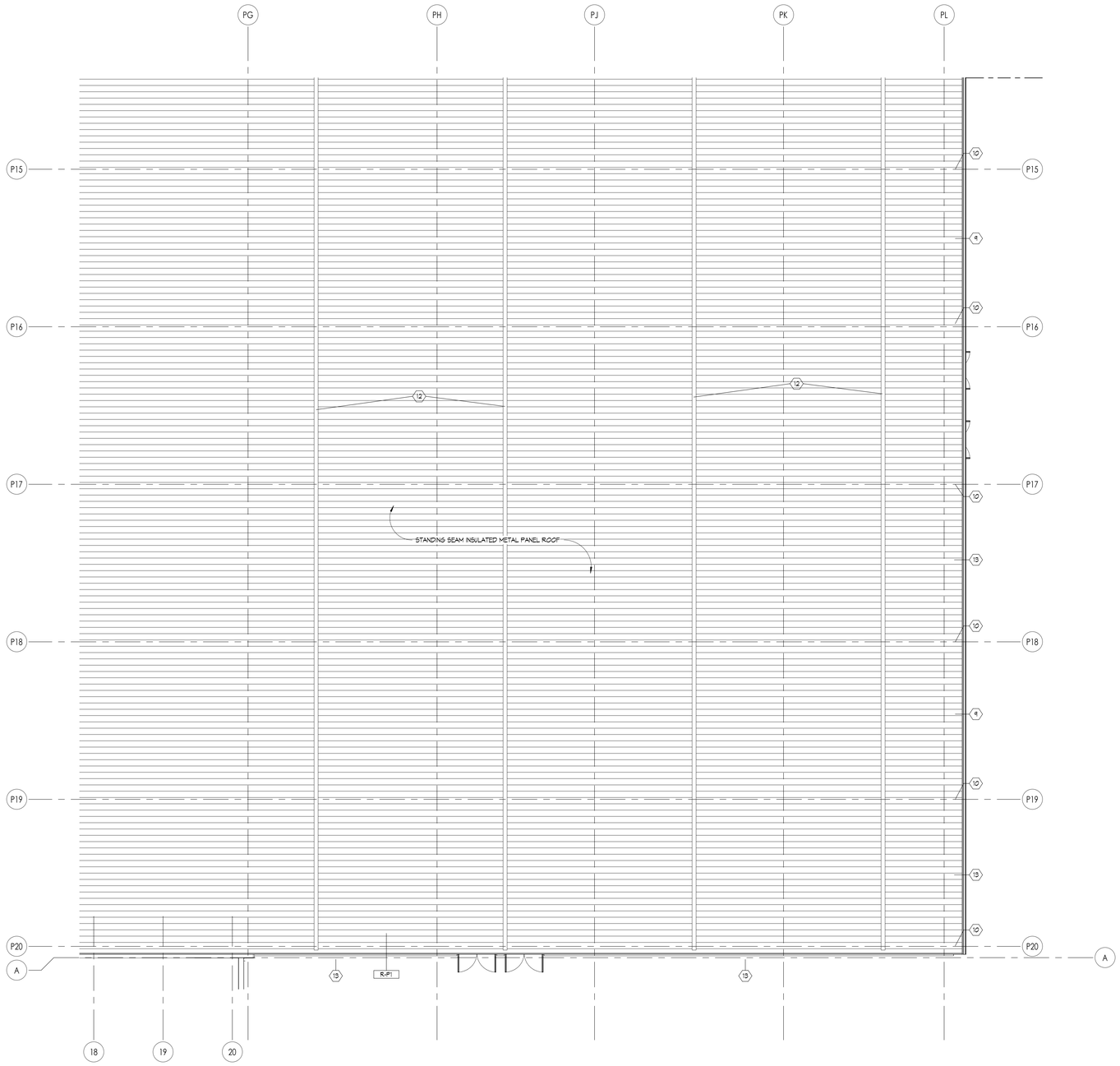

1 ROOF PLAN - AREA ROOF UNIT 1400F

1/8" = 1'-0"

ROOF PLAN GENERAL NOTES

1. FOR MECHANICAL EQUIPMENT INSTALLED ON ROOF, CONTRACTOR SHALL INSTALL EQUIPMENT SUPPORTS, ROOF CURBS OR PADS AS REQUIRED TO POSITION EQUIPMENT THE REQUIRED DISTANCE ABOVE FINISHED ROOF SURFACE. SEE MECHANICAL PLANS FOR ROOF-MOUNTED EQUIPMENT. INSTALL NEW ROOF TOP EQUIPMENT PER EXISTING ROOF MANUFACTURERS INSTRUCTIONS TO MAINTAIN EXISTING WARRANTIES.
2. PROVIDE TREATED WOOD CURB RAILS ON WALK PADS FOR SMALL CONDENSER UNIT ASSOCIATED W/ FAN COIL UNITS. SEE MECHANICAL FOR LOCATIONS. SEE STRUCTURAL STANDARD DETAILING FOR PLACEMENT AND JOIST REINFORCEMENT.
3. ROOF SLOPES TO BE A MINIMUM OF 1/4" PER FOOT. TAPERED INSULATION ROOF SADDLES TO SLOPE TO ROOF DRAINS AS REQUIRED TO MAKE A COMPLETE SYSTEM OF 1/4" PER FOOT SLOPE.
4. TAPERED INSULATION INDICATED IS FOR DESIGN INTENT ONLY. ROOFING CONTRACTOR IS RESPONSIBLE FOR ALL SITE VERIFICATION AND FINAL INSULATION LAYOUTS TO ENSURE POSITIVE DRAINAGE. SUBMIT SHOP DRAWINGS OF TAPER AND INSULATION PLAN AT ALL NEW ROOF AREAS.
5. PROVIDE SINGLE MEMBRANE ROOFING COMPLETE WITH FLASHING AT CORNERS, COPING AND JUNCTIONS, U.N.O.
6. OVERFLOW DRAINS (OD) SHALL BE INSTALLED WITH INLET 2" ABOVE ROOF DRAIN (RD) INLET. OVERFLOW DRAINS SHALL NOT ACCEPT WATER UNTIL ROOF DRAIN BECOMES PLUGGED AND 2" OF STORM WATER ACCUMULATES ON ROOF SURFACE.
7. REFER TO ROOF TYPES ON SHEET A021.
8. PROVIDE AT LEAST 30" PARAPET AT 2 HR RATED WALL LOCATIONS.
9. PATCH AREAS OF ROOF TO MEET WARRANTY REQUIREMENTS OF EXISTING ROOFING MANUFACTURER. INFILL ROOFING SYSTEM AND REPAIR MEMBRANE AT PIPES AND MECHANICAL CURBS PER MANUF. WARRANTY REQUIREMENTS. VERIFY SIZE IN FIELD.
10. REFER TO ARCHITECTURAL ROOF, CURB AND PIPE PENETRATION DETAILS ON A611.

ROOF PLAN LEGEND

- 2-HOUR RATED FIRE WALL
- COMBINATION ROOF DRAIN AND OVERFLOW DRAIN
- ROOF STRUCTURE SLOPE DIRECTION
- TAPERED INSULATION SLOPE DIRECTION
- STANDING SEAM INSULATED METAL PANEL ROOF
- TRANSLUCENT ROOF PANEL
- WALK PAD

ROOF PLAN KEYNOTES

1. 2 HOUR RATED FIRE WALL.
2. TRANSLUCENT ROOF PANEL - SKYLIGHT.
3. GUTTER. REFER TO SHEET A611.
4. DOWNSPOUT TO GRADE. REFER TO SHEET A611. PROVIDE SPLASH BLOCKS.
5. EXTERIOR WALL LADDER AND HOIST. REFER TO A611.
6. ROOF SCREEN PANEL. REFER TO 1/A670.
7. EXTERIOR WALL BELOW.
8. 2 HR RATED EXPANSION JOINT.
9. GUTTER BY PEMB MANUFACTURER.
10. DOWNSPOUT BY PEMB MANUFACTURER.
11. NOT USED.
12. SNOW RETENTION SYSTEM - DESIGN AND INSTALL PER PEMB MANUFACTURER.
13. PEMB RAKE TRIM PER MANUFACTURER.
14. FALL PROTECTION ANCHOR POINTS AT RIDGE PER MANUFACTURER.
15. DOWNSPOUT TO ROOF. PROVIDE SPLASH BLOCKS.
16. 4"x8" PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
17. SCUPPER BOX WITH DOWNSPOUT. PROVIDE SPLASH BLOCKS.
18. 4"x16" PARAPET SCUPPER. INSTALL MIN. 2" ABOVE ROOF. REFER TO A611.
19. GLT DECK WITH TAPERED INSULATION AND EPDM ROOFING ABOVE.

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HOWELL PUBLIC SCHOOLS

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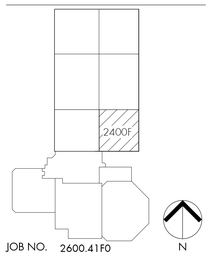

JOB NO. 2600.41F0

SHEET TITLE

ARCHITECTURAL ROOF PLAN - UNIT 1400F

SHEET NO.

A290.m

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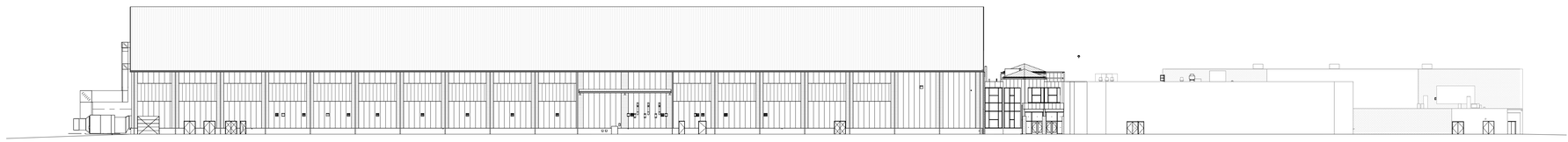
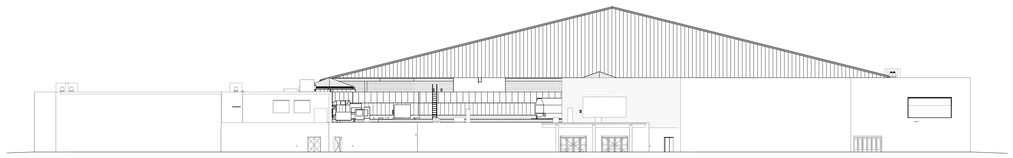
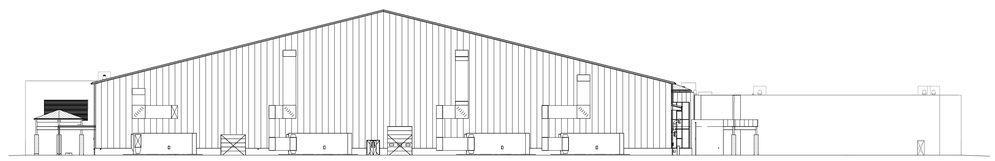


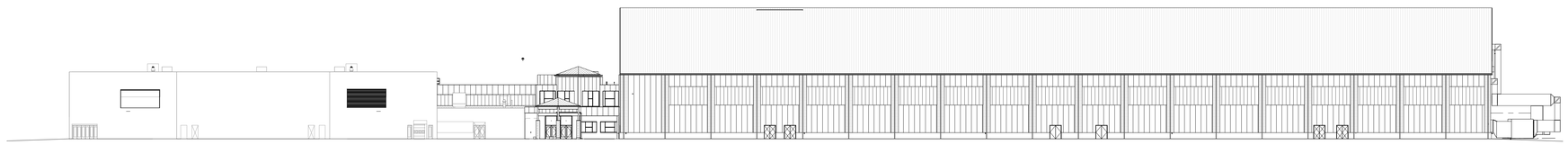
4 WEST ELEVATION - COMPOSITE
1" = 30'-0"



3 SOUTH ELEVATION - COMPOSITE
1" = 30'-0"



2 NORTH ELEVATION - COMPOSITE
1" = 30'-0"



1 EAST ELEVATION - COMPOSITE
1" = 30'-0"

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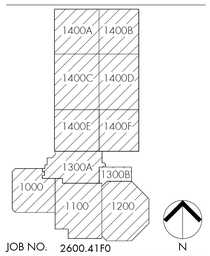

JOB NO. 2600.41F0

SHEET TITLE
COMPOSITE EXTERIOR ELEVATIONS

SHEET NO.
A300

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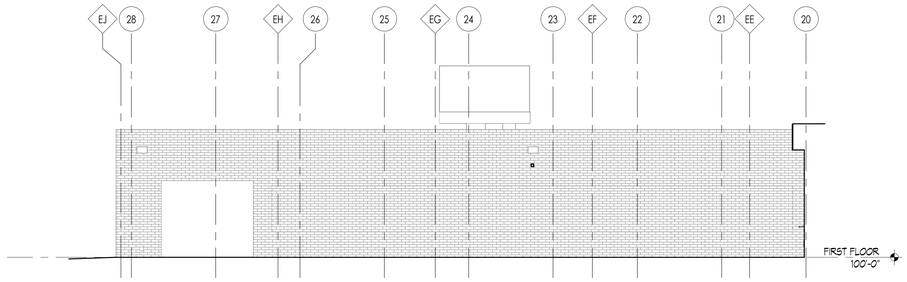
EXTERIOR ELEVATIONS LEGEND/KEYNOTES

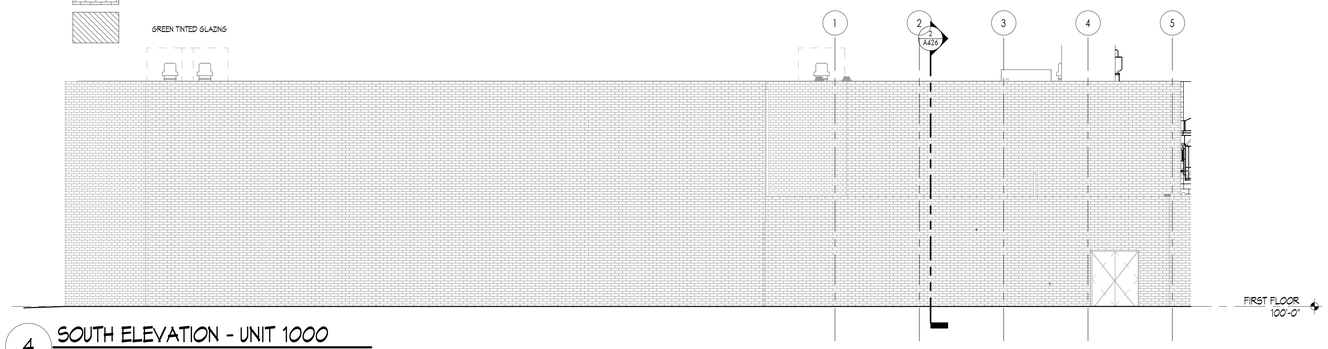
NOTE: 1. ARCHITECTURAL ELEVATIONS ARE PROVIDED TO EXPRESS DESIGN INTENT ONLY.
2. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN THE WALL.
3. PROVIDE MASONRY CONTROL JOINTS AT EACH COLUMN GRID, MAX. SPACING 25'-0".
4. PROVIDE POWER FOR THE EXTERIOR BUILDING SIGNAGE. LETTERING TO BE FINALIZED UPON OWNER APPROVAL.

- 4" FACE BRICK
- INSULATED METAL PANEL
- TRANSLUCENT PANEL- KALWALL
- 8X16 CMU
- GREEN TINTED GLAZING

1. DOWNSPOUT NOZZLE, SEE DETAIL ON A611.
2. SCUPPER BOX WITH DOWNSPOUT
3. HOSE BIB, REFER TO PLUMBING.
4. NEW LOUVER, SEE DETAIL ON A842.
5. 1" METAL SKIN CLADDING BY PEMB SUPPLIER.



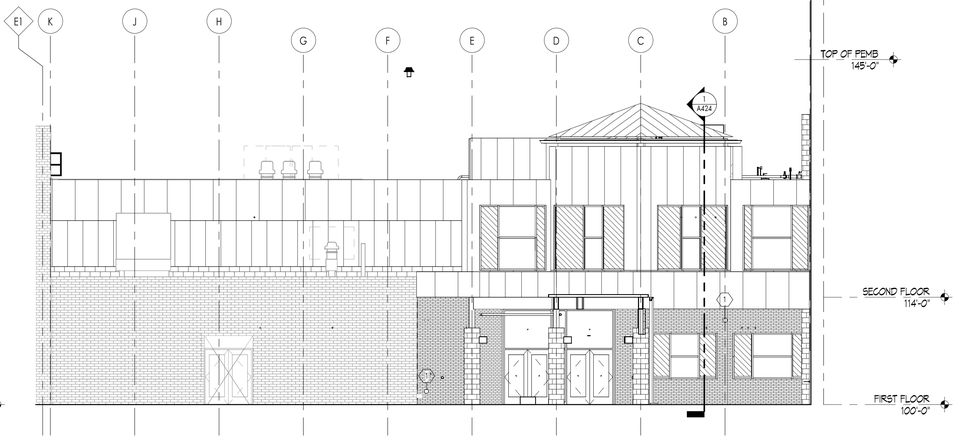
5 NORTH ELEVATION - UNIT 1300
1/8" = 1'-0"



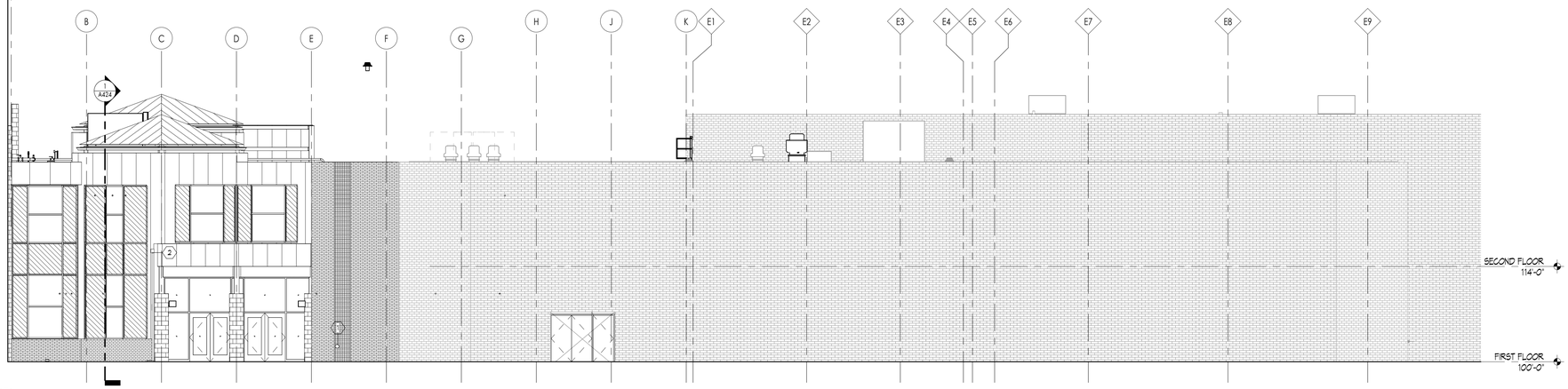
4 SOUTH ELEVATION - UNIT 1000
1/8" = 1'-0"



3 NORTH ELEVATION - UNIT 1000
1/8" = 1'-0"



2 EAST ELEVATION - UNIT 1300
1/8" = 1'-0"



1 WEST ELEVATION - UNIT 1000 & 1300
1/8" = 1'-0"

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HOWELL PUBLIC SCHOOLS

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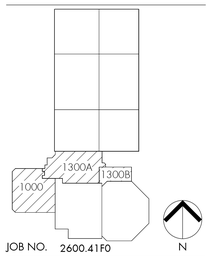
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
EXTERIOR ELEVATIONS - UNIT 1000 & 1300

SHEET NO.
A301

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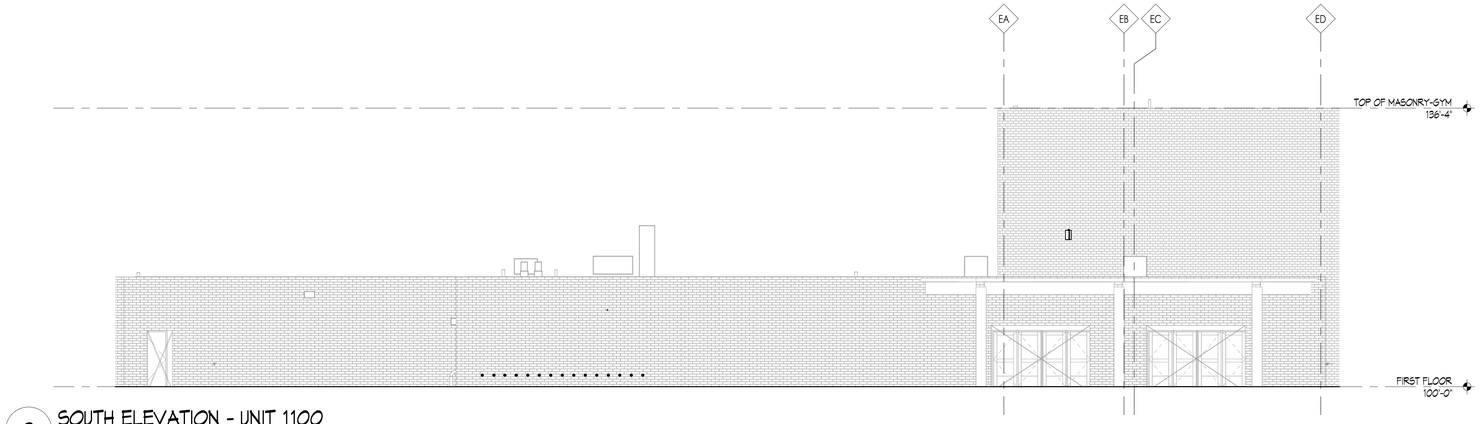
EXTERIOR ELEVATIONS LEGEND/KEYNOTES

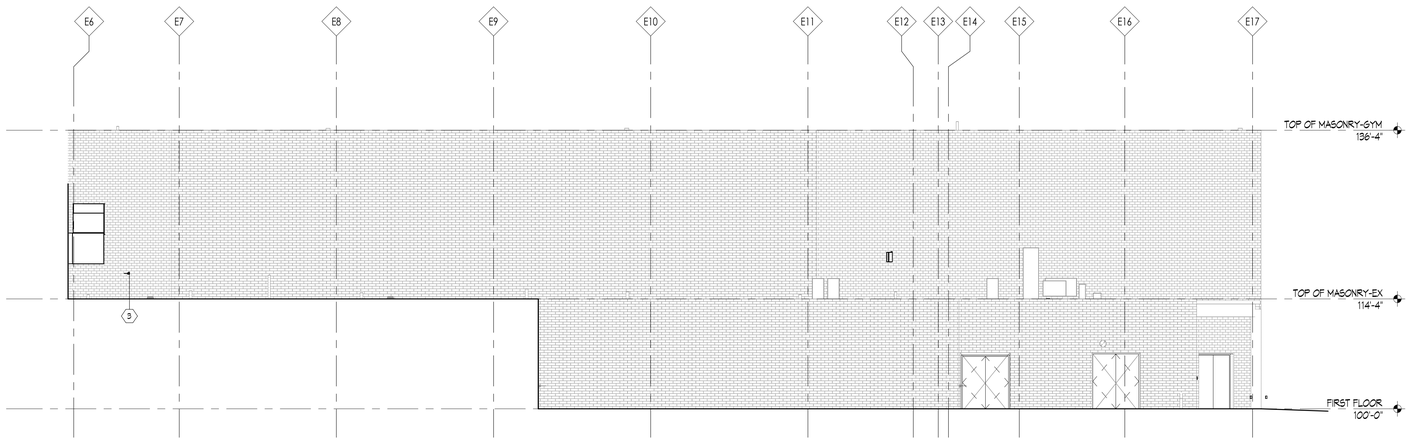
NOTE: 1. ARCHITECTURAL ELEVATIONS ARE PROVIDED TO EXPRESS DESIGN INTENT ONLY.
2. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN THE WALL.
3. PROVIDE MASONRY CONTROL JOINTS AT EACH COLUMN GRID. MAX. SPACING 25'-0".
4. PROVIDE POWER FOR THE EXTERIOR BUILDING SIGNAGE. LETTERING TO BE FINALIZED UPON OWNER APPROVAL.

- 4" FACE BRICK
- INSULATED METAL PANEL
- TRANSLUCENT PANEL - KALWALL
- 8X16 CMU
- GREEN TINTED GLAZING

1. DOWNSPOUT NOZZLE, SEE DETAIL ON A611.
2. SCUPPER BOX WITH DOWNSPOUT
3. HOSE BIB, REFER TO PLUMBING.
4. NEW LOUVER, SEE DETAIL ON A642.
5. 1" METAL SKIN CLADDING BY PEMB SUPPLIER.



2 SOUTH ELEVATION - UNIT 1100
1/8" = 1'-0"



1 WEST ELEVATION - UNIT 1100
1/8" = 1'-0"

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HOWELL COMMUNITY CENTER

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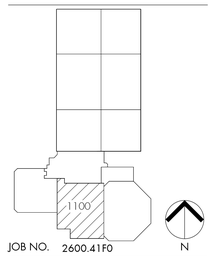
HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
EXTERIOR ELEVATION - UNIT 1100

SHEET NO.
A302

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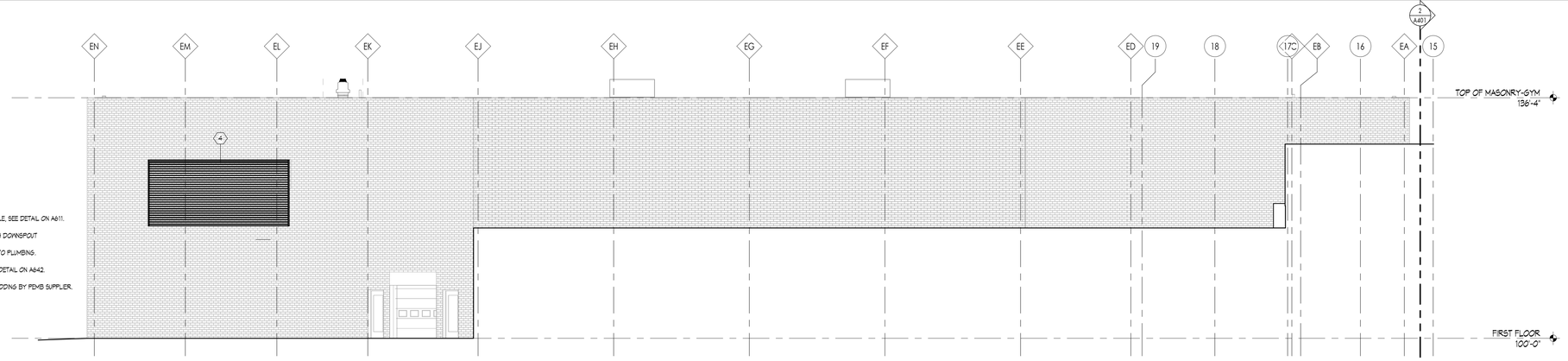
EXTERIOR ELEVATIONS LEGEND/KEYNOTES

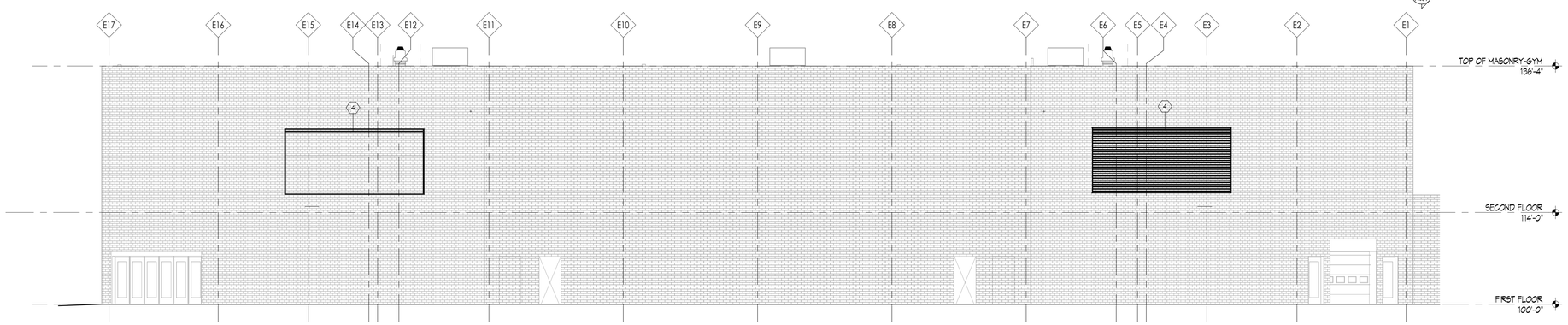
NOTE: 1. ARCHITECTURAL ELEVATIONS ARE PROVIDED TO EXPRESS DESIGN INTENT ONLY.
2. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN THE WALL.
3. PROVIDE MASONRY CONTROL JOINTS AT EACH COLUMN GRID. MAX. SPACING 25'-0".
4. PROVIDE POWER FOR THE EXTERIOR BUILDING SIGNAGE. LETTERING TO BE FINALIZED UPON OWNER APPROVAL.

- 4" FACE BRICK
- INSULATED METAL PANEL
- TRANSLUCENT PANEL- KALWALL
- 8X16 CMU
- GREEN TINTED GLAZING

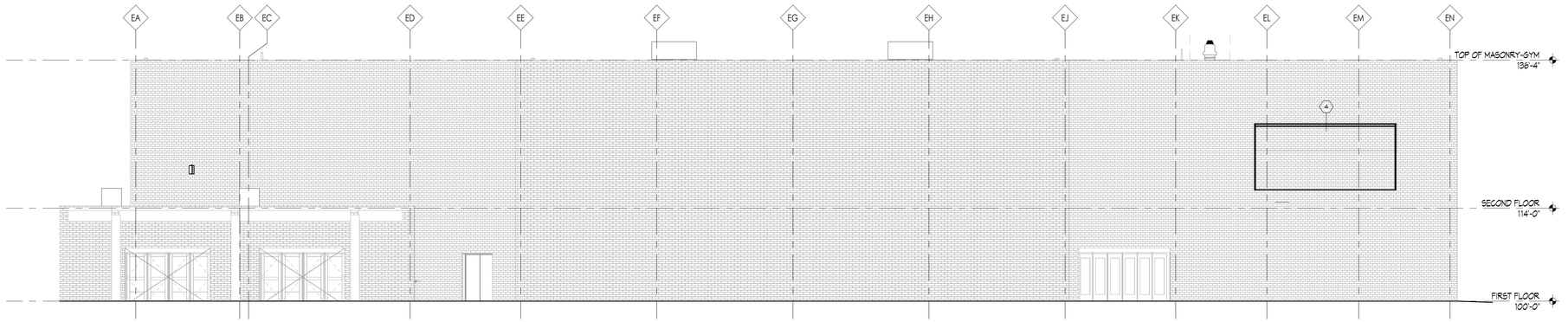
1. DOWNSPOUT NOZZLE, SEE DETAIL ON A611.
2. SCUPPER BOX WITH DOWNSPOUT
3. HOSE BIB, REFER TO PLUMBING.
4. NEW LOUVER, SEE DETAIL ON A642.
5. 1" METAL SKIN CLADDING BY PEMB SUPPLIER.



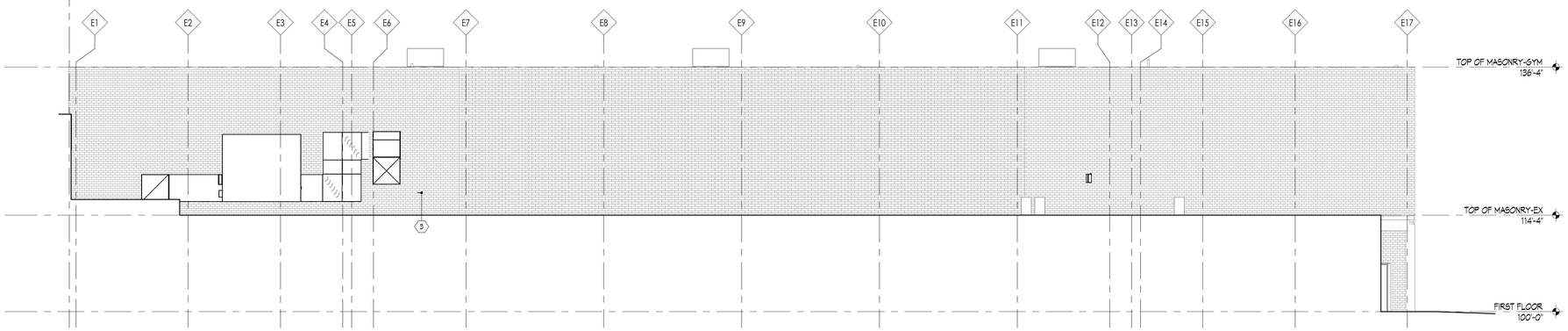
4 NORTH ELEVATION - UNIT 1200
1/8" = 1'-0"



3 EAST ELEVATION - UNIT 1200
1/8" = 1'-0"



2 SOUTH ELEVATION - UNIT 1200
1/8" = 1'-0"



1 WEST ELEVATION - UNIT 1200
1/8" = 1'-0"

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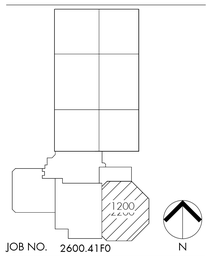

JOB NO. 2600.41F0

SHEET TITLE
EXTERIOR ELEVATION - UNIT 1200

SHEET NO.
A303

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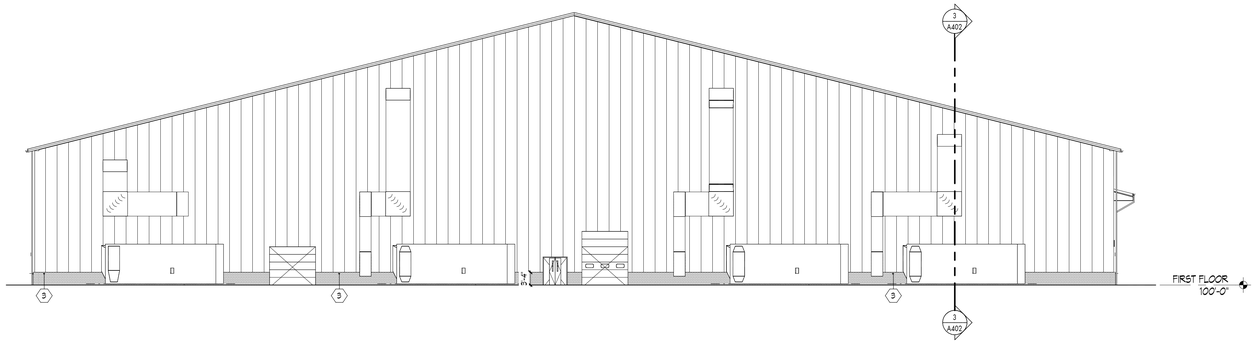
EXTERIOR ELEVATIONS LEGEND/KEYNOTES

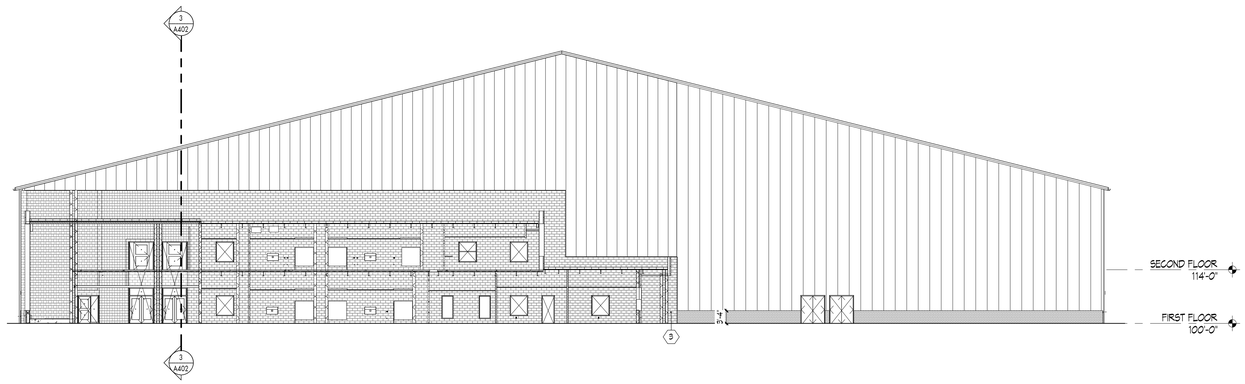
NOTE: 1. ARCHITECTURAL ELEVATIONS ARE PROVIDED TO EXPRESS DESIGN INTENT ONLY.
2. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN THE WALL.
3. PROVIDE MASONRY CONTROL JOINTS AT EACH COLUMN GRID. MAX. SPACING 25'-0".
4. PROVIDE POWER FOR THE EXTERIOR BUILDING SIGNAGE. LETTERING TO BE FINALIZED UPON OWNER APPROVAL.

- 4" FACE BRICK
- INSULATED METAL PANEL
- TRANSLUCENT PANEL- KALWALL
- 8X16 CMU
- GREEN TINTED GLAZING

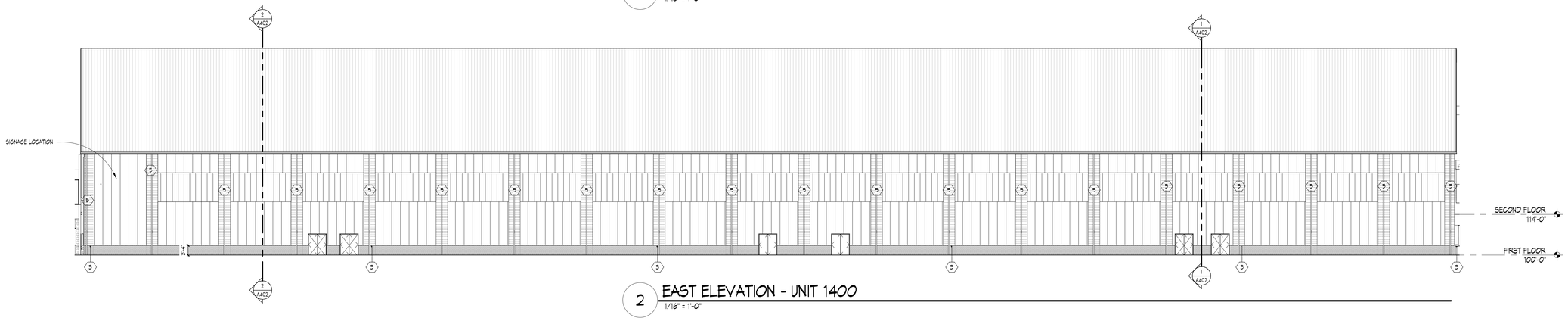
1. DOWNSPOUT NOZZLE, SEE DETAIL ON A611.
2. SCUPPER BOX WITH DOWNSPOUT
3. HOSE BIB, REFER TO PLUMBING.
4. NEW LOUVER, SEE DETAIL ON A642.
5. 1" METAL SKIN CLADDING BY PEMB SUPPLIER.



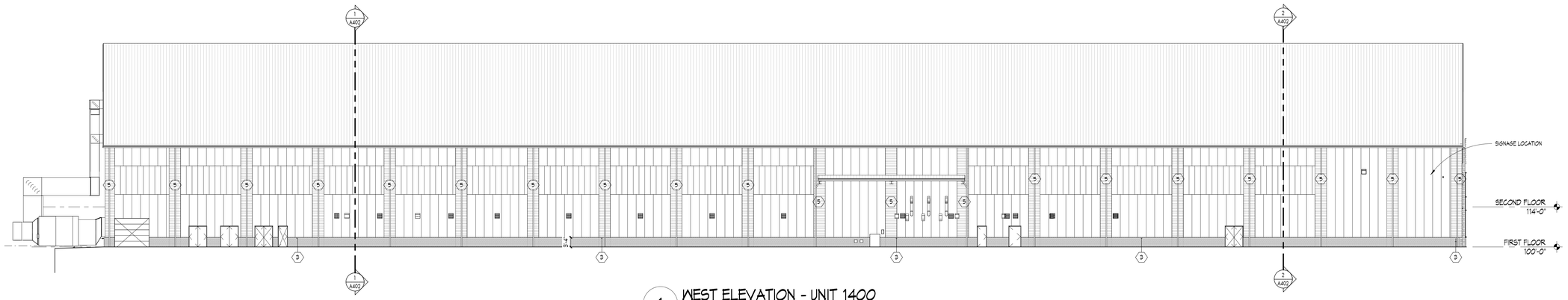
4 NORTH ELEVATION - UNIT 1400
1/16" = 1'-0"



3 SOUTH ELEVATION - UNIT 1400
1/16" = 1'-0"



2 EAST ELEVATION - UNIT 1400
1/16" = 1'-0"



1 WEST ELEVATION - UNIT 1400
1/16" = 1'-0"

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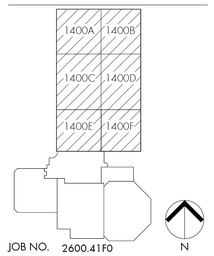
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
EXTERIOR ELEVATIONS - UNIT 1400

SHEET NO.
A304

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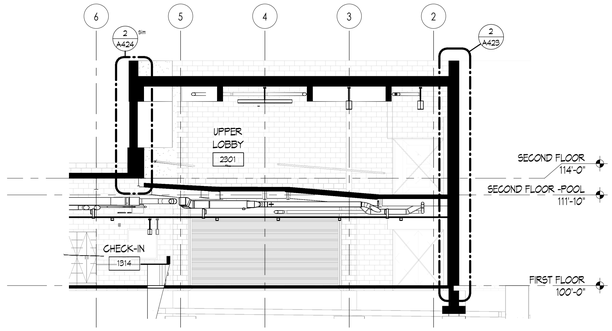
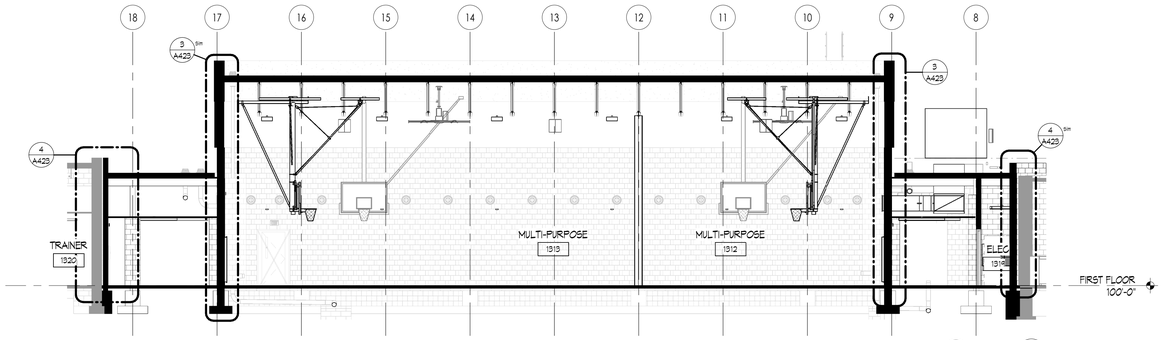
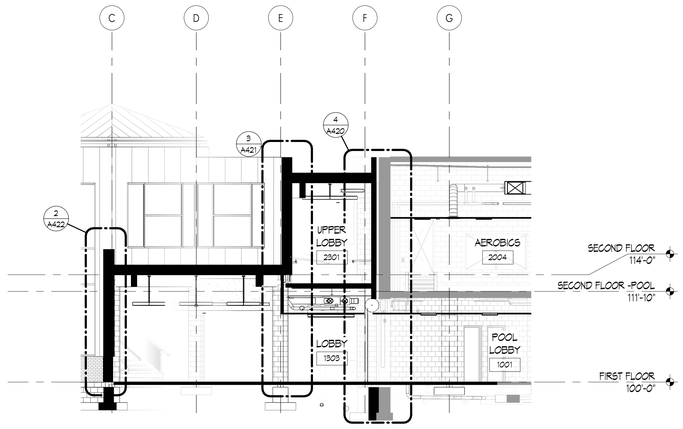


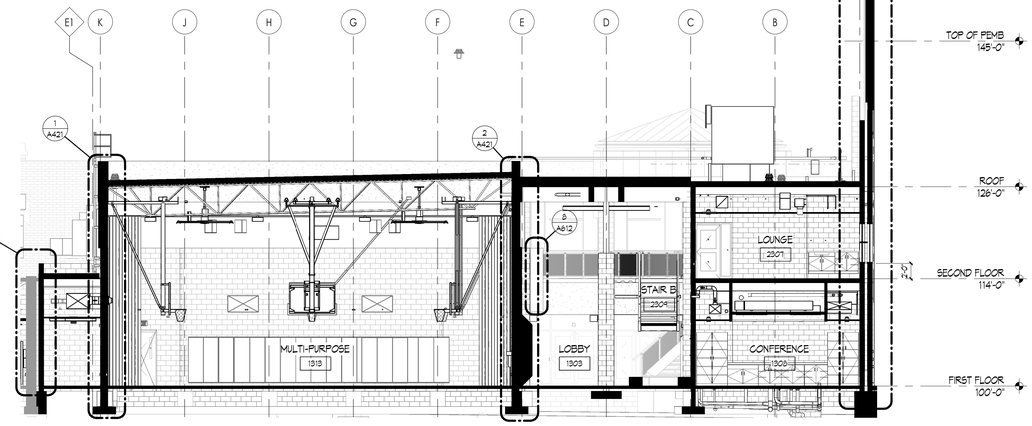
5 SECTION UNIT 1300 - AT RAMP
1/8" = 1'-0"



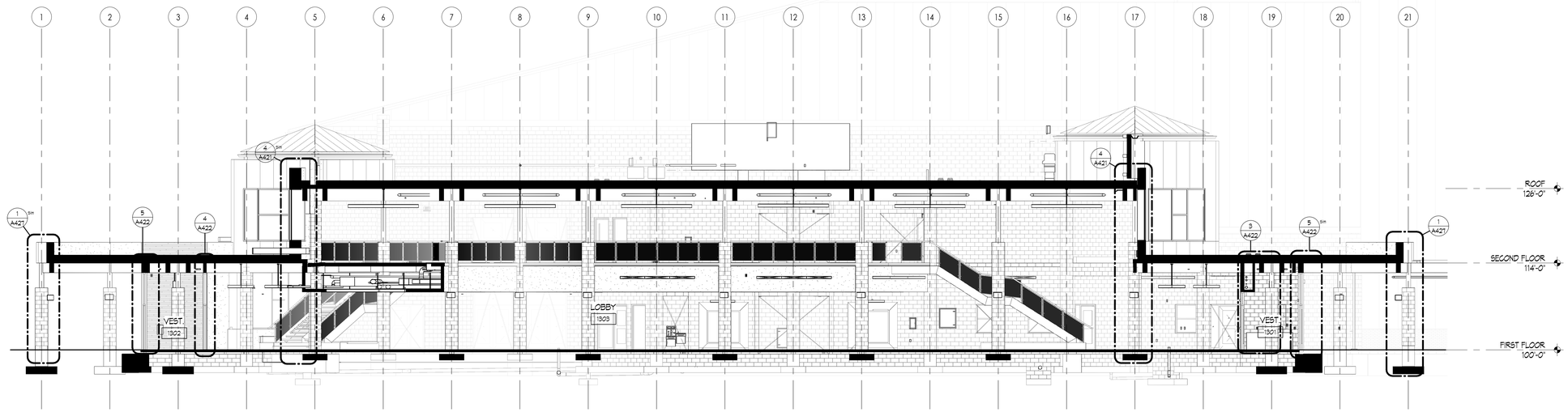
4 SECTION UNIT 1300 - AT MULTI-PURPOSE
1/8" = 1'-0"



3 SECTION UNIT 1300 - AT POOL LOBBY
1/8" = 1'-0"



2 SECTION UNIT 1300 - TRANSVERSE
1/8" = 1'-0"



1 SECTION UNIT 1300 - AT LOBBY
1/8" = 1'-0"

REFER TO STRUCTURAL DRAWINGS FOR TIMBER FRAME AND STEEL FRAME REQUIREMENTS

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HOWELL PUBLIC SCHOOLS

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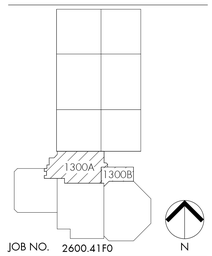

JOB NO. 2600.41F0

SHEET TITLE
BUILDING SECTIONS - UNIT 1300

SHEET NO.
A401

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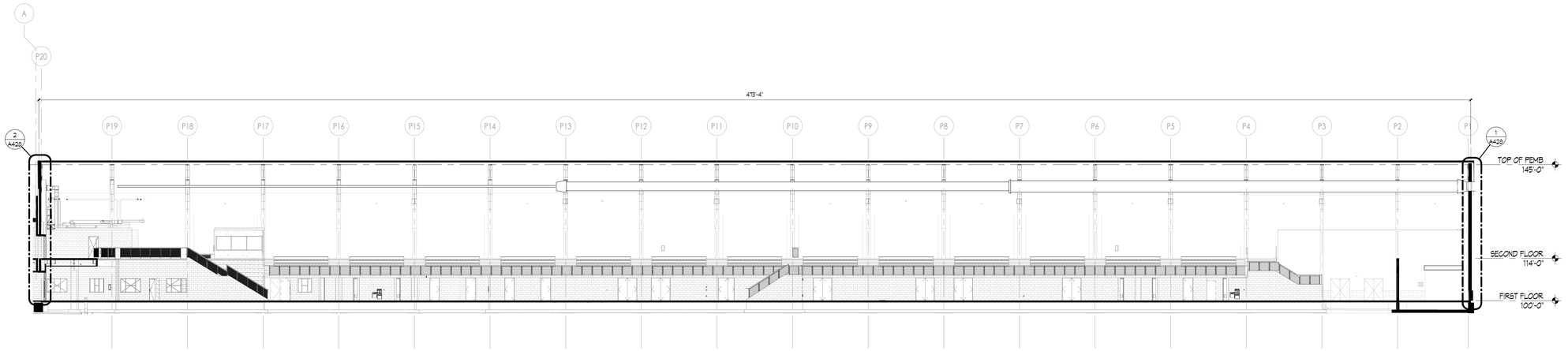
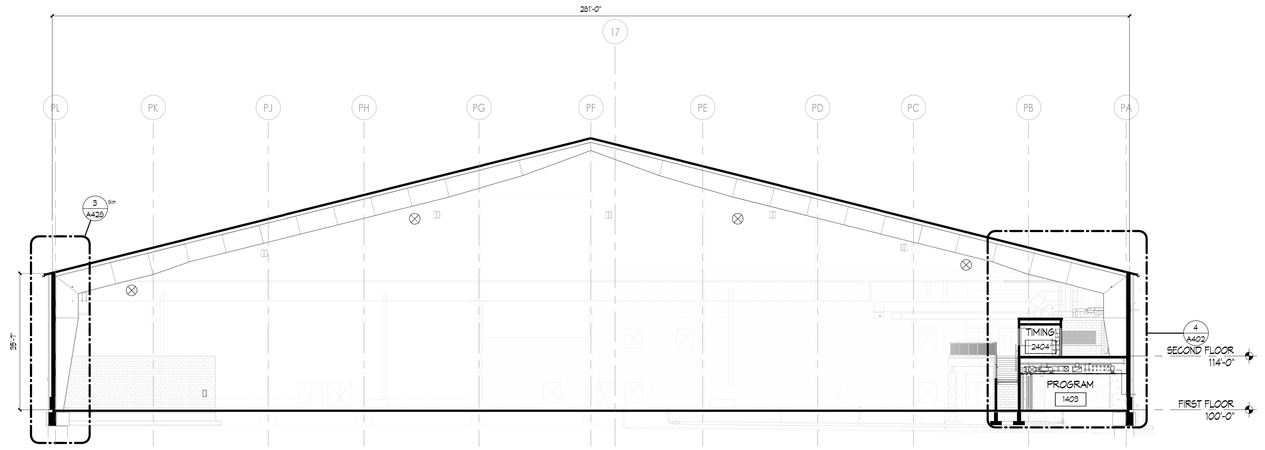
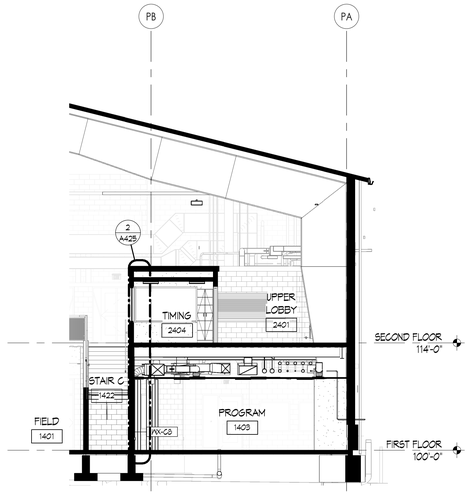


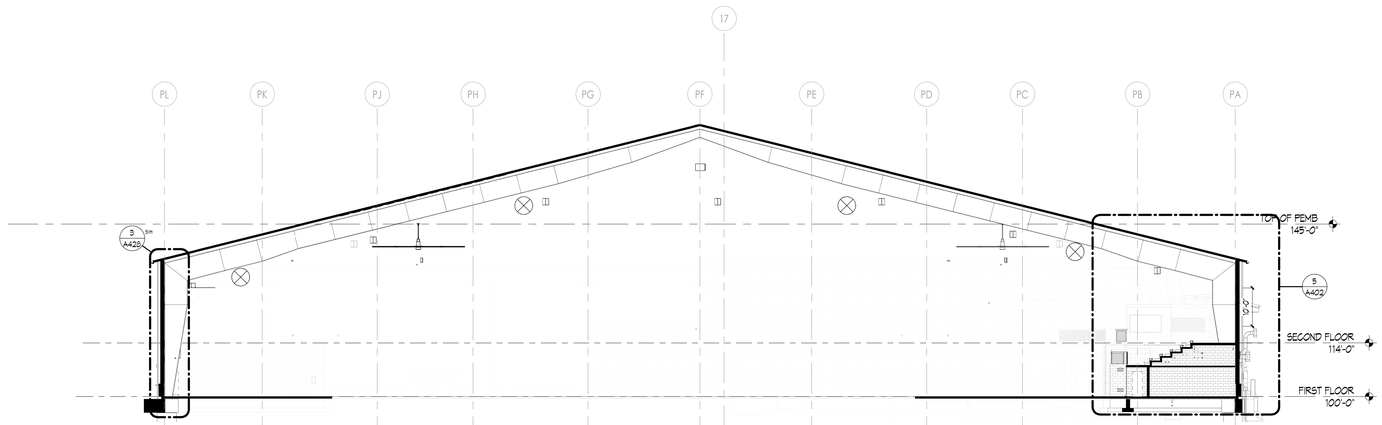
3 SECTION UNIT 1400 N/S -1
1/16" = 1'-0"



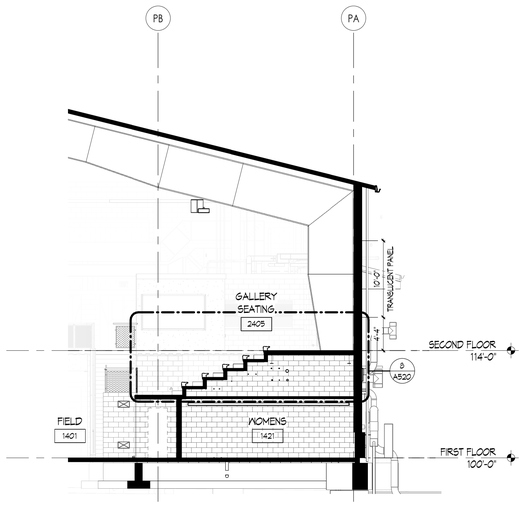
2 SECTION UNIT 1400 E/W - 2
1/16" = 1'-0"



4 SECTION UNIT 1400 E/W - 2 - ENLARGED
1/8" = 1'-0"



1 SECTION UNIT 1400 - E/W 1
1/16" = 1'-0"



5 SECTION UNIT 1400 - E/W 1 - ENLARGED
1/8" = 1'-0"

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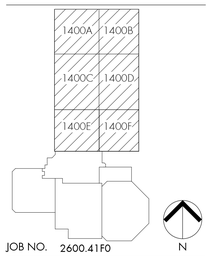
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
BUILDING SECTIONS - UNIT 1400

SHEET NO.
A402

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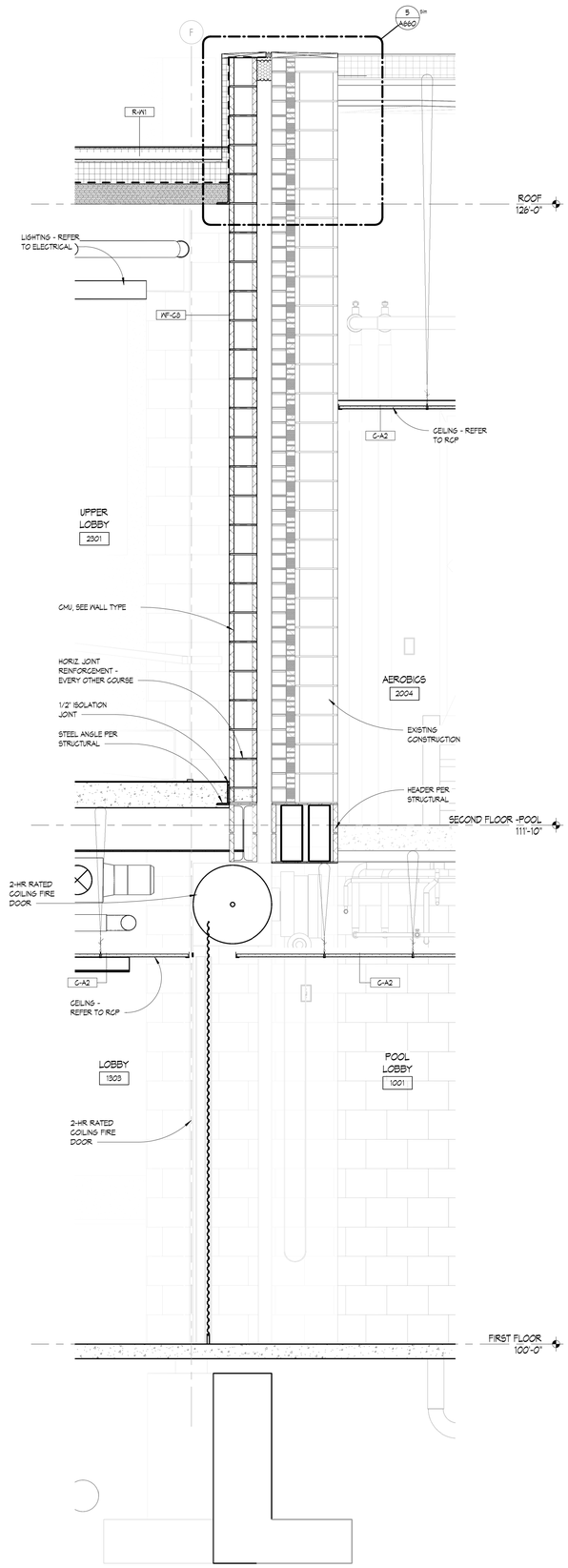
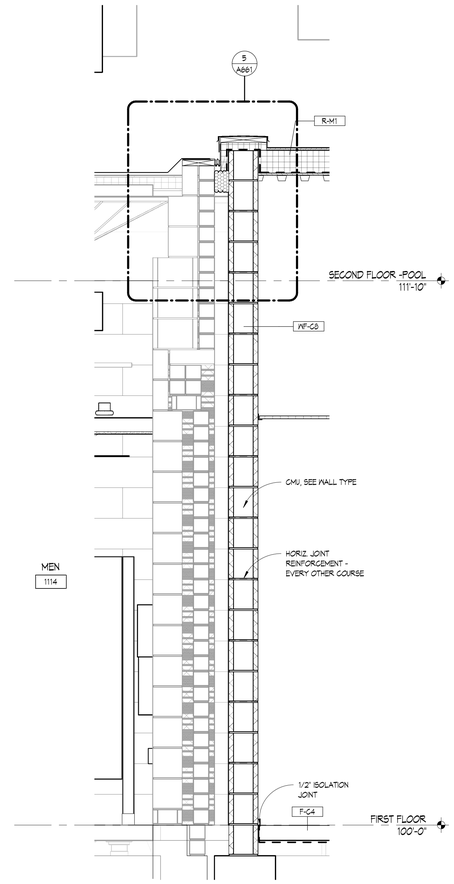
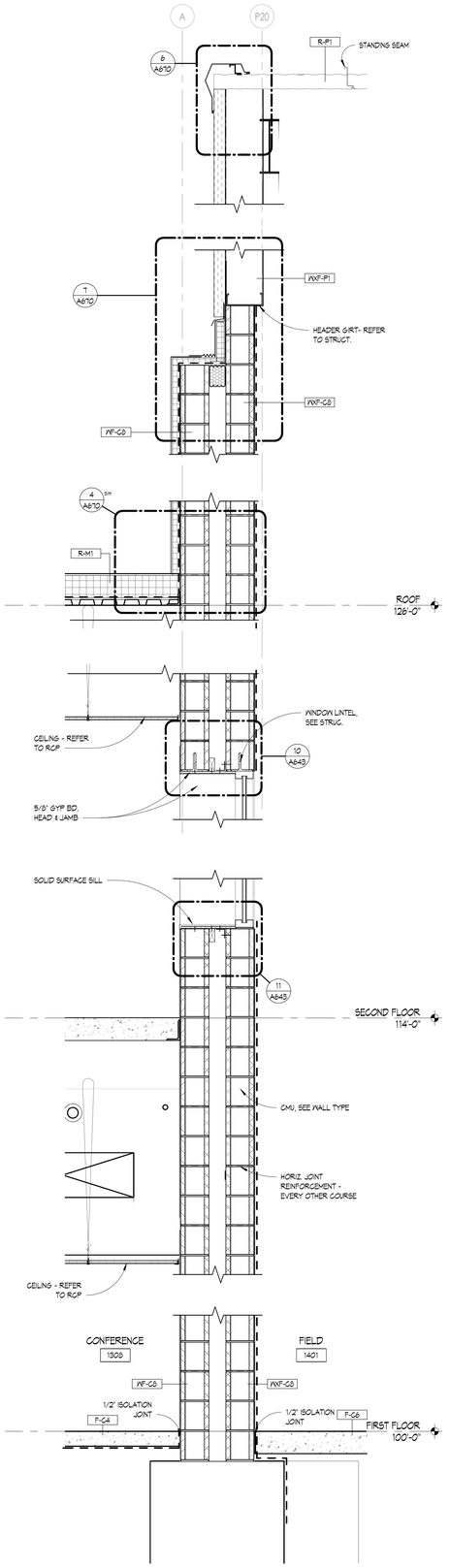


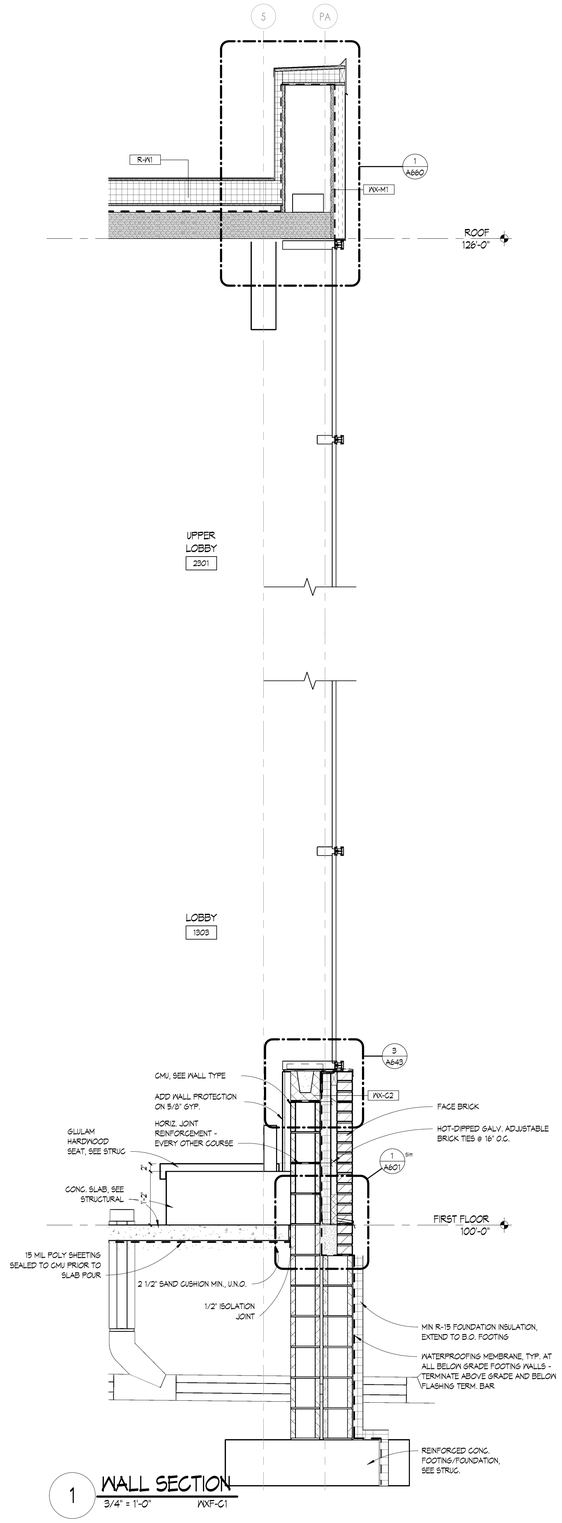
4 WALL SECTION
3/4" = 1'-0"



3 WALL SECTION
3/4" = 1'-0"



2 WALL SECTION
3/4" = 1'-0"



1 WALL SECTION
3/4" = 1'-0" WXF-C1

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
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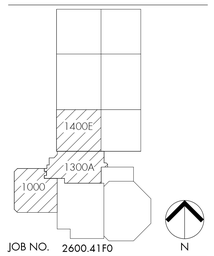
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
WALL SECTIONS

SHEET NO.
A420

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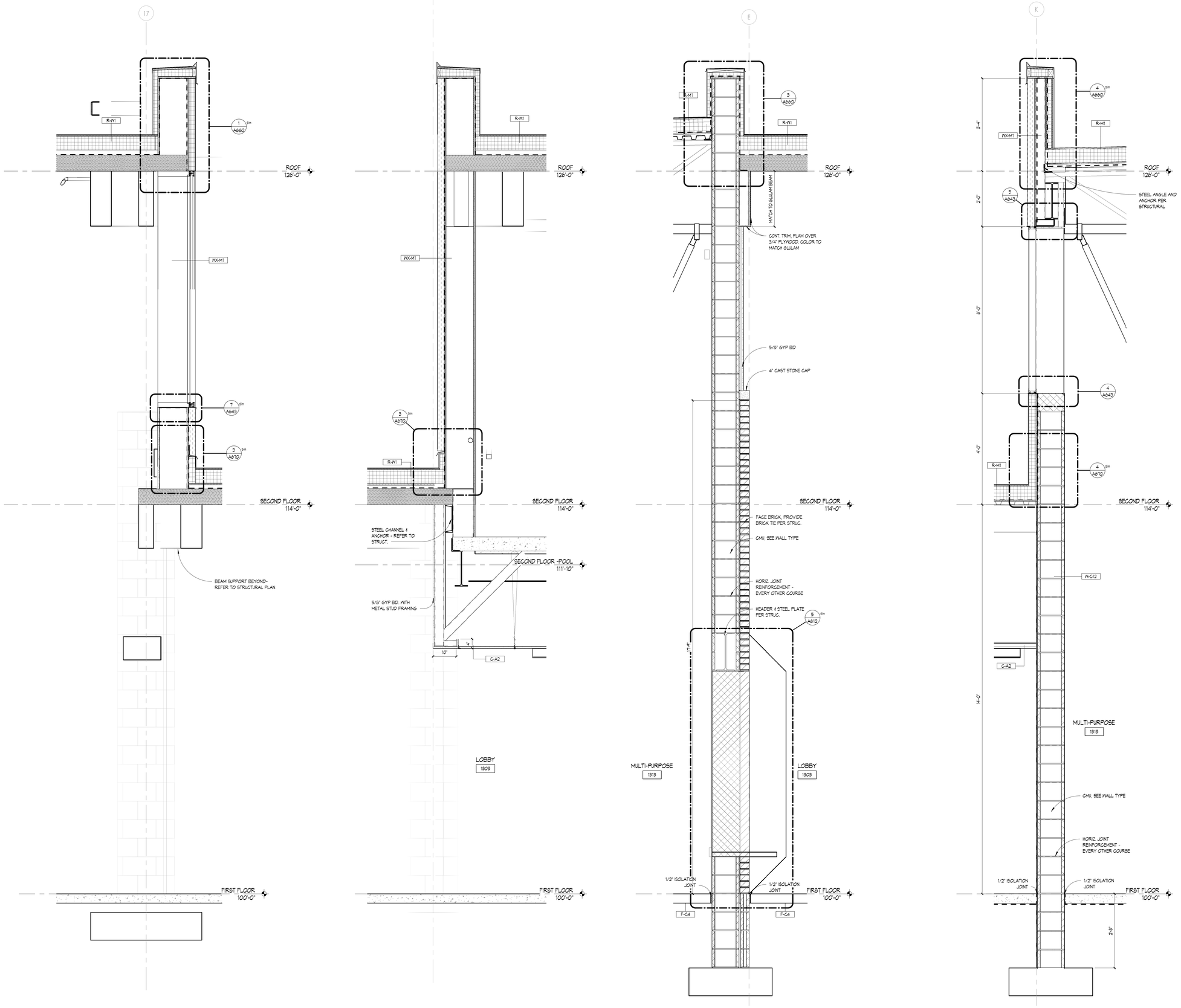

4 WALL SECTION
3/4" = 1'-0"

3 WALL SECTION
3/4" = 1'-0"

2 WALL SECTION
3/4" = 1'-0"

1 WALL SECTION
3/4" = 1'-0"

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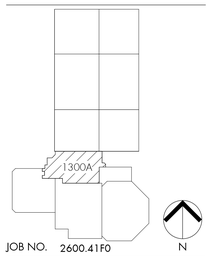
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



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SHEET TITLE
WALL SECTIONS

SHEET NO.
A421

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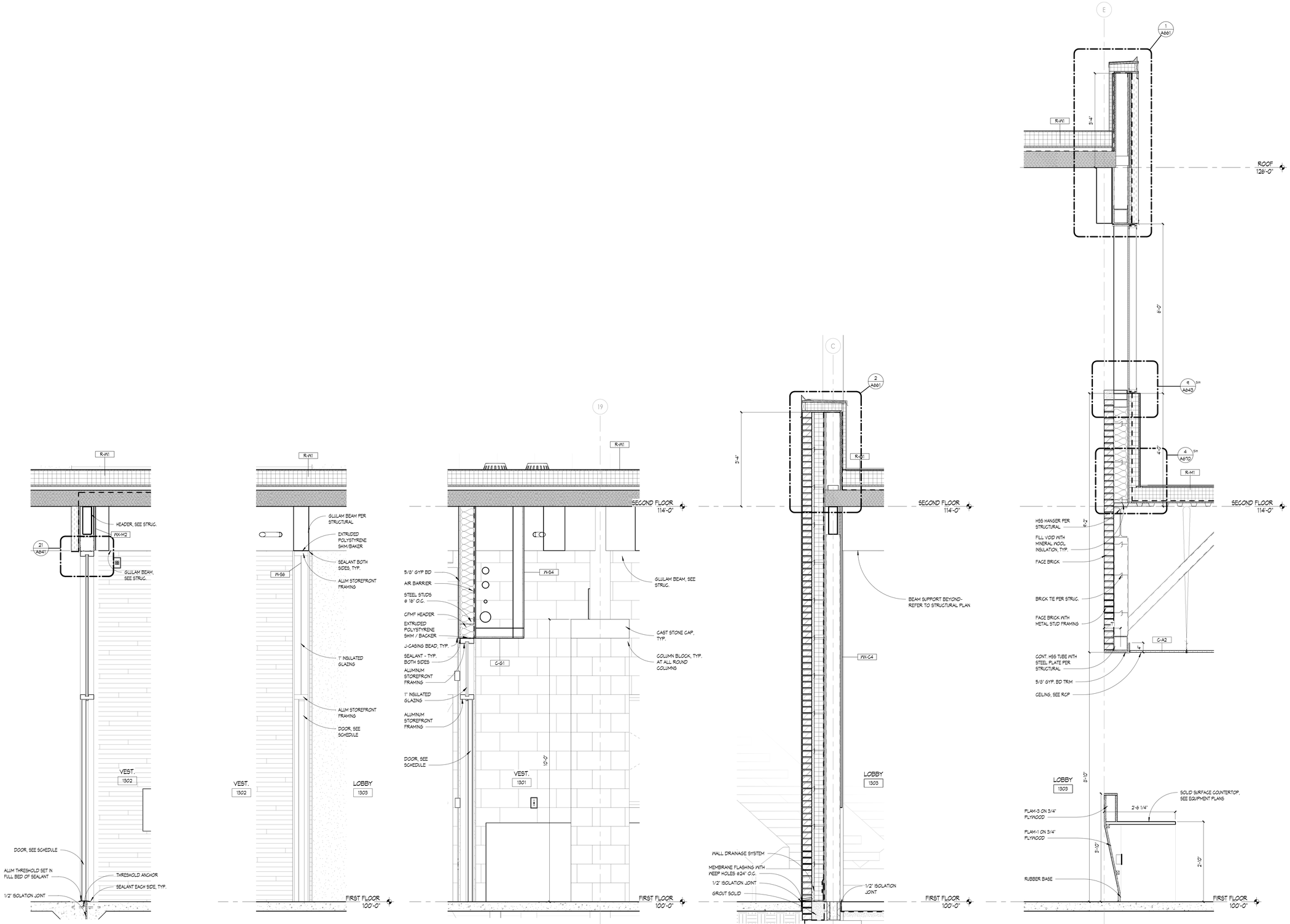

5 WALL SECTION
3/4" = 1'-0"

4 WALL SECTION
3/4" = 1'-0"

3 WALL SECTION
3/4" = 1'-0"

2 WALL SECTION
3/4" = 1'-0"

1 WALL SECTION
3/4" = 1'-0"

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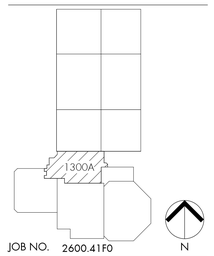
ISSUANCES	DATE
DESIGN DEVELOPMENT	01.29.2026



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SHEET TITLE
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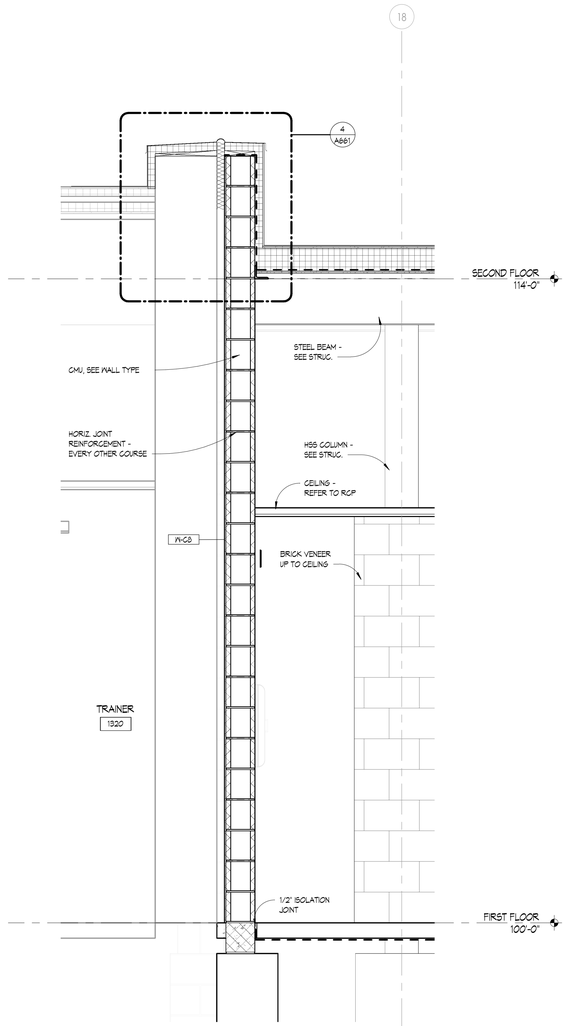
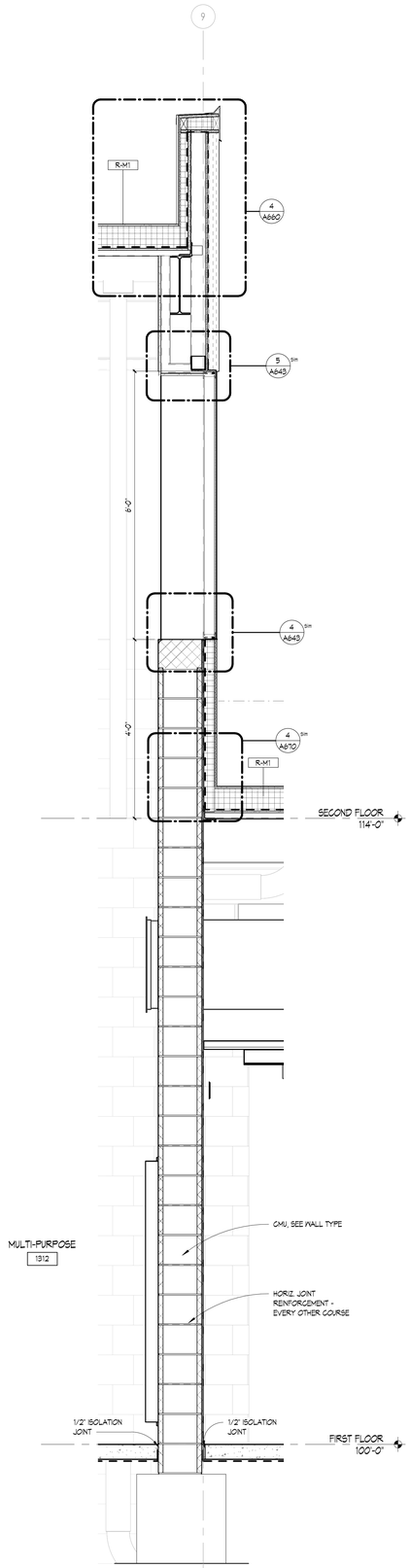
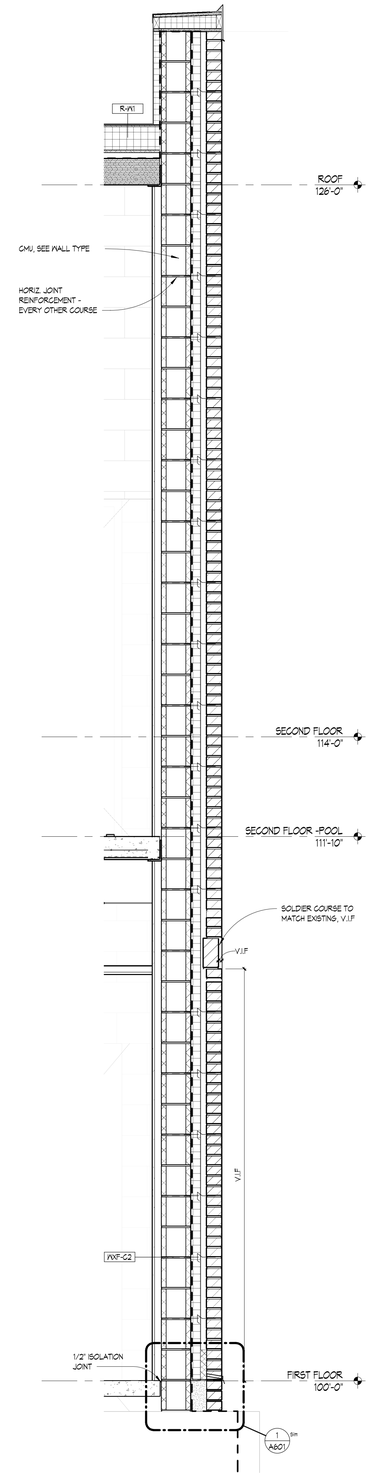


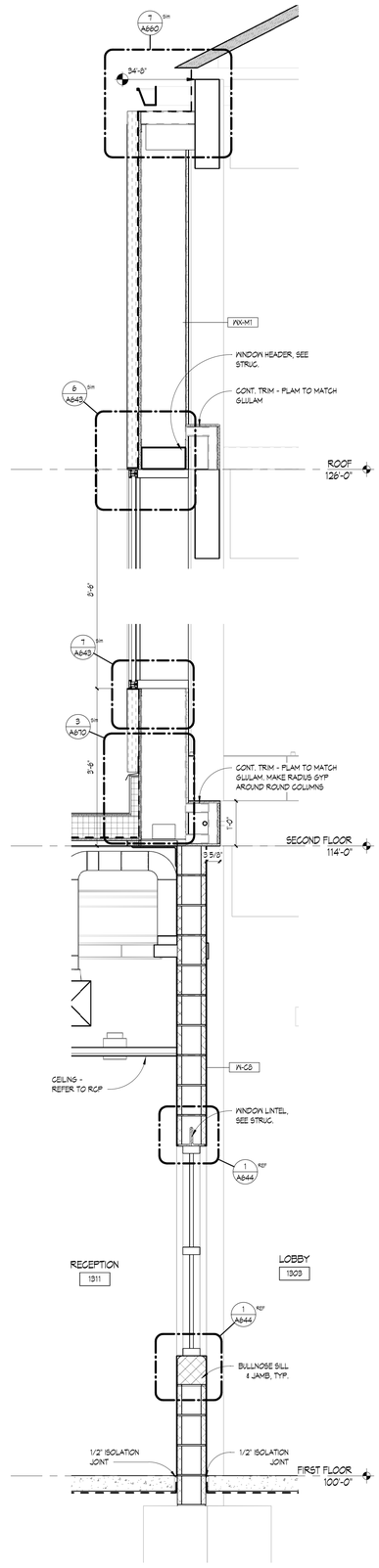
4 WALL SECTION
3/4" = 1'-0"



3 WALL SECTION
3/4" = 1'-0"



2 WALL SECTION
3/4" = 1'-0"



1 WALL SECTION
3/4" = 1'-0"

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HOWELL COMMUNITY CENTER

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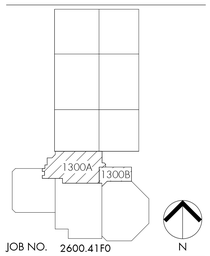
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



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SHEET TITLE
WALL SECTIONS

SHEET NO.
A423

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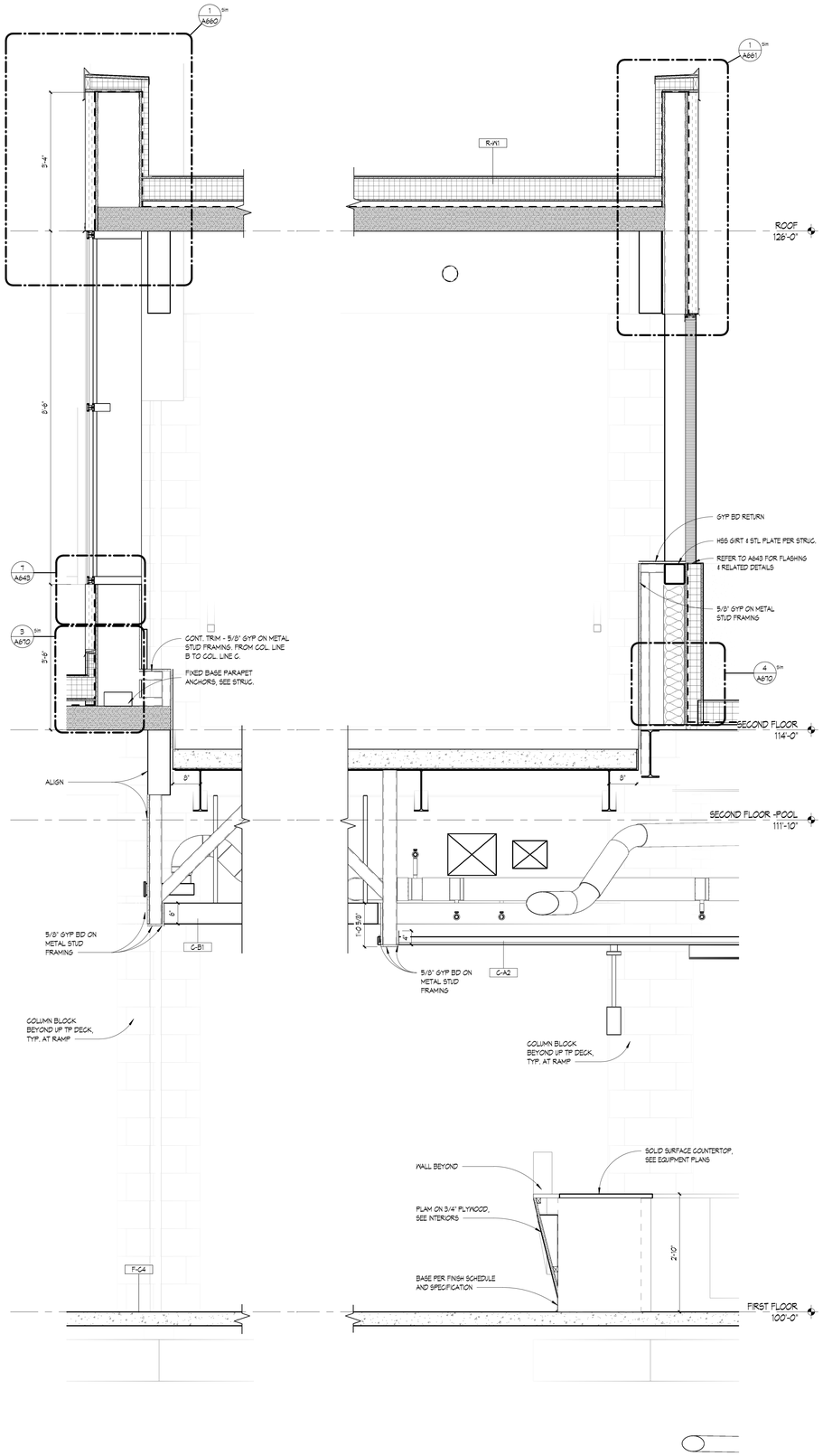
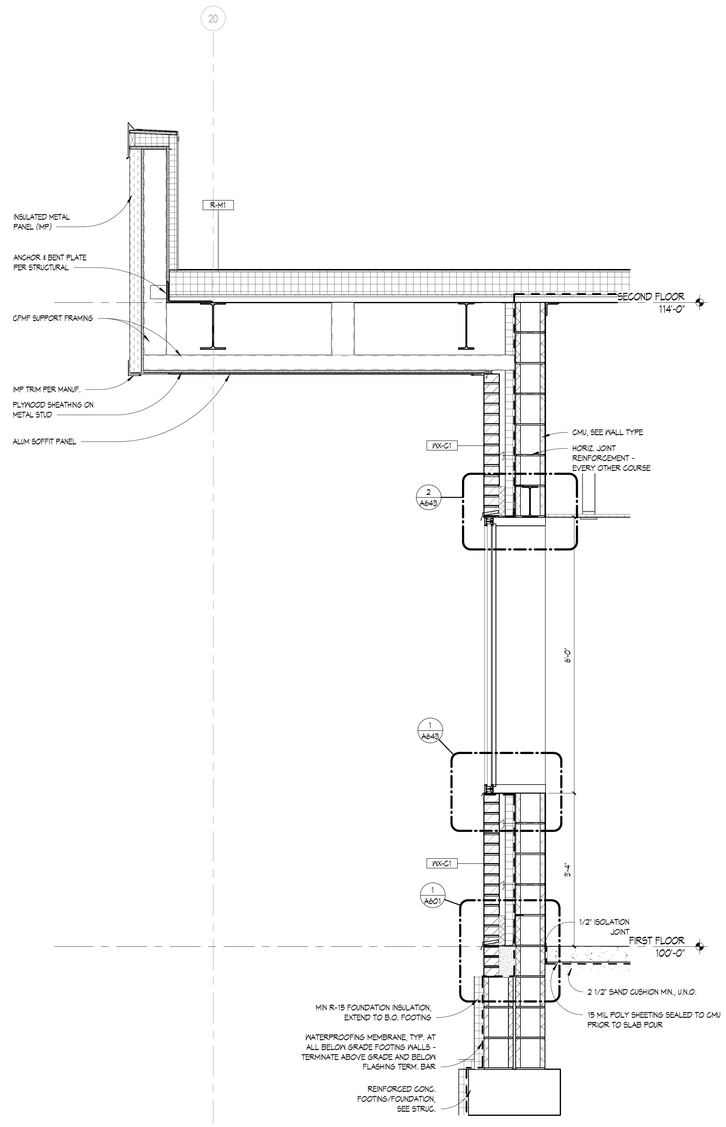


2 WALL SECTION
3/4" = 1'-0"



1 WALL SECTION
3/4" = 1'-0"

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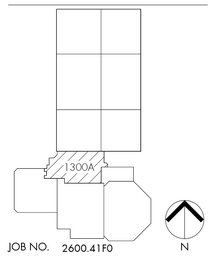
HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
WALL SECTIONS

SHEET NO.
A424

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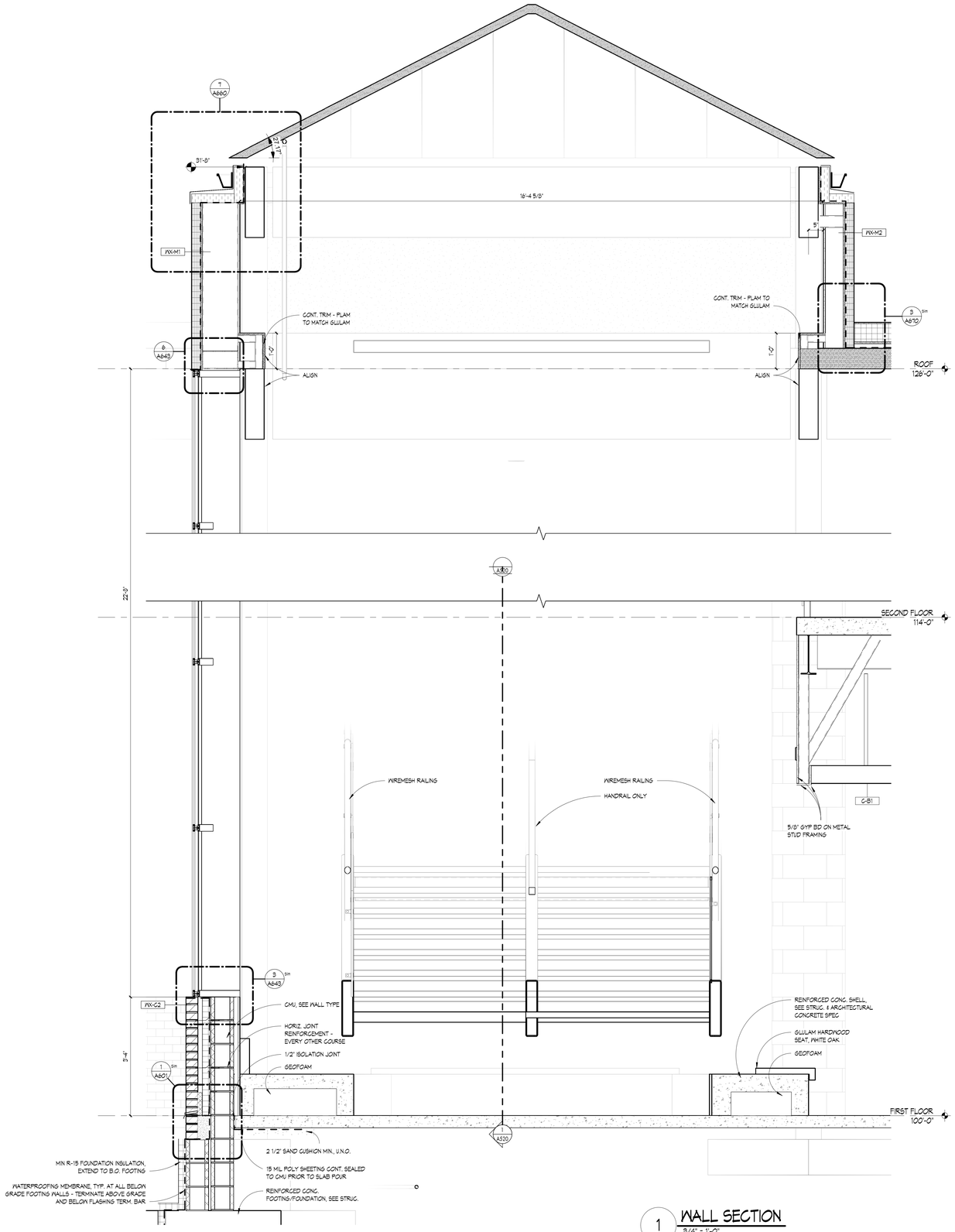
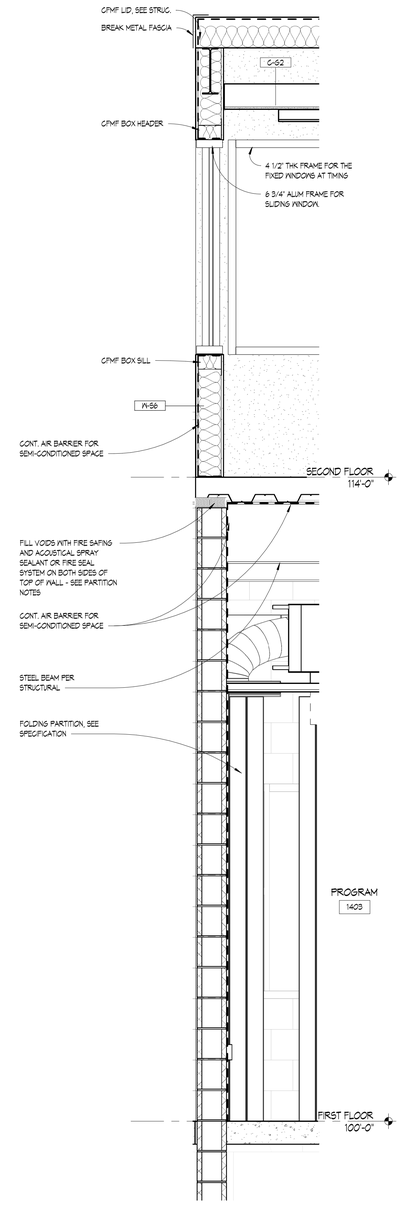


1 WALL SECTION
3/4" = 1'-0"



2 WALL SECTION - TIMING
3/4" = 1'-0"

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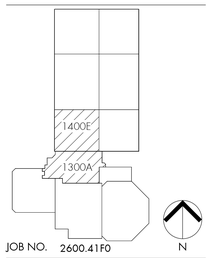

JOB NO. 2600.41F0

SHEET TITLE
WALL SECTIONS

SHEET NO.
A425

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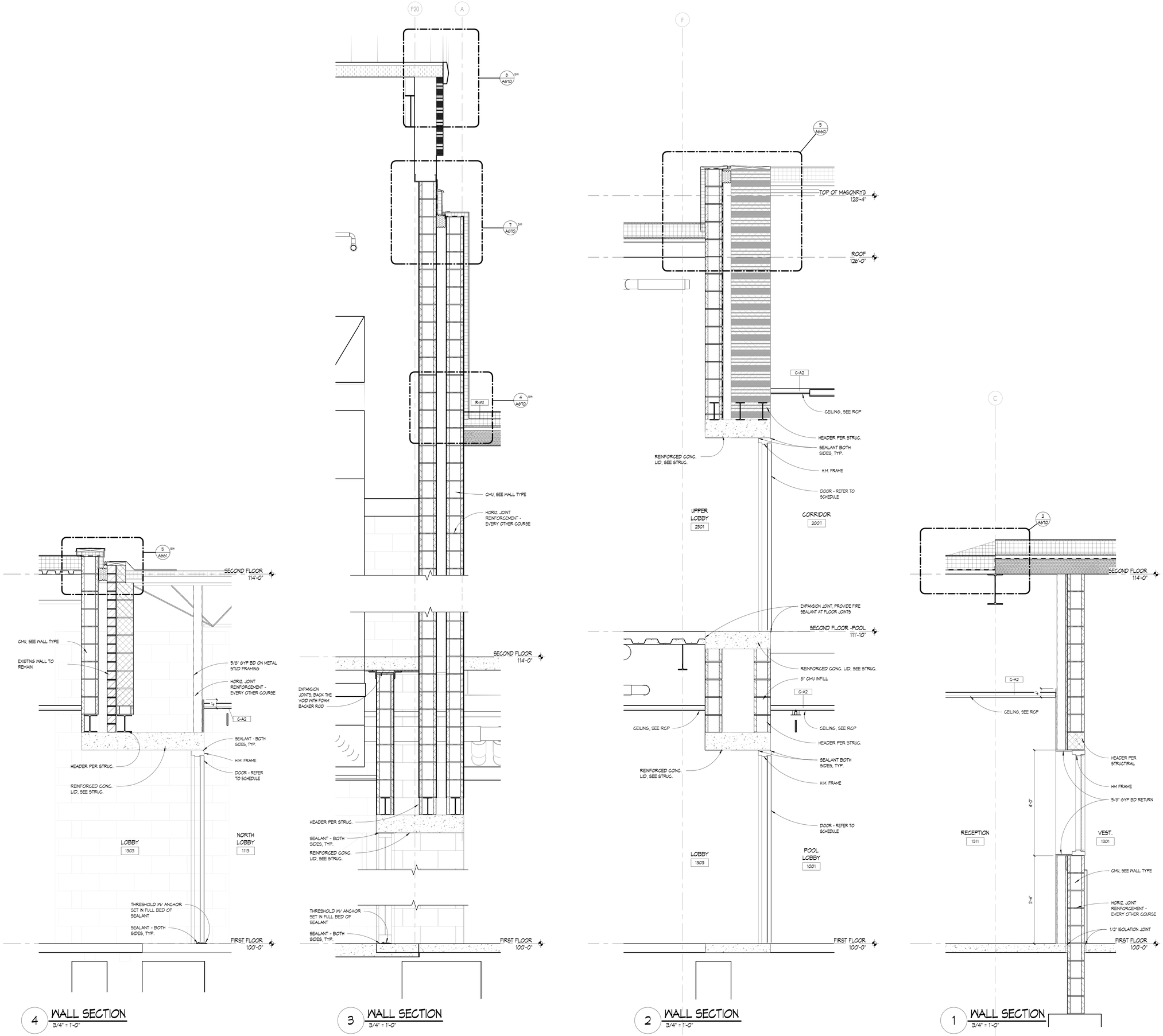

4 WALL SECTION
3/4" = 1'-0"

3 WALL SECTION
3/4" = 1'-0"

2 WALL SECTION
3/4" = 1'-0"

1 WALL SECTION
3/4" = 1'-0"

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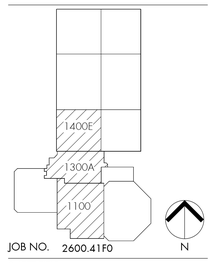
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
WALL SECTIONS

SHEET NO.
A426

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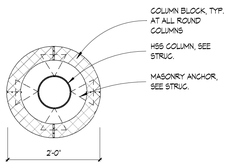
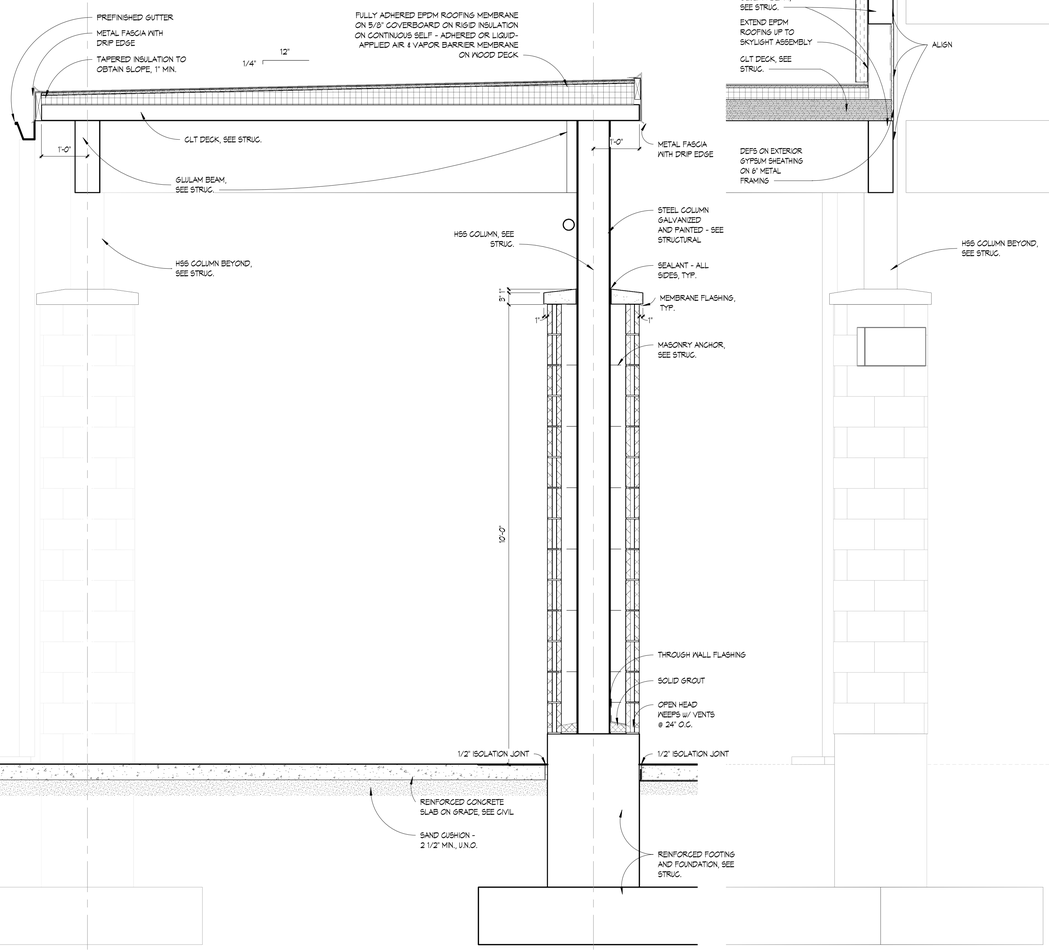
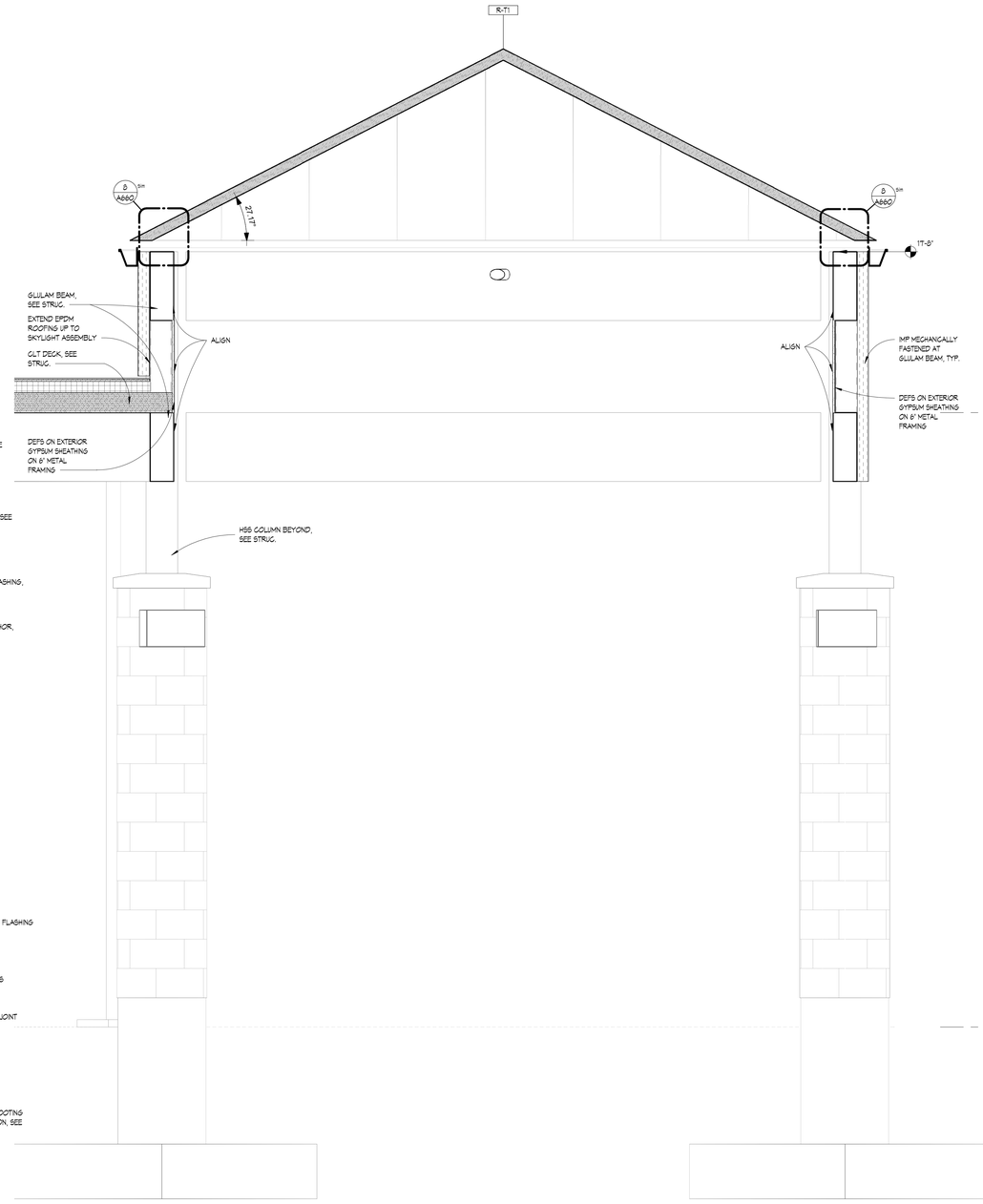
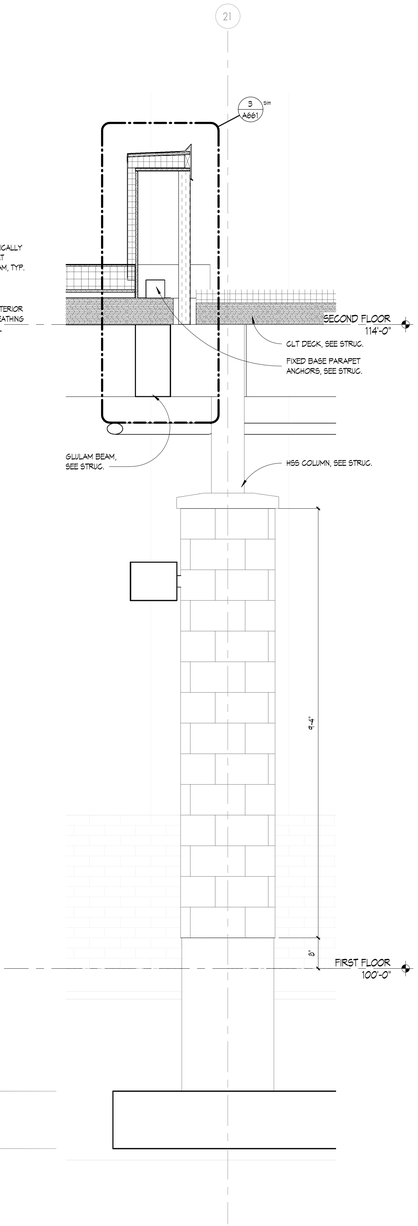




3 CANOPY SECTION
3/4" = 1'-0"



2 CANOPY SECTION
3/4" = 1'-0"



1 CANOPY SECTION
3/4" = 1'-0"

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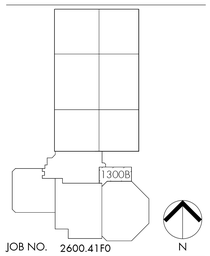
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

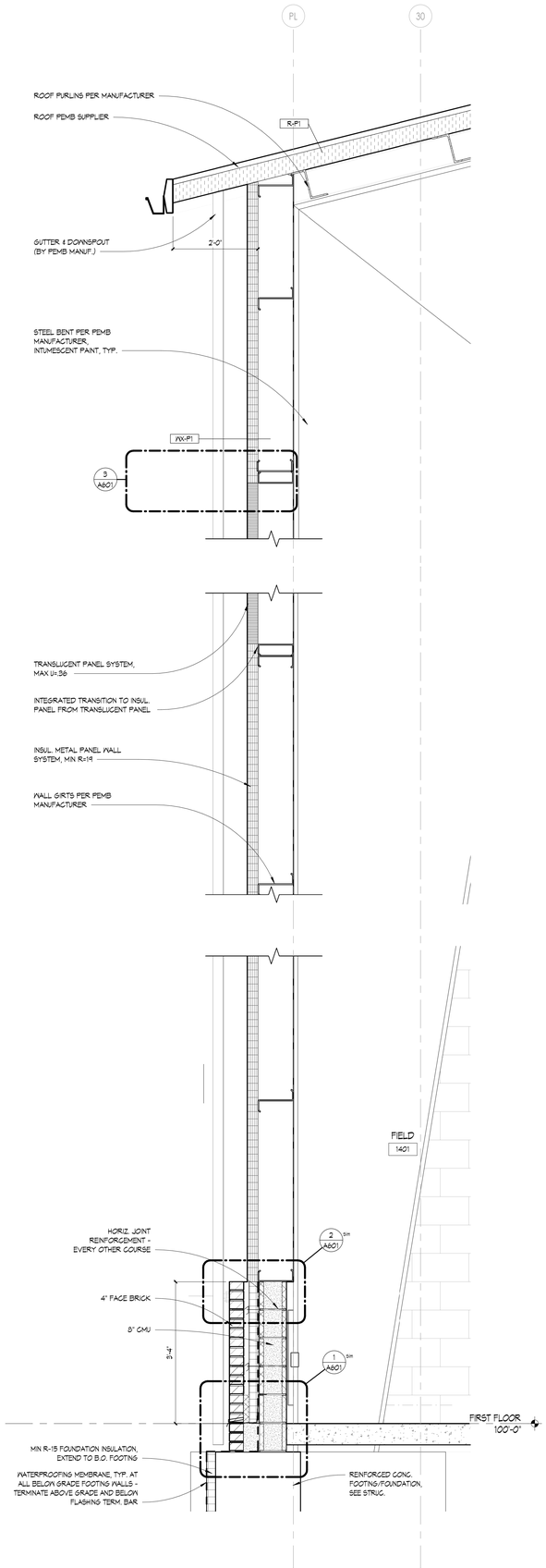
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



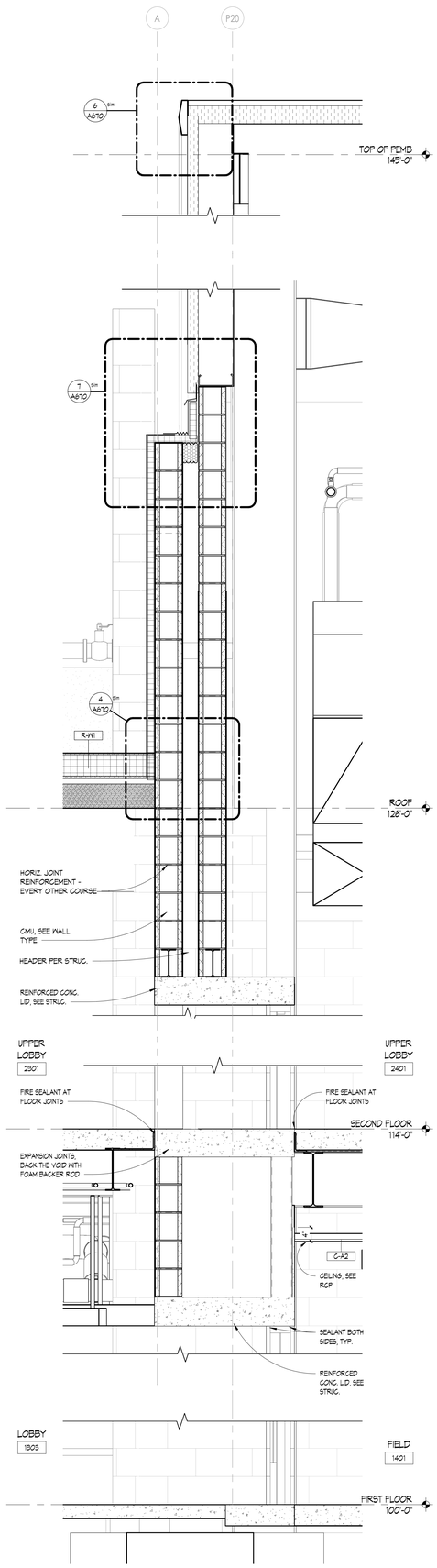
JOB NO. 2600.41F0

SHEET TITLE
WALL SECTIONS

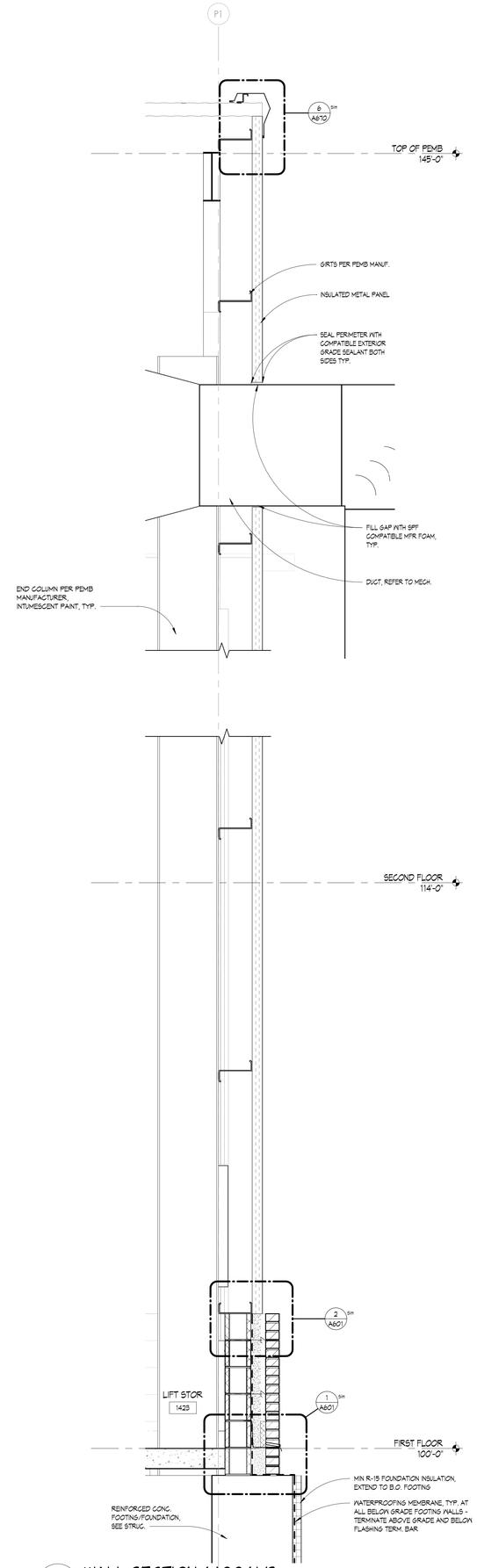
SHEET NO.
A427



3 WALL SECTION 1400 E/W
3/4" = 1'-0"



2 WALL SECTION 1400 S
3/4" = 1'-0"



1 WALL SECTION 1400 N/S
3/4" = 1'-0"

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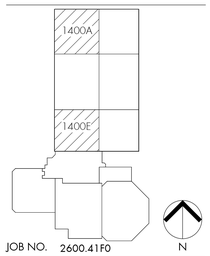
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
WALL SECTIONS

SHEET NO.
A428

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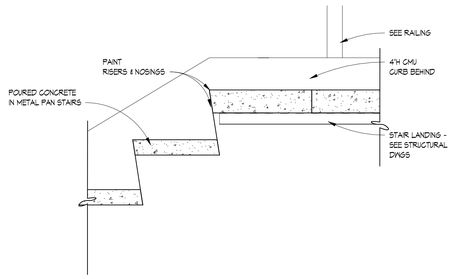
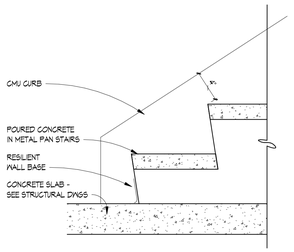
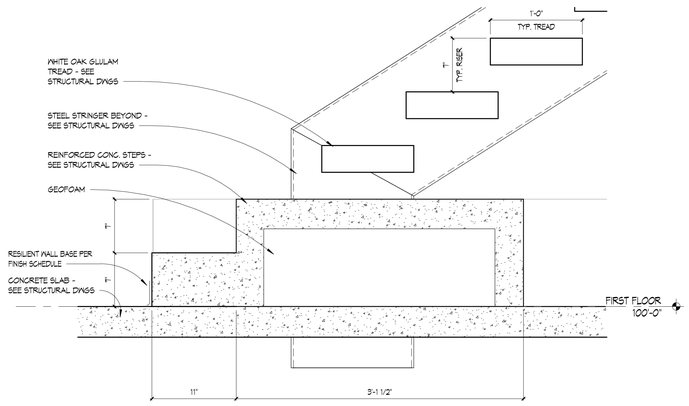


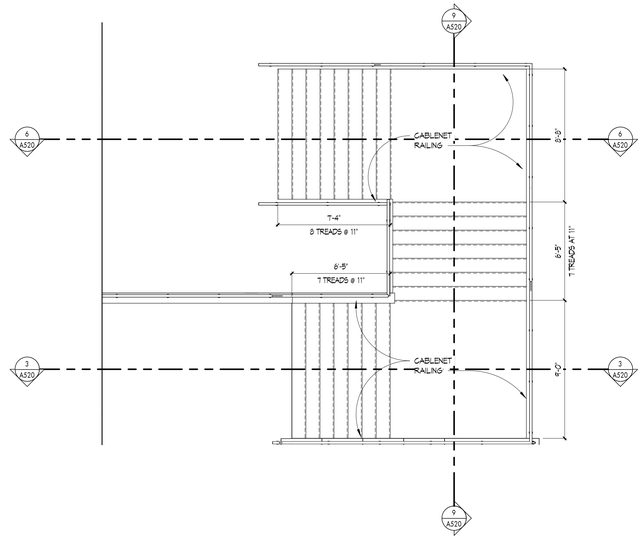
10 STAIR DETAIL
1 1/2" = 1'-0"



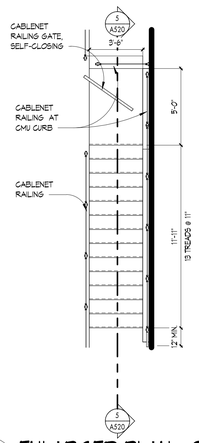
9 STAIR DETAIL
1 1/2" = 1'-0"



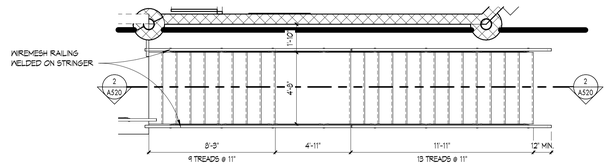
11 TIMBER TREAD STAIR
1 1/2" = 1'-0"



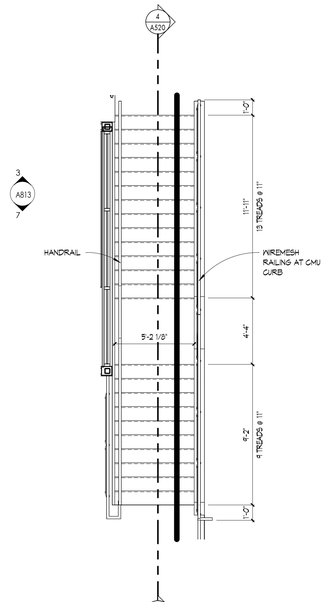
3 ENLARGED PLAN - STAIR E
1/4" = 1'-0"



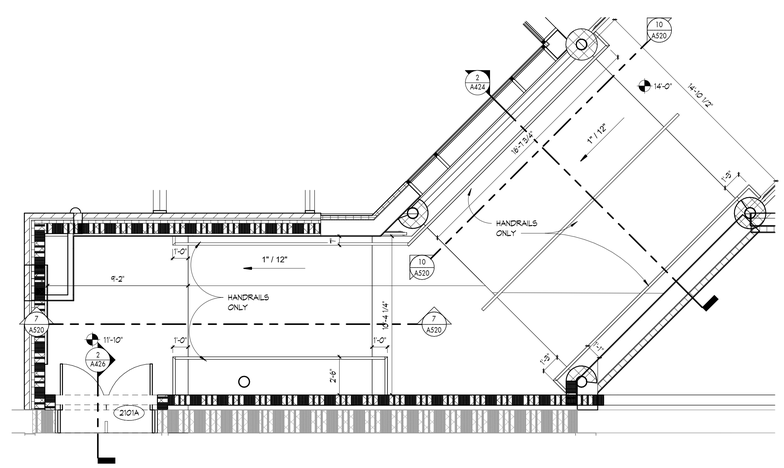
4 ENLARGED PLAN - STAIR D
1/4" = 1'-0"



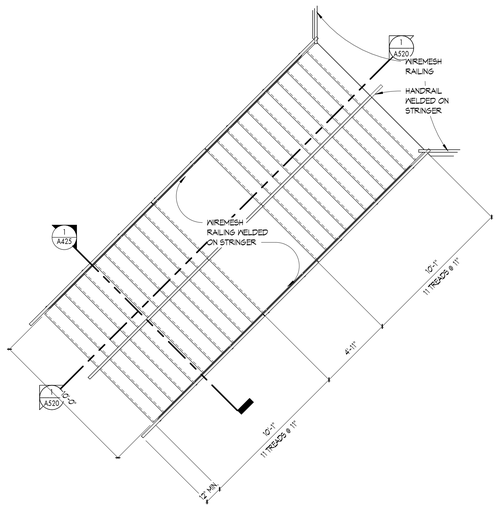
2 ENLARGED PLAN - STAIR B
1/4" = 1'-0"



5 ENLARGED PLAN - STAIR C
1/4" = 1'-0"



6 ENLARGED PLAN - RAMP
1/4" = 1'-0"



1 ENLARGED PLAN - STAIR A
1/4" = 1'-0"

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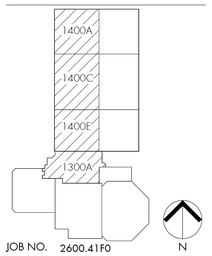
HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
STAIR & RAMP ENLARGED PLANS

SHEET NO.
A510

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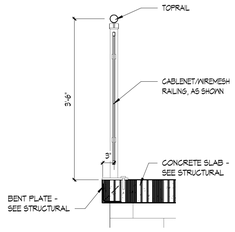
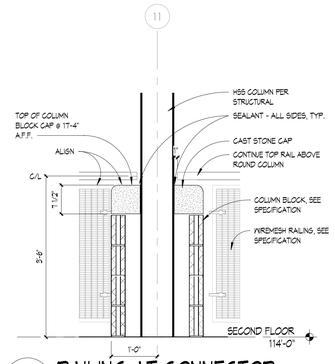
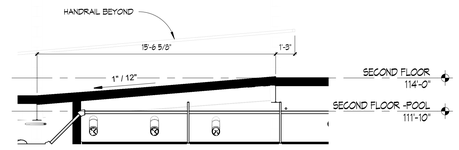


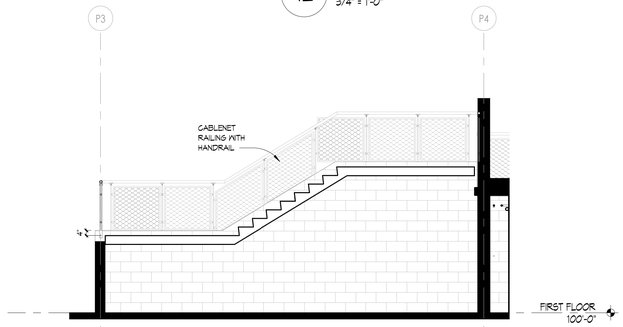
12 RAILING DETAIL
3/4" = 1'-0"



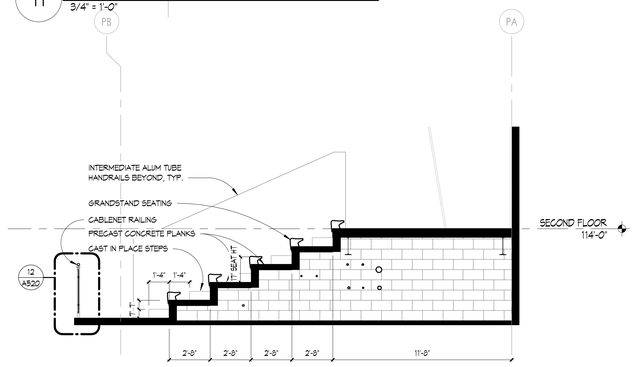
11 RAILING AT CONNECTOR
3/4" = 1'-0"



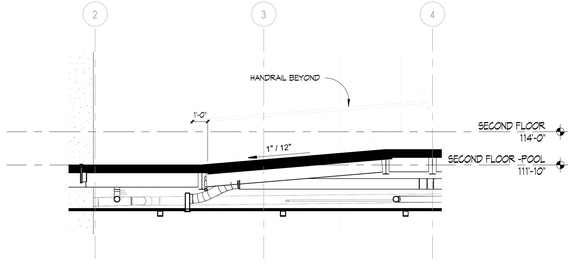
10 SECTION 2 - RAMP
1/4" = 1'-0"



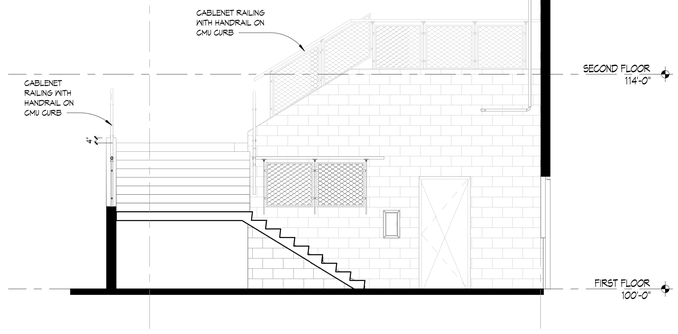
9 SECTION 3 - STAIR E
1/4" = 1'-0"



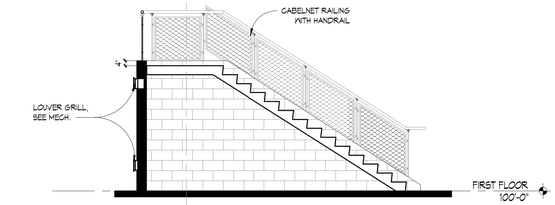
8 SECTION - GALLERY SEATING
1/4" = 1'-0"



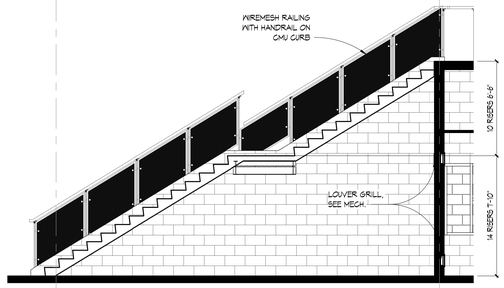
7 SECTION 1 - RAMP
1/4" = 1'-0"



6 SECTION 2 - STAIR E
1/4" = 1'-0"



5 SECTION - STAIR D
1/4" = 1'-0"



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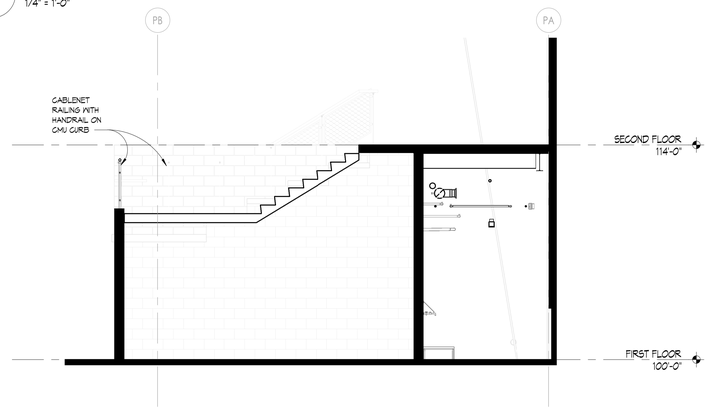
1/4" = 1'-0"



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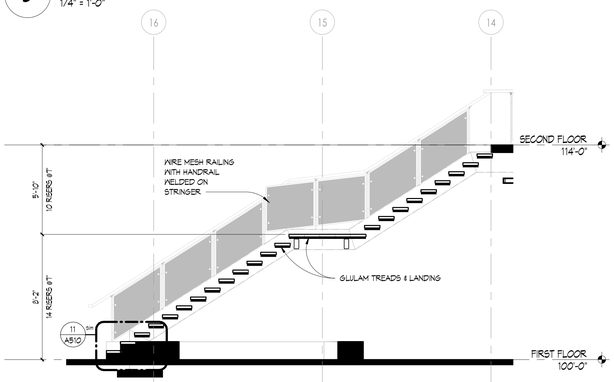

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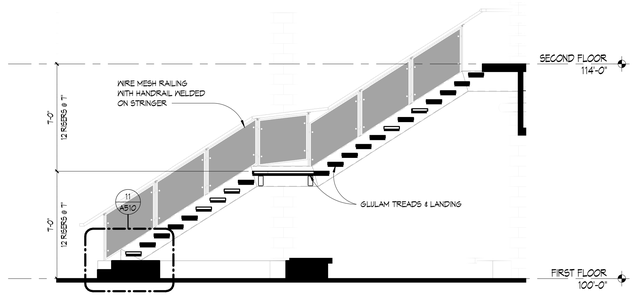

1 SECTION - STAIR A
1/4" = 1'-0"

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HOWELL PUBLIC SCHOOLS

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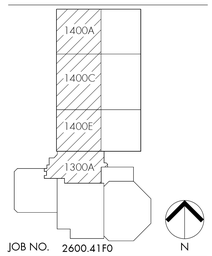
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
STAIR & RAMP ENLARGED SECTIONS

SHEET NO.
A520

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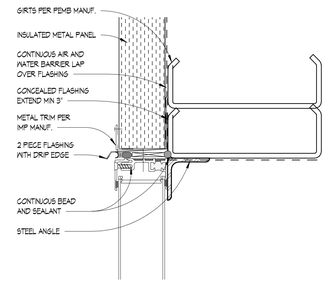
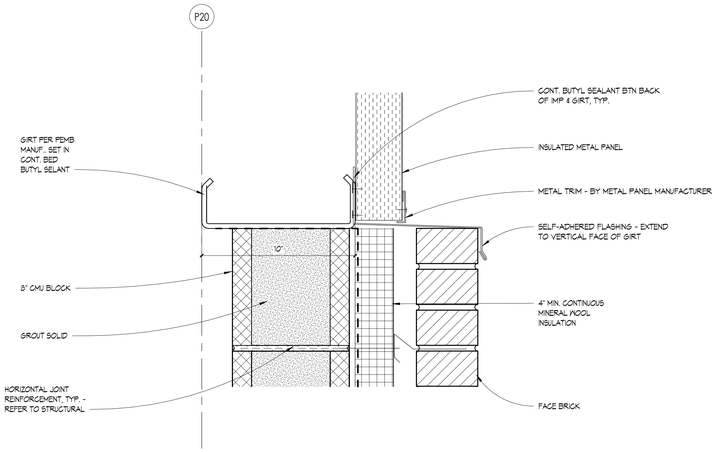
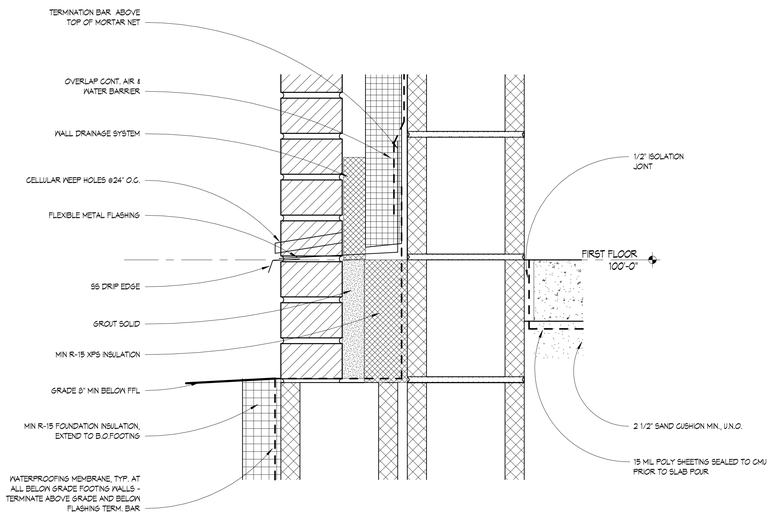


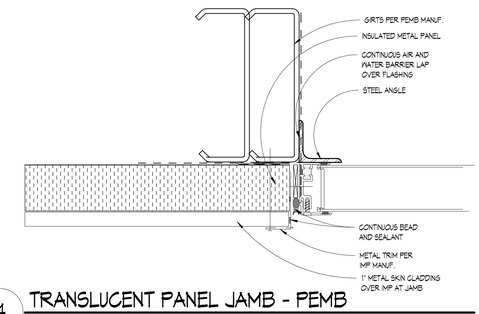
3 TRANSLUCENT PANEL HEAD - PEMB
3" = 1'-0"
SIMILAR FOR SILL



2 DETAIL
3" = 1'-0"



1 DETAIL
3" = 1'-0"



4 TRANSLUCENT PANEL JAMB - PEMB
3" = 1'-0"

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
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JOB NO. 2600.41F0

N

SHEET TITLE
DETAILS

SHEET NO.
A601

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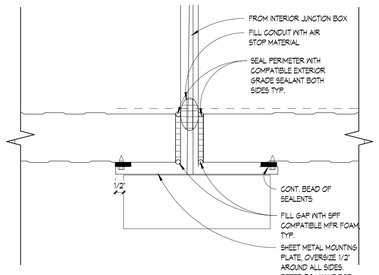
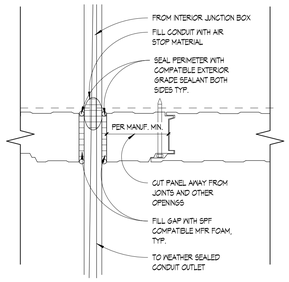


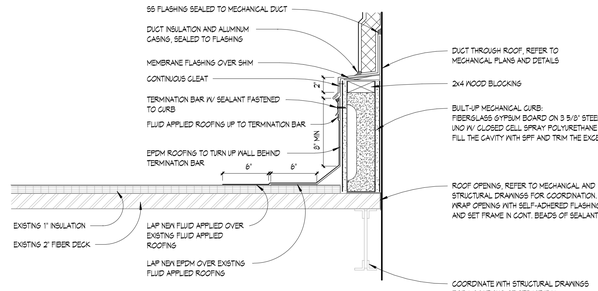
NOTES:
1. COORDINATE WITH ELECTRICAL & MECHANICAL DETAILS.
2. COORDINATE WITH IMP MANUFACTURER TO MAINTAIN WARRANTY.
3. INSTALL ALL COMPONENTS SECURELY, CONTINUOUS, AND WEATHER TIGHT.

17 MOUNTING PLATE AT IMP
3" = 1'-0"

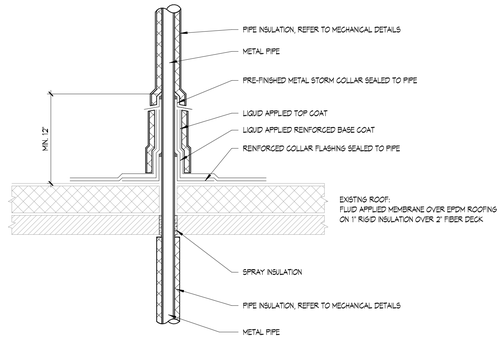


NOTES:
1. COORDINATE WITH ELECTRICAL & MECHANICAL DETAILS.
2. COORDINATE WITH IMP MANUFACTURER TO MAINTAIN WARRANTY.
3. INSTALL ALL COMPONENTS SECURELY, CONTINUOUS, AND WEATHER TIGHT.
4. PROVIDE SIMILAR OR EQUIVALENT SOLUTION FOR ALL PIPES AND OTHER PENETRATIONS.

16 CONDUIT SLEEVE THROUGH IMP
3" = 1'-0"

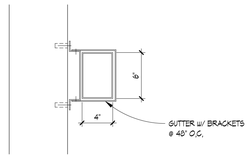


13 SECTION DETAIL AT DUCT CURB
1 1/2" = 1'-0"

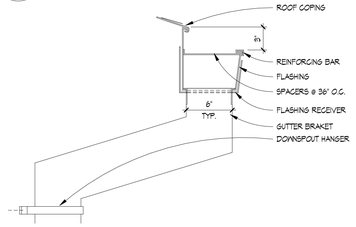


NOTES:
1. COORDINATE WITH MECHANICAL DETAILS.
2. COORDINATE WITH ROOFING MANUFACTURER TO MAINTAIN ROOF WARRANTY.
3. INSTALL ALL COMPONENTS SECURELY, CONTINUOUS, AND WEATHER TIGHT.

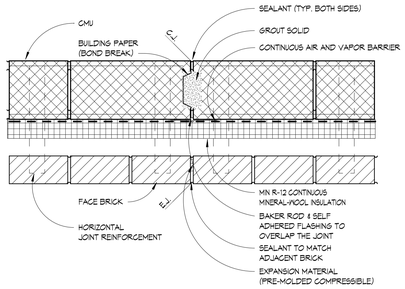
12 INSULATED PIPE PENETRATION THROUGH ROOF
1/8" = 1'-0"



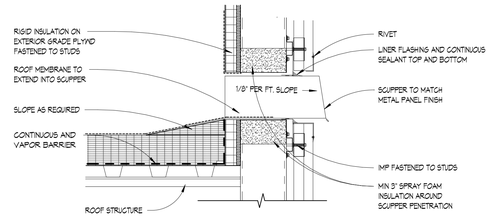
15 COLUMN / DOWNSPOUT DETAIL
1 1/2" = 1'-0"



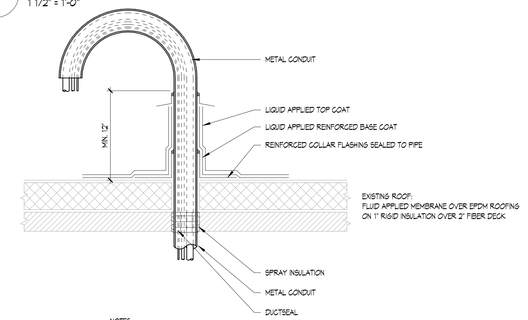
14 GUTTER/DOWNSPOUT DETAIL
1 1/2" = 1'-0"



8 WALL MOVEMENT JOINT
1 1/2" = 1'-0"



5 PARAPET SCUPPER
1 1/2" = 1'-0"



NOTES:
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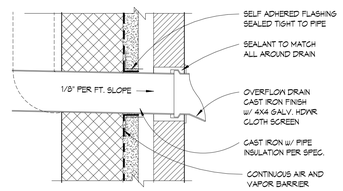
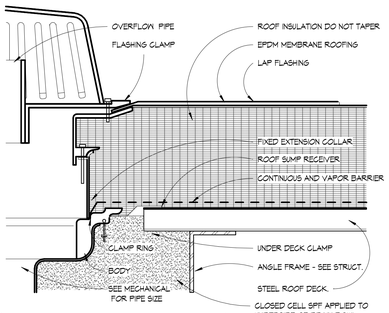
3. INSTALL ALL COMPONENTS SECURELY, CONTINUOUS, AND WEATHER TIGHT.

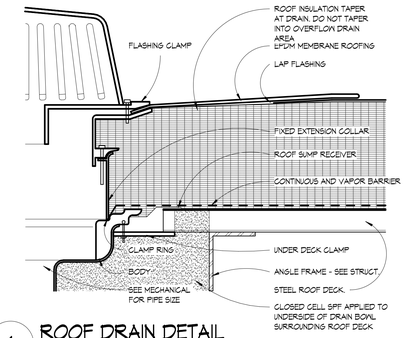
4 CONDENSING UNIT CONDUIT PENETRATION THROUGH ROOF
1/8" = 1'-0"



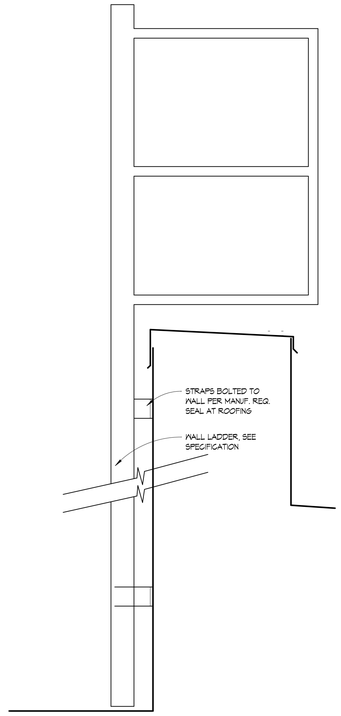
3 DOWNSPOUT NOZZLE DETAIL
1 1/2" = 1'-0"



2 OVERFLOW DRAIN DETAIL
3" = 1'-0"



1 ROOF DRAIN DETAIL
3" = 1'-0"



9 EXTERIOR WALL LADDER
1 1/2" = 1'-0"

NOTES:
1. COORDINATE WITH MECHANICAL DETAILS.
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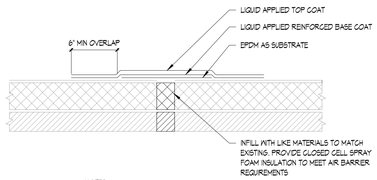
11 UNINSULATED PIPE PENETRATION THROUGH ROOF
1/8" = 1'-0"



NOTES:
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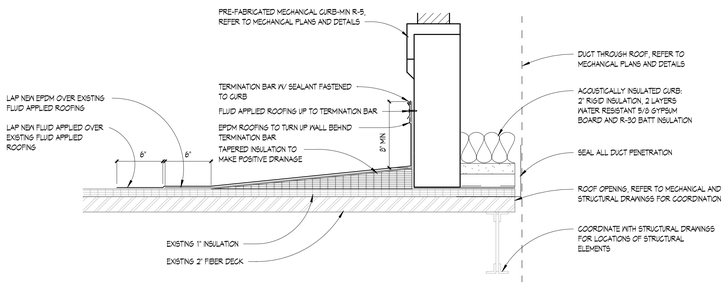
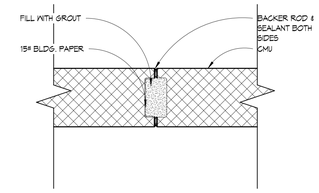
3. INSTALL ALL COMPONENTS SECURELY, CONTINUOUS, AND WEATHER TIGHT.

7 INFILL PENETRATION THROUGH ROOF
1/8" = 1'-0"



10 SECTION DETAIL AT RTU CURB
1 1/2" = 1'-0"



6 CONTROL JOINT DETAIL
1 1/2" = 1'-0"

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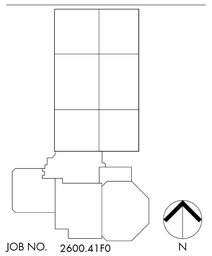
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE
BUILDING DETAILS

SHEET NO.
A611

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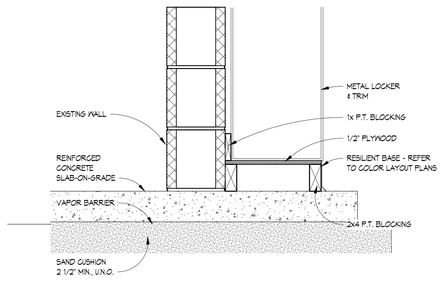
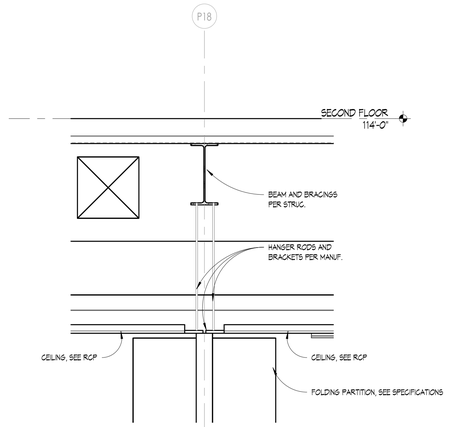
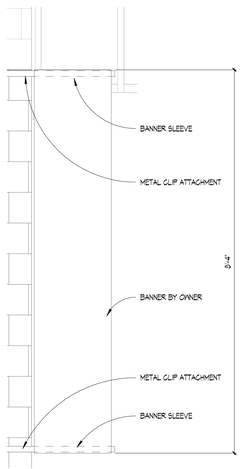


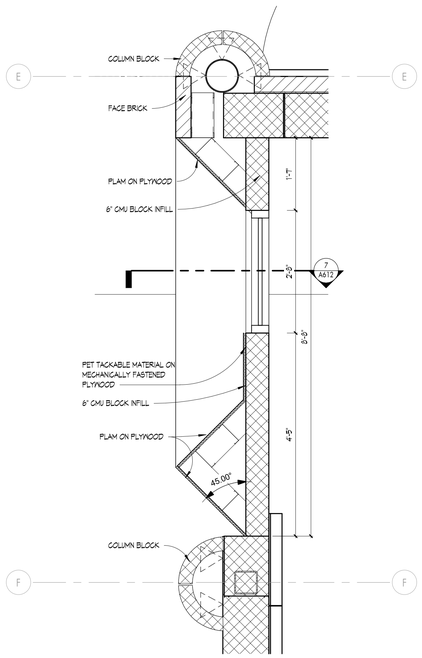
10 LOCKER BASE DETAIL
1 1/2" = 1'-0"



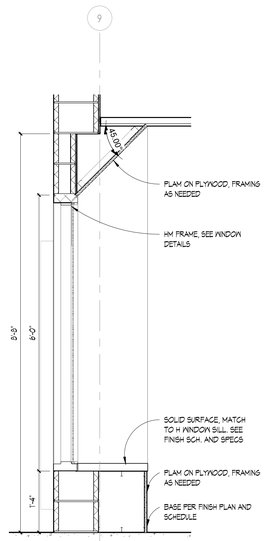
9 FOLDING PARTITON HEADER
3/4" = 1'-0"



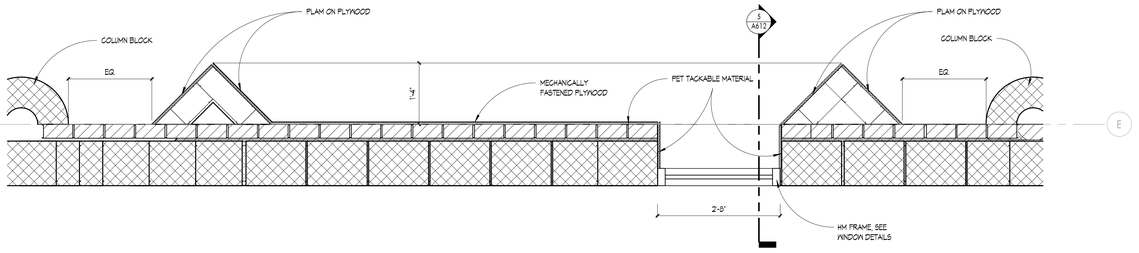
8 BANNER ATTACHMENT
3/4" = 1'-0"



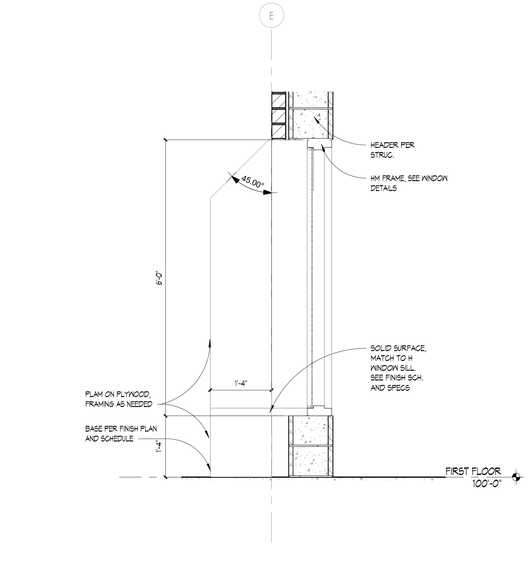
11 WINDOW SEAT - PLAN
3/4" = 1'-0"



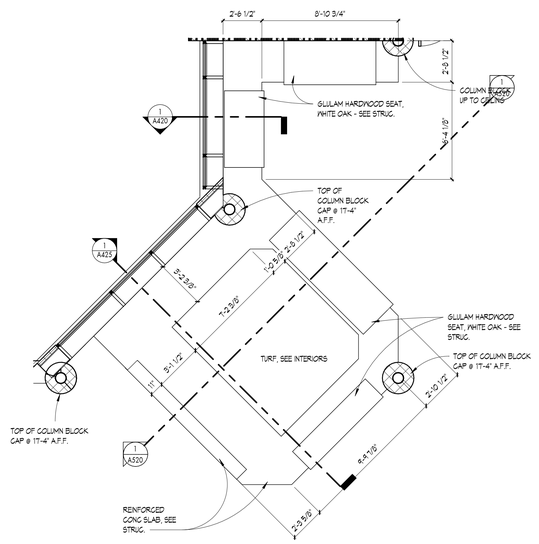
7 WINDOW SEAT - SECTION
3/4" = 1'-0"



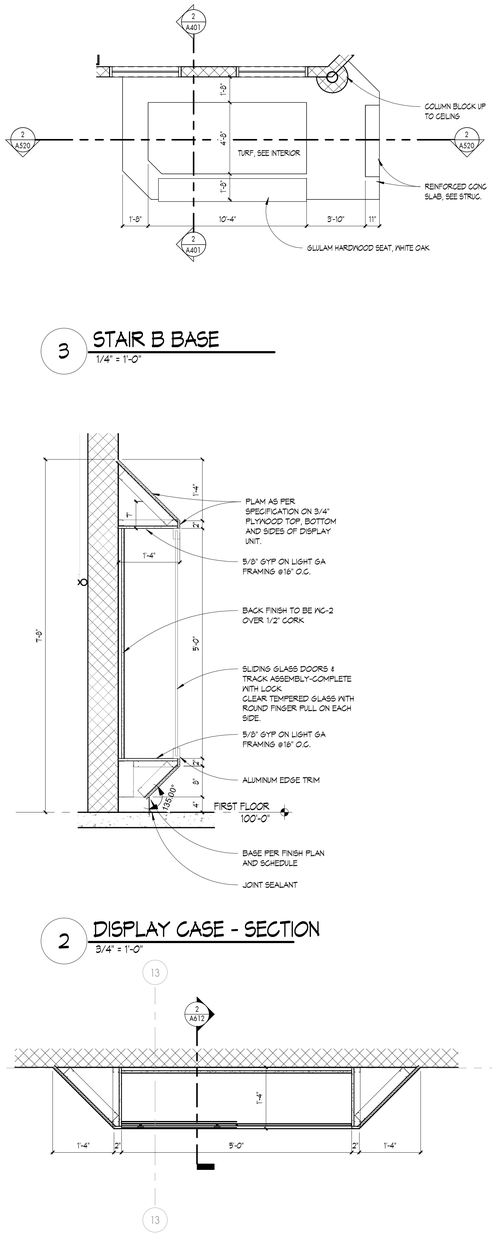
4 WINDOW SEAT - PLAN
3/4" = 1'-0"



5 WINDOW SEAT - SECTION
3/4" = 1'-0"



6 STAIR A BASE
1/4" = 1'-0"



3 STAIR B BASE
1/4" = 1'-0"

2 DISPLAY CASE - SECTION
3/4" = 1'-0"

1 DISPLAY CASE - PLAN
3/4" = 1'-0"

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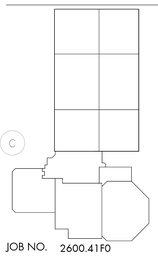
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
DESIGN DEVELOPMENT	01.29.2026
CONSTRUCTION DOCUMENTS	07.30.2026



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SHEET TITLE

BUILDING DETAILS

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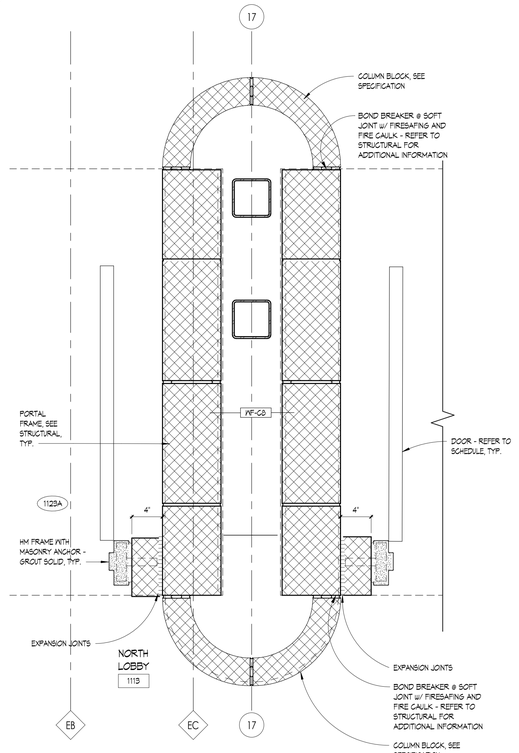
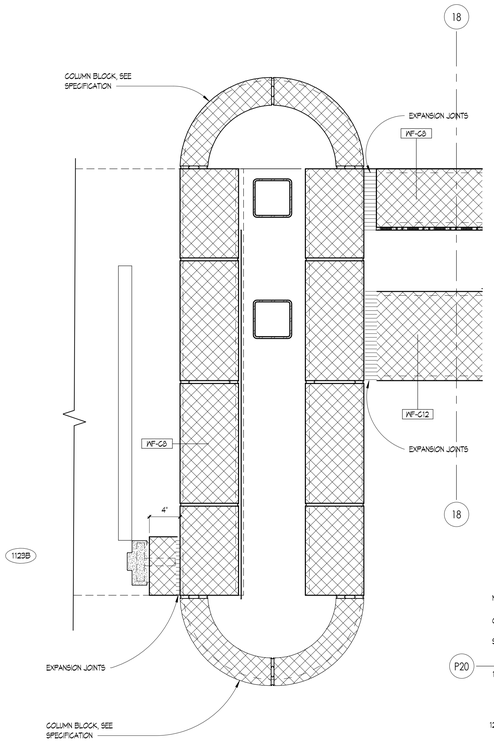
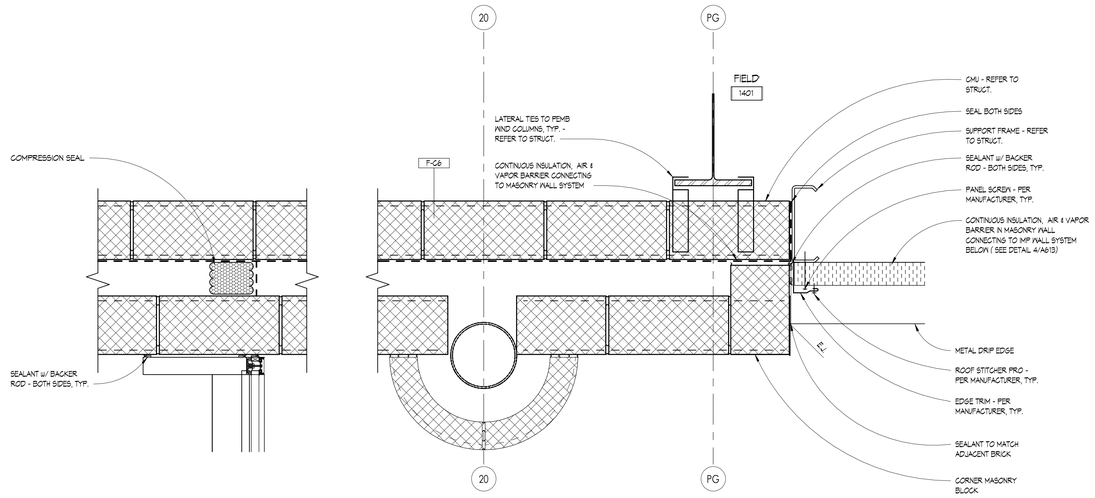
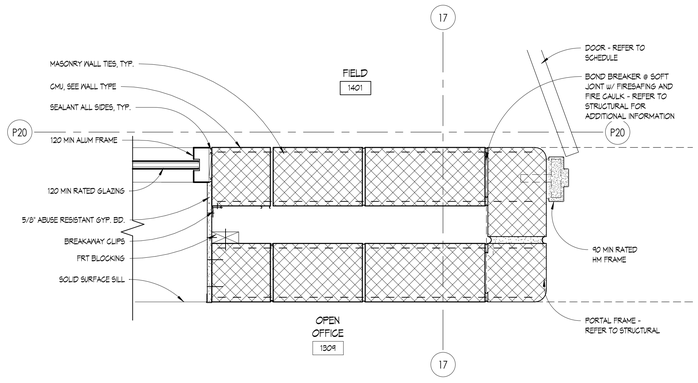


7 PLAN DETAIL
1 1/2" = 1'-0"

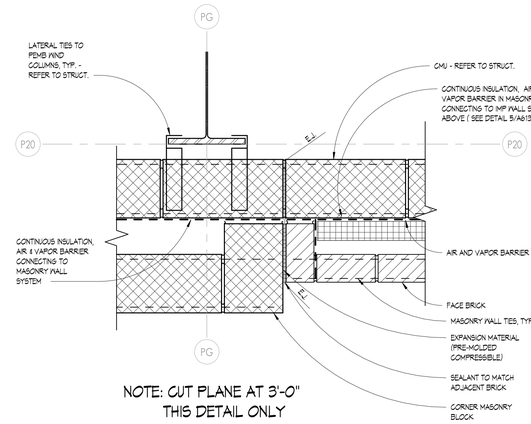




5 PLAN DETAIL
1 1/2" = 1'-0"

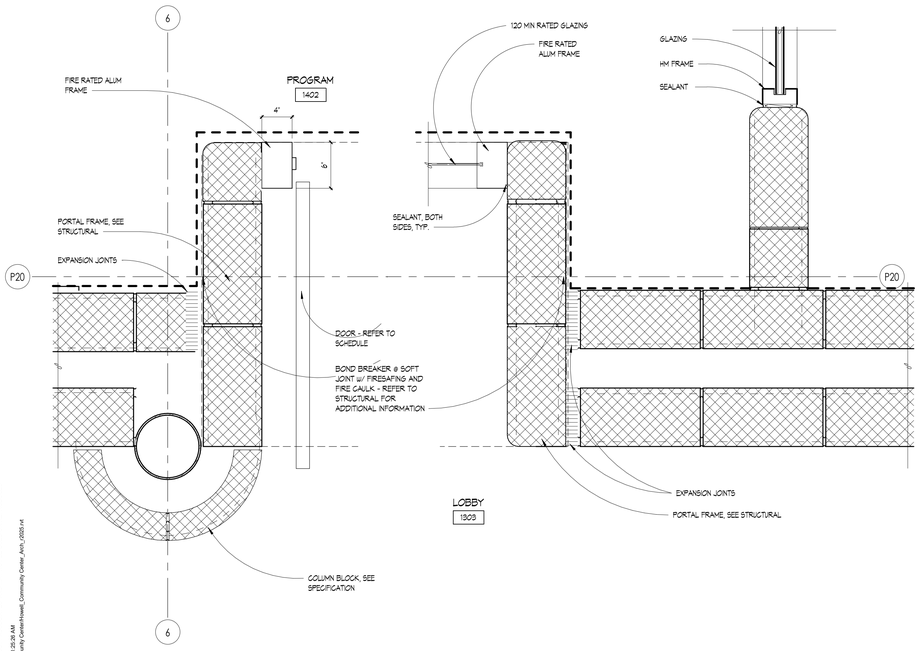


6 PLAN DETAIL
1 1/2" = 1'-0"

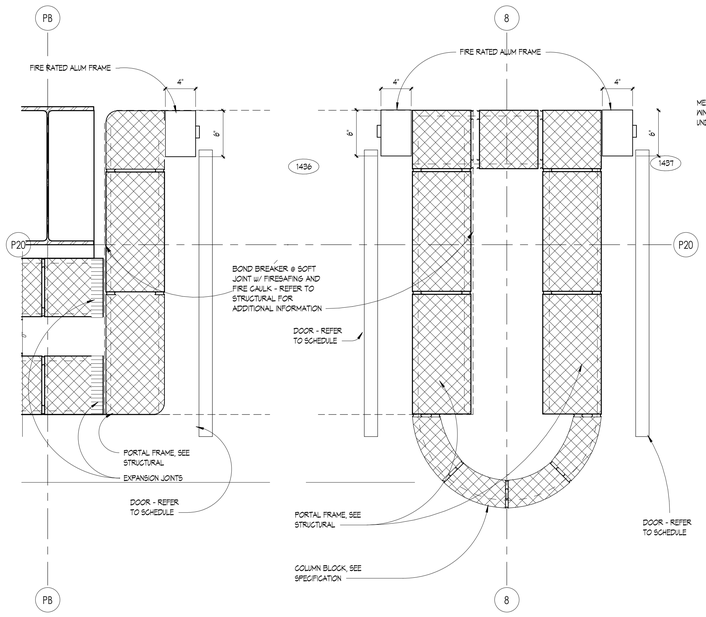


NOTE: CUT PLANE AT 3'-0"
THIS DETAIL ONLY

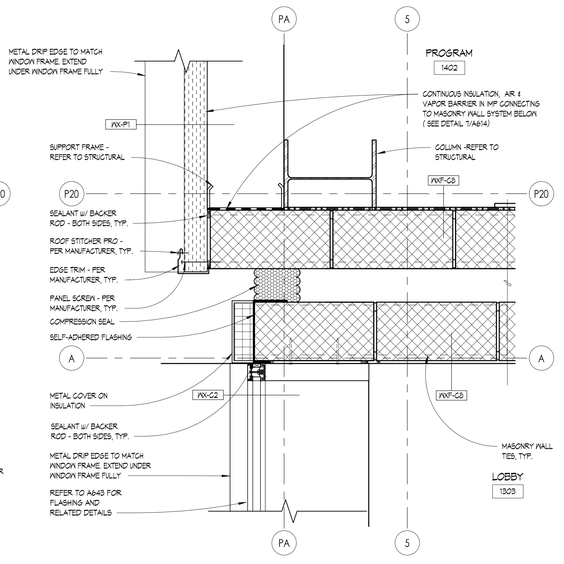
4 PLAN DETAIL
1 1/2" = 1'-0"



2 PLAN DETAIL
1 1/2" = 1'-0"



3 PLAN DETAIL
1 1/2" = 1'-0"



1 PLAN DETAIL
1 1/2" = 1'-0"

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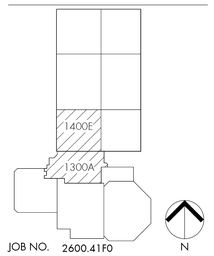
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



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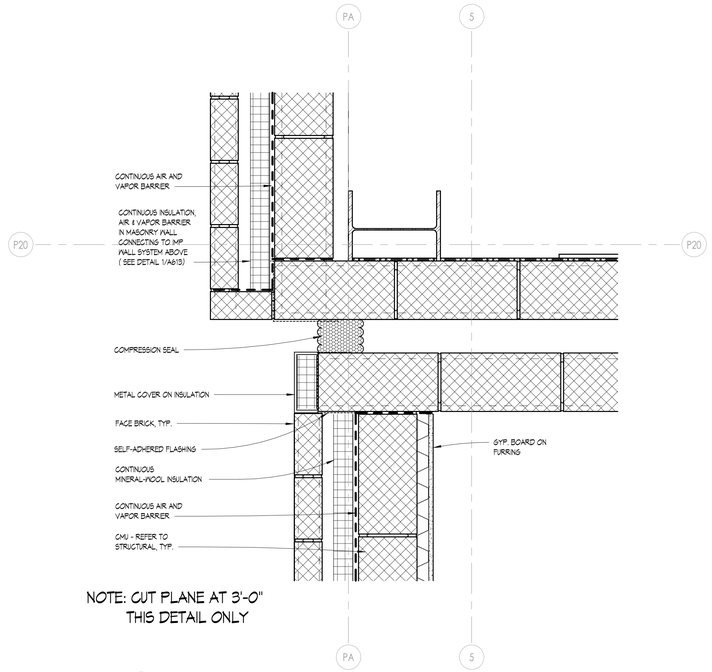
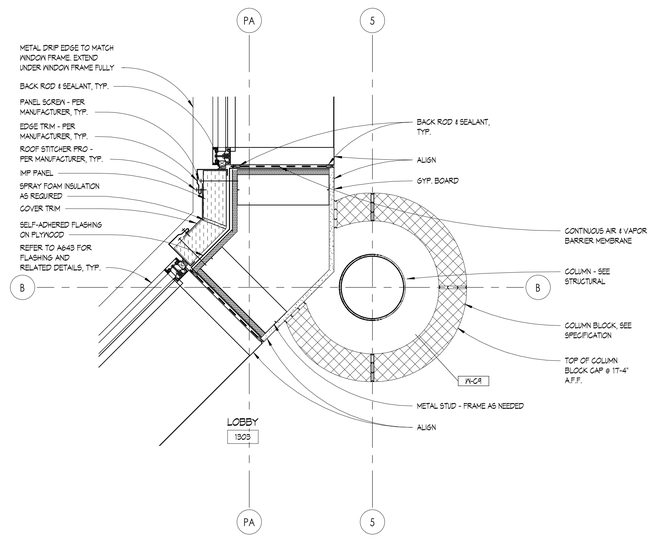
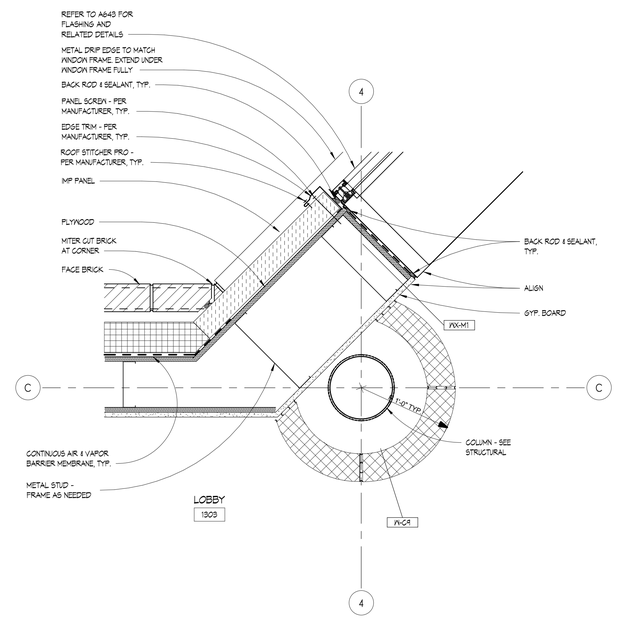


NOTE: CUT PLANE AT 3'-0" THIS DETAIL ONLY

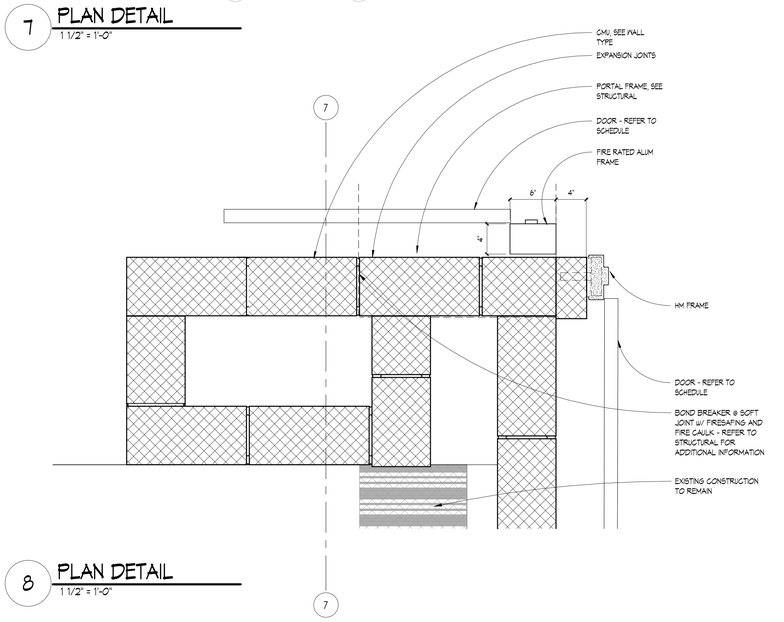
7 PLAN DETAIL
1 1/2" = 1'-0"



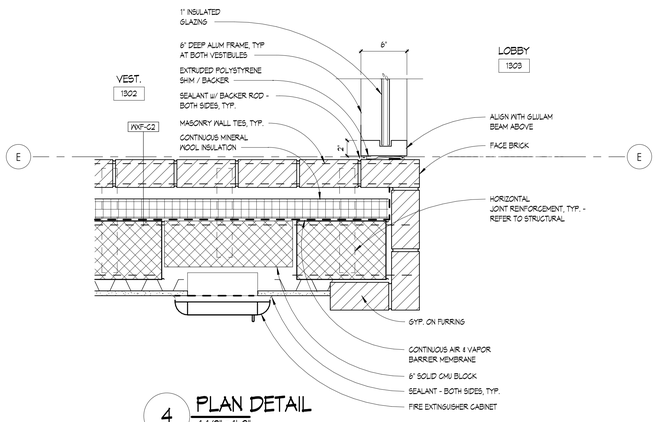
5 PLAN DETAIL
1 1/2" = 1'-0"



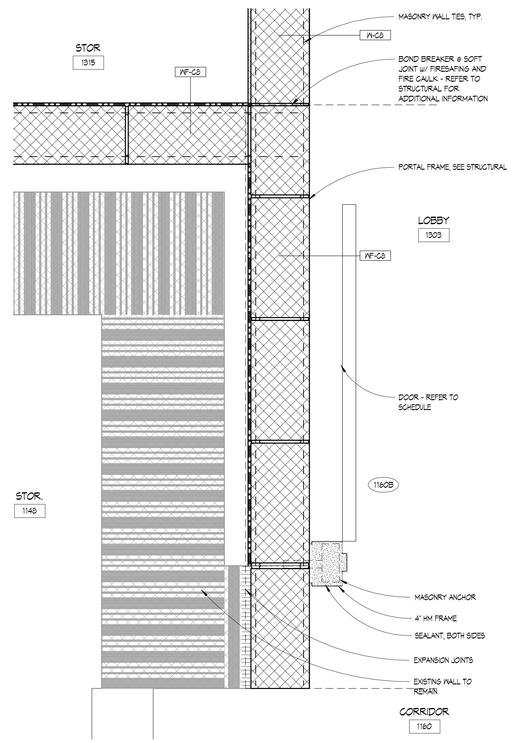
3 PLAN DETAIL
1 1/2" = 1'-0"



8 PLAN DETAIL
1 1/2" = 1'-0"



4 PLAN DETAIL
1 1/2" = 1'-0"



2 PLAN DETAIL
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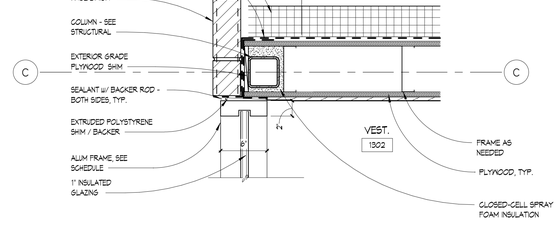
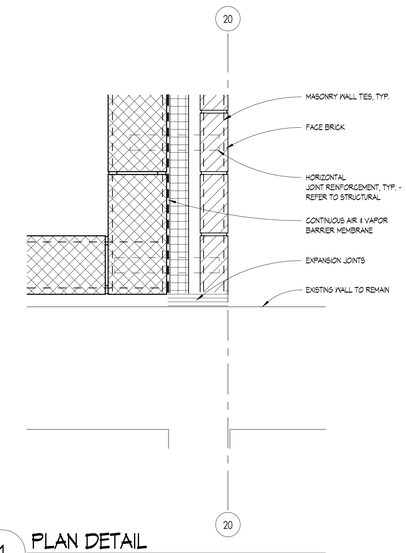


6 PLAN DETAIL
1 1/2" = 1'-0"



1 PLAN DETAIL
1 1/2" = 1'-0"

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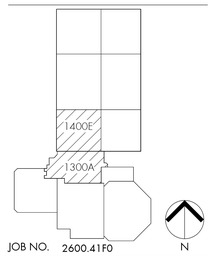
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



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BUILDING DETAILS

SHEET NO.
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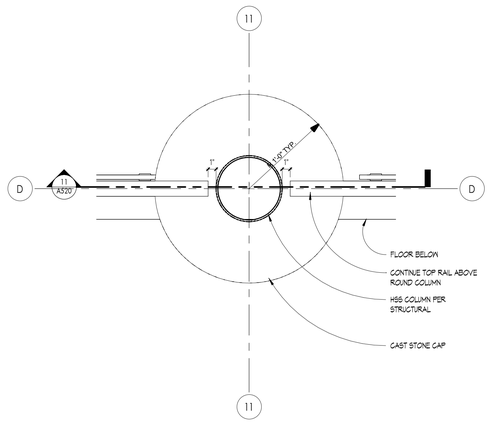
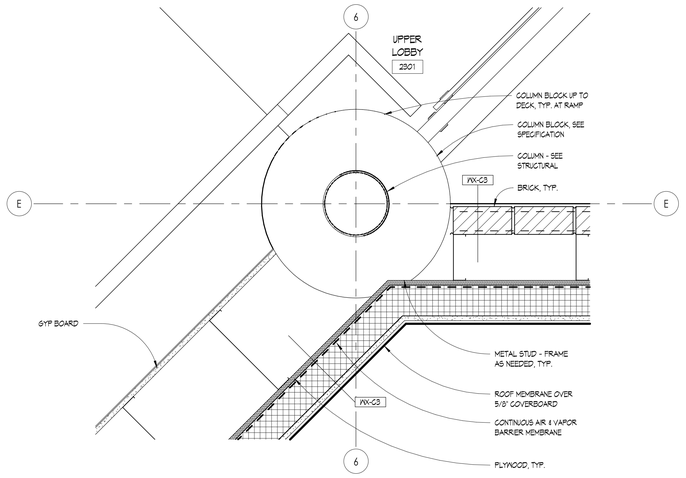
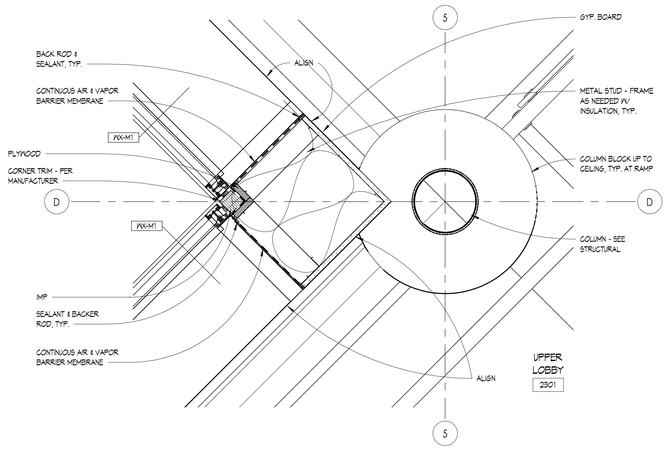
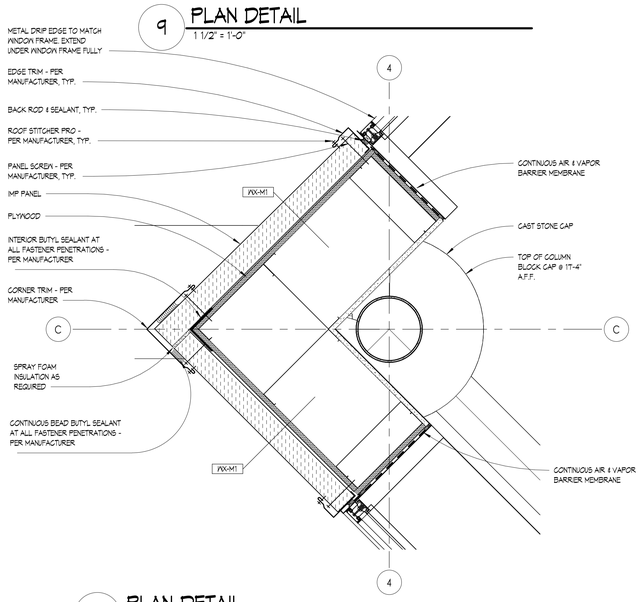






9 PLAN DETAIL
1 1/2" = 1'-0"



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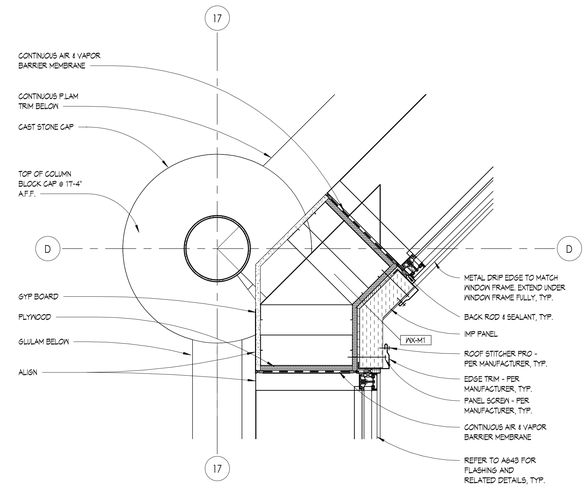

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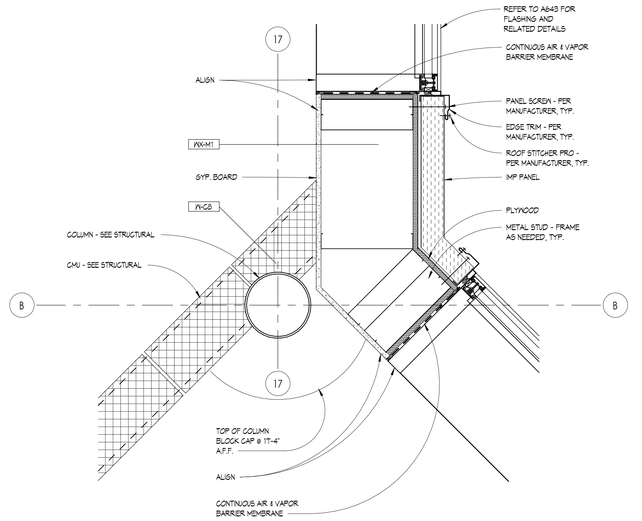

6 PLAN DETAIL
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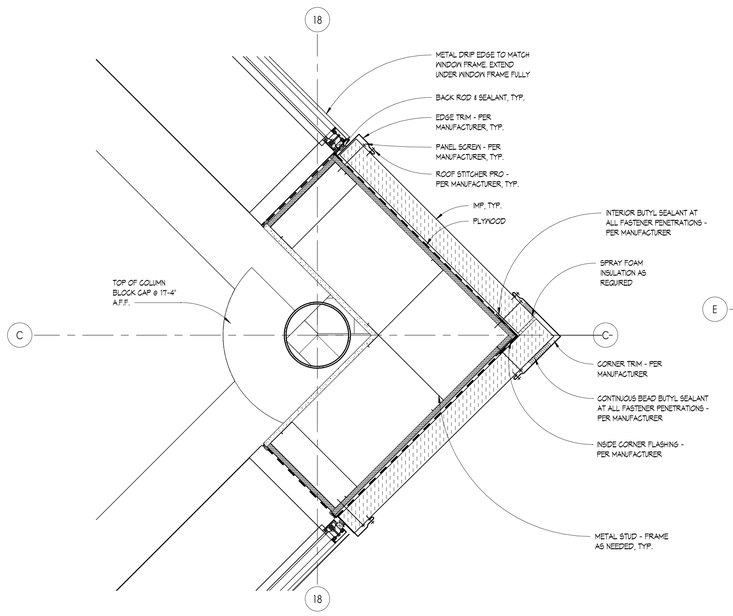

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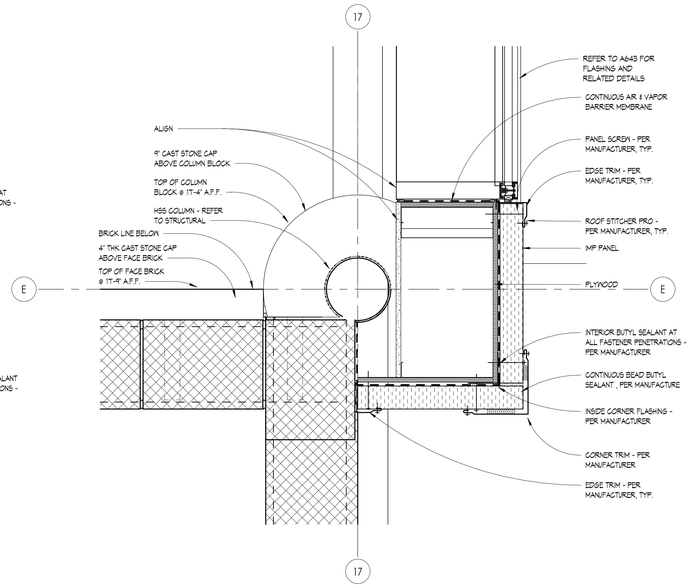

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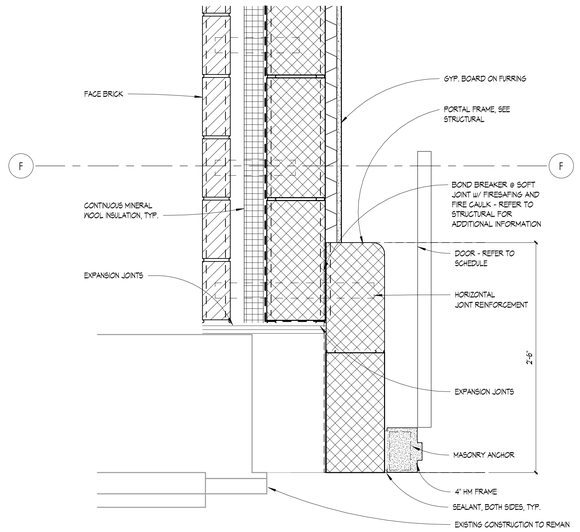

3 PLAN DETAIL
1 1/2" = 1'-0"

2 PLAN DETAIL
1 1/2" = 1'-0"

1 PLAN DETAIL
1 1/2" = 1'-0"

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KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

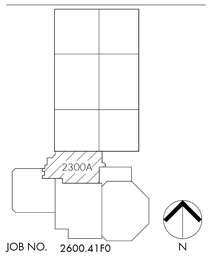
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
BUILDING DETAILS

SHEET NO.
A615

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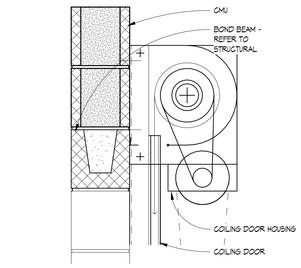
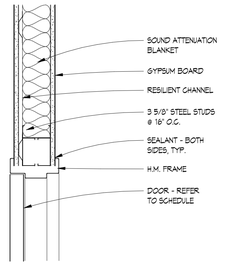
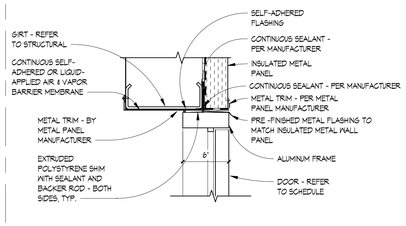


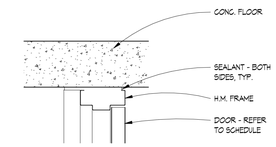
20 HEAD - COILING DOOR
1 1/2" = 1'-0"



14 HEAD - HM FRAME
1 1/2" = 1'-0" 6 3/8" HM FRAME REQUIRED



9 FRP DOOR JAMB - HEAD
1 1/2" = 1'-0"



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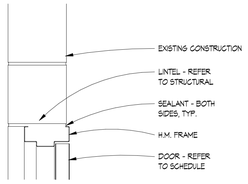
1 1/2" = 1'-0"



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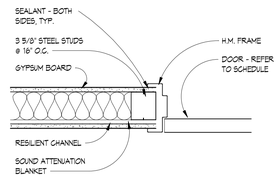
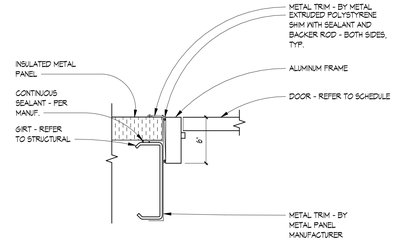
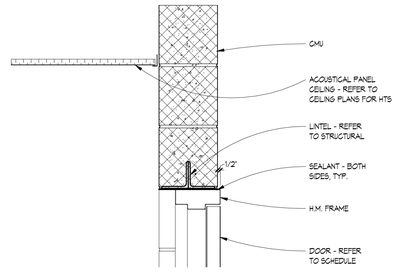
1 1/2" = 1'-0"



13 JAMB - HM FRAME
1 1/2" = 1'-0" 6 3/8" HM FRAME REQUIRED



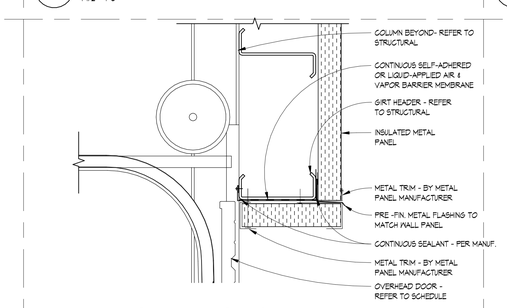
8 FRP DOOR JAMB - PEMB
1 1/2" = 1'-0"



4 HEAD - HM FRAME
1 1/2" = 1'-0"

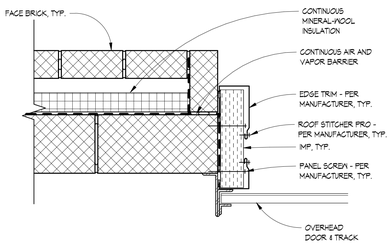
18 JAMB - HM FRAME
1 1/2" = 1'-0"

12 JAMB - HM FRAME
1 1/2" = 1'-0" 6 3/8" HM FRAME REQUIRED

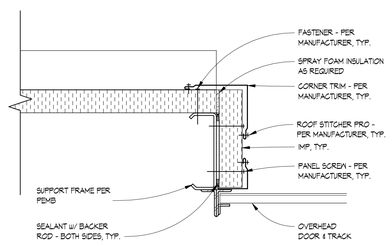


7 HEAD - OVERHEAD DOOR
1 1/2" = 1'-0"

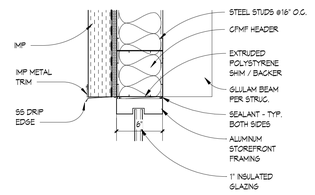
3 JAMB - HM FRAME
1 1/2" = 1'-0" BULLNOSE CMU @ JAMBS, TYP.



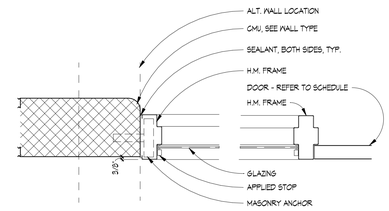
17 JAMB - OVERHEAD DOOR
1 1/2" = 1'-0" NOTE: CUT PLANE AT 3'-0" THIS DETAIL ONLY



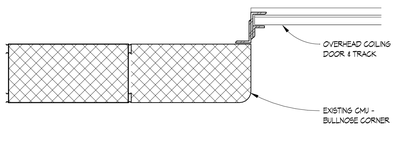
11 JAMB - OVERHEAD DOOR
1 1/2" = 1'-0"



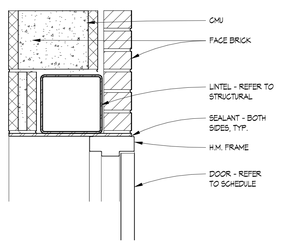
21 HEAD - ALUM FRAME
1 1/2" = 1'-0"



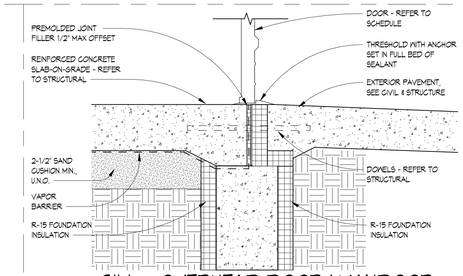
2 JAMB - HM FRAME
1 1/2" = 1'-0" BULLNOSE CMU @ JAMBS, TYP.



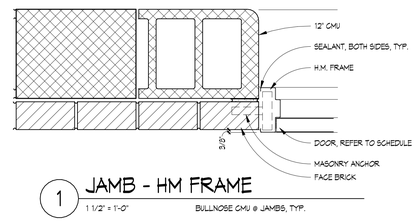
16 JAMB - COILING DOOR
1 1/2" = 1'-0"



10 HEAD - HM FRAME
1 1/2" = 1'-0"



6 SILL - OVERHEAD DOOR/ MANDOOR
1 1/2" = 1'-0"



1 JAMB - HM FRAME
1 1/2" = 1'-0" BULLNOSE CMU @ JAMBS, TYP.

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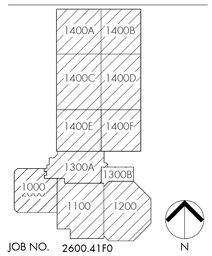
KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
DOOR DETAILS

SHEET NO.
A641

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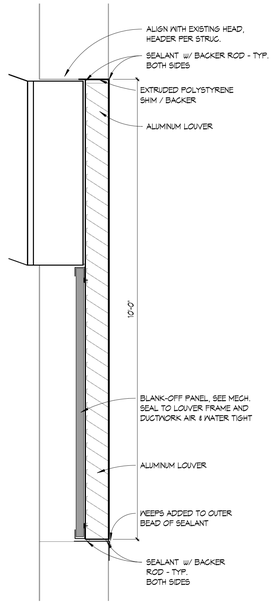
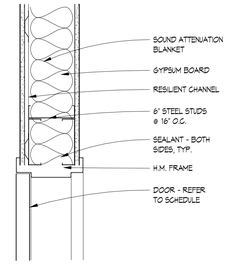
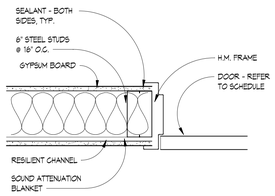


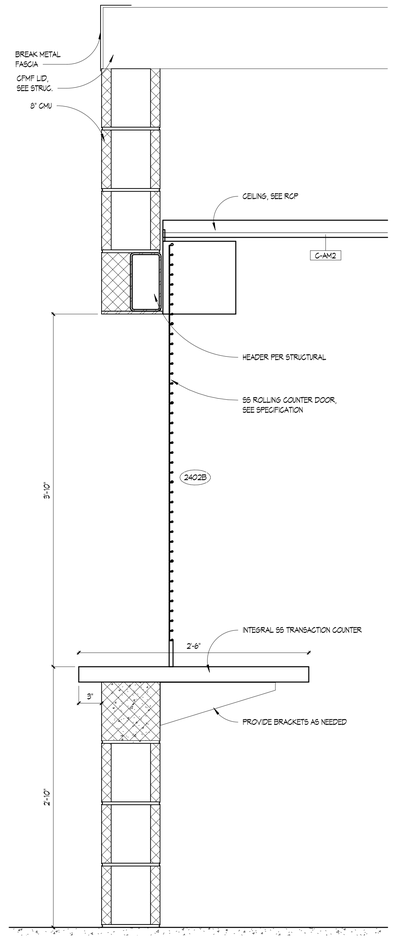
13 LOUVRE SECTION
3/4" = 1'-0"



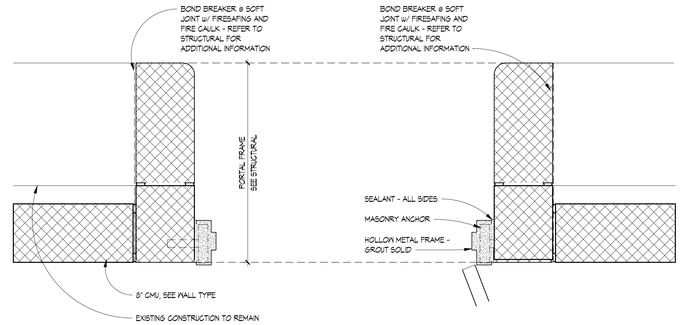
19 HEAD - HM FRAME
1 1/2" = 1'-0" — @ 3/4" HM FRAME REQUIRED



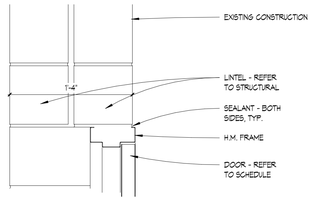
18 JAMB - HM FRAME
1 1/2" = 1'-0" — @ 3/4" HM FRAME REQUIRED



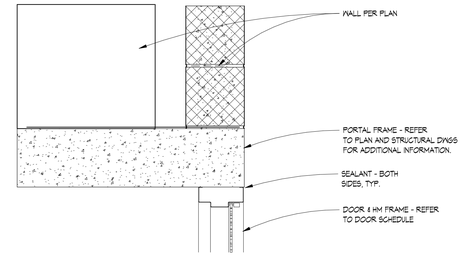
12 COUNTERTOP COILING DOOR
1 1/2" = 1'-0"



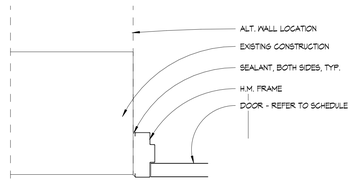
5 HEAD - HM FRAME - PORTAL FRAME
1 1/2" = 1'-0" — BULLNOSE CMU @ JAMBS, TYP.



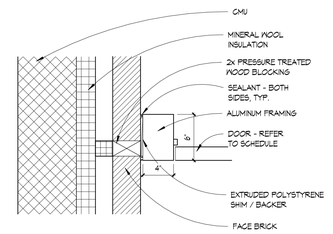
8 HEAD - HM FRAME
1 1/2" = 1'-0"



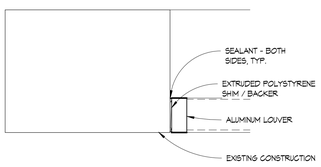
4 HEAD - HM FRAME - PORTAL FRAME
1 1/2" = 1'-0" — BULLNOSE CMU @ JAMBS, TYP.



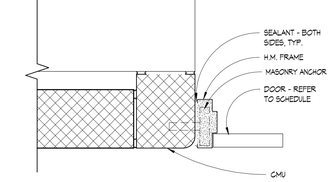
7 JAMB - HM FRAME
1 1/2" = 1'-0"



3 JAMB - ALUMINUM FRAME
1 1/2" = 1'-0" — BULLNOSE CMU @ JAMBS, TYP.



11 JAMB - LOUVER
1 1/2" = 1'-0"



21 JAMB - LOUVER
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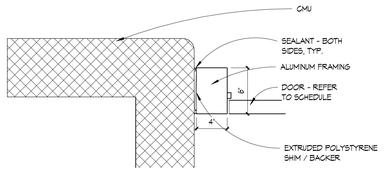
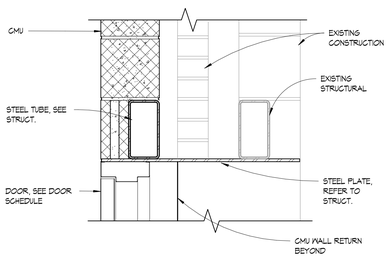
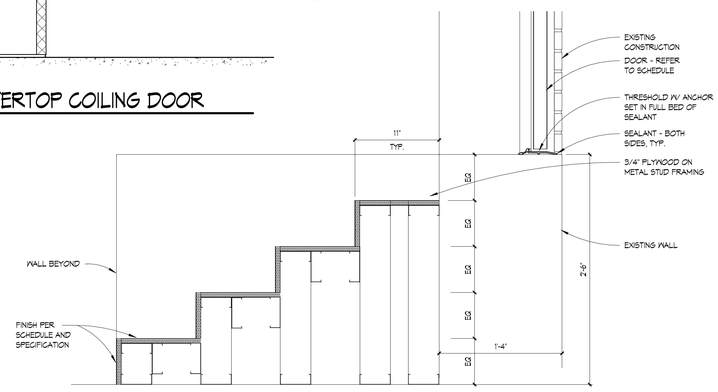


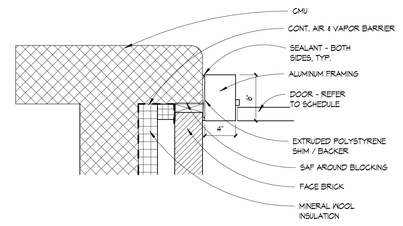
15 JAMB - ALUMINUM FRAME
1 1/2" = 1'-0" — BULLNOSE CMU @ JAMBS, TYP.



20 HEAD - HM FRAME
1 1/2" = 1'-0"



14 SILL - HM FRAME
1 1/2" = 1'-0"



2 JAMB - ALUMINUM FRAME
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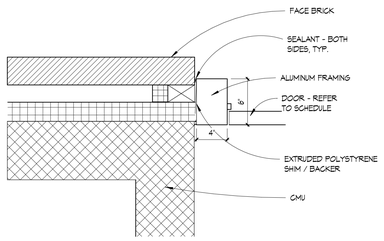
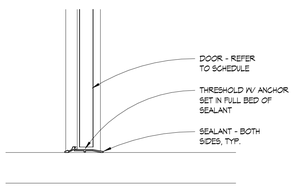
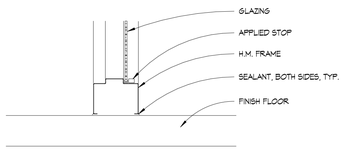


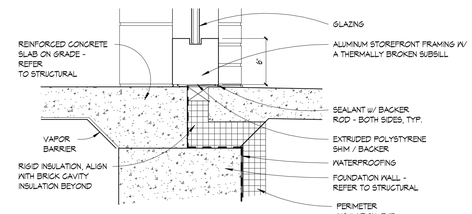
16 JAMB - ALUMINUM FRAME
1 1/2" = 1'-0" — BULLNOSE CMU @ JAMBS, TYP.



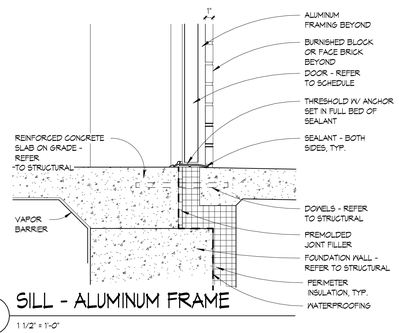
17 SILL - HM FRAME
1 1/2" = 1'-0"



10 SILL - HM FRAME
1 1/2" = 1'-0"



9 SILL - ALUMINUM FRAME
1 1/2" = 1'-0"



1 SILL - ALUMINUM FRAME
1 1/2" = 1'-0"

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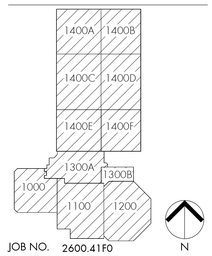
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
DOOR DETAILS

SHEET NO.
A642

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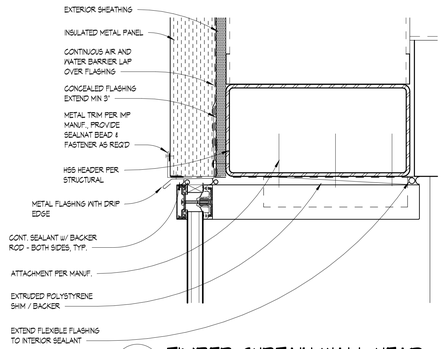
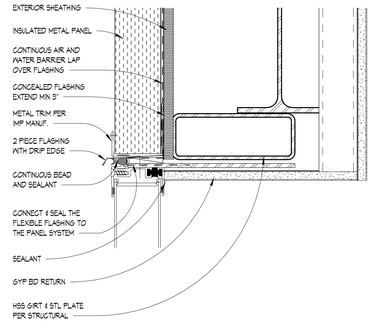
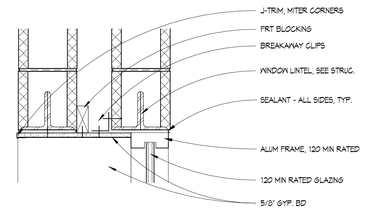


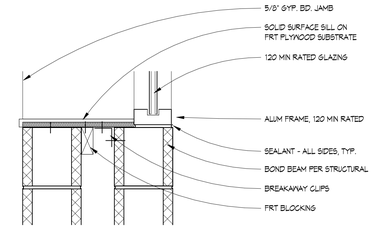
6 TIMBER CURTAIN WALL HEAD
3" = 1'-0"



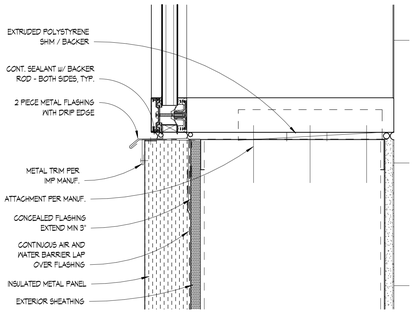
5 TRANSLUCENT PANEL HEAD
3" = 1'-0"
SIMILAR FOR JAMB



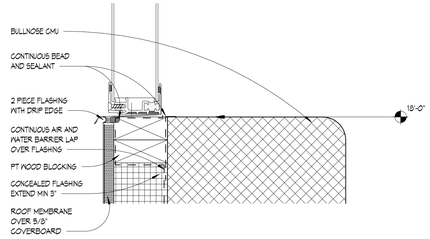
10 HM WINDOW HEAD
1 1/2" = 1'-0"



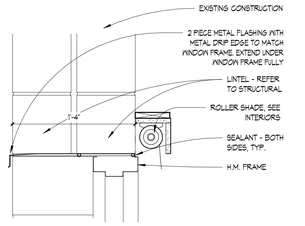
11 HM WINDOW SILL
1 1/2" = 1'-0"



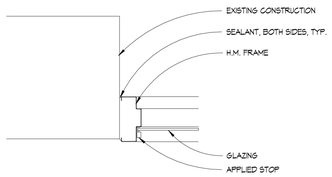
7 TIMBER CURTAIN WALL SILL
3" = 1'-0"



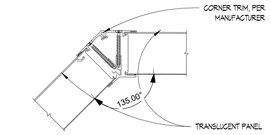
4 TRANSLUCENT PANEL SILL
3" = 1'-0"



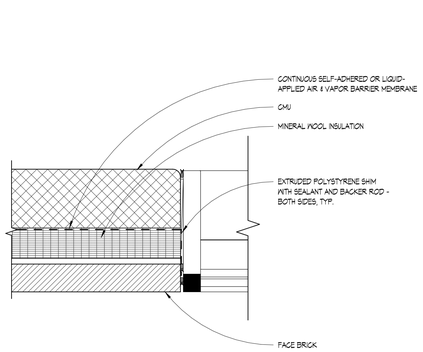
HEAD - HM FRAME "K"



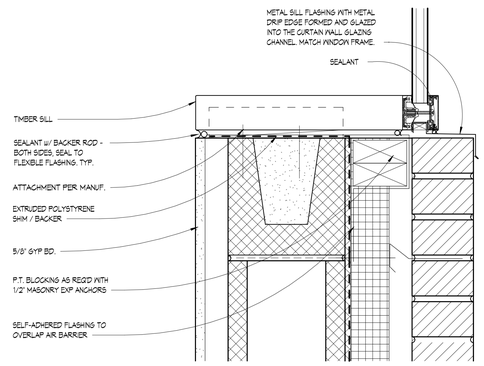
JAMB - HM FRAME "K"



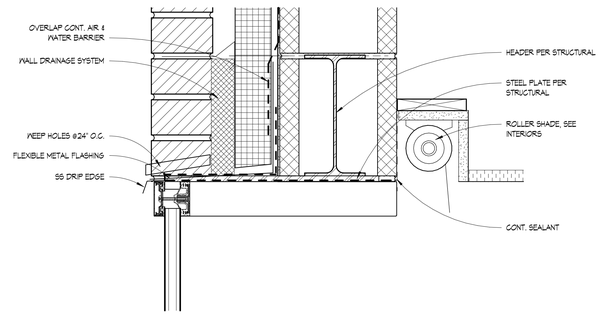
19 TRANSLUCENT PANEL CORNER JAMB
3" = 1'-0"



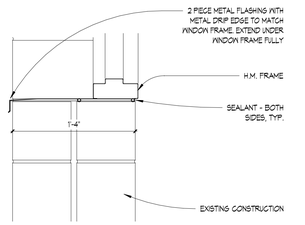
18 TIMBER CURTAIN WALL JAMB
1 1/2" = 1'-0"



3 TIMBER CURTAIN WALL SILL
3" = 1'-0"



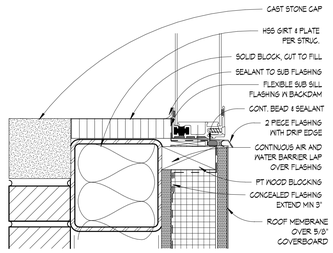
2 TIMBER CURTAIN WALL HEAD
3" = 1'-0"



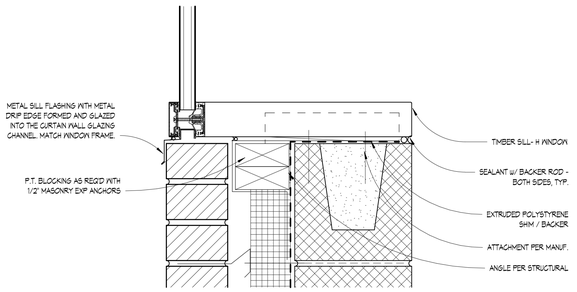
SILL - HM FRAME "K"



17 TRANSLUCENT PANEL CORNER JAMB
3" = 1'-0"



9 TRANSLUCENT PANEL SILL
3" = 1'-0"



1 TIMBER CURTAIN WALL SILL
3" = 1'-0"

8 HM WINDOW DETAIL
1 1/2" = 1'-0"

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Assistant, Doug Howell Community Center\Howell, Community Center_Arch_2026.rvt

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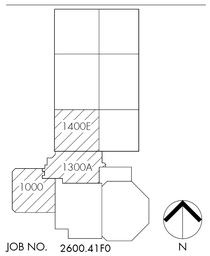
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
WINDOW DETAILS

SHEET NO.
A643

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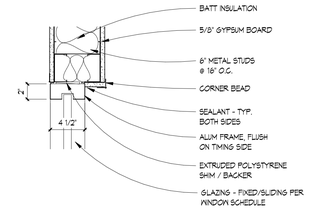
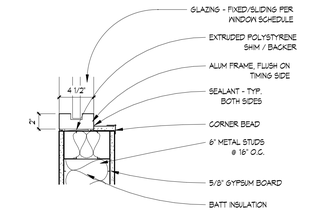
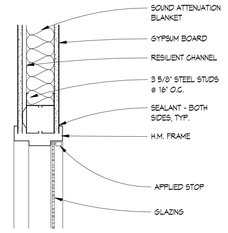


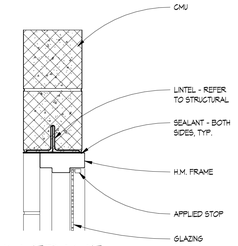
3 ALUM WINDOW HEAD
1 1/2" = 1'-0"



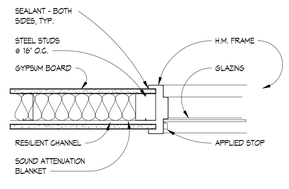
2 ALUM WINDOW SILL
1 1/2" = 1'-0"



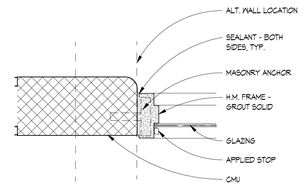
HEAD - HM FRAME
6 3/8" HM FRAME REQUIRED



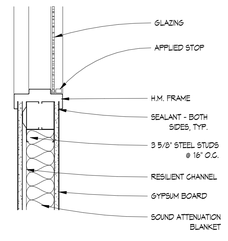
HEAD - HM FRAME



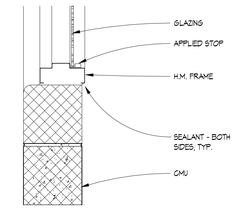
JAMB - HM FRAME



JAMB - HM FRAME
BULLNOSE CMU @ JAMBS, TYP.



SILL - HM FRAME
6 3/8" HM FRAME REQUIRED



SILL - HM FRAME
BULLNOSE CMU @ SILLS, TYP., U.N.O.

1 HM WINDOW DETAILS
1 1/2" = 1'-0"

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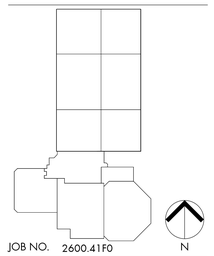
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE
WINDOW DETAILS

SHEET NO.
A644

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

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PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F0

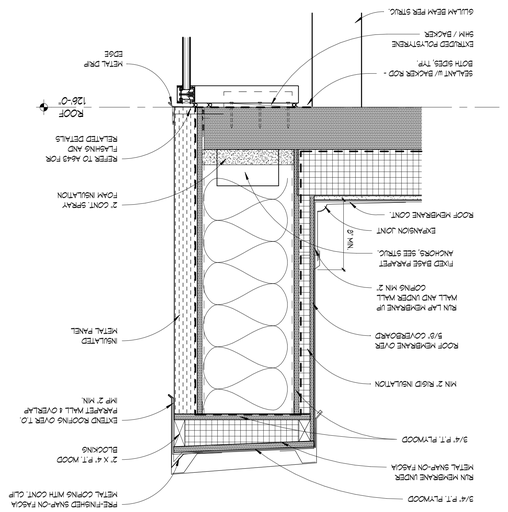
SHEET TITLE

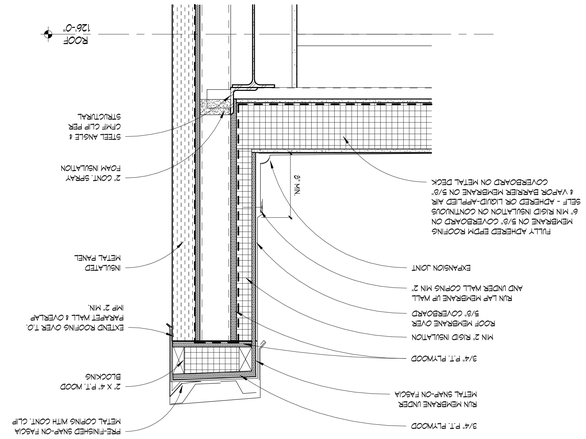
PARAPET DETAILS

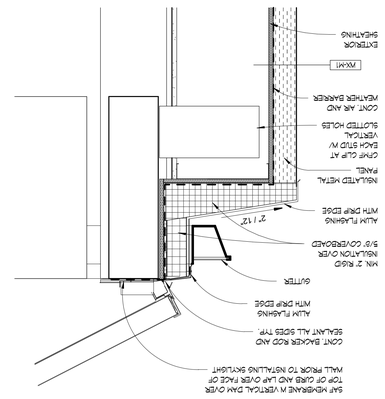
SHEET NO.

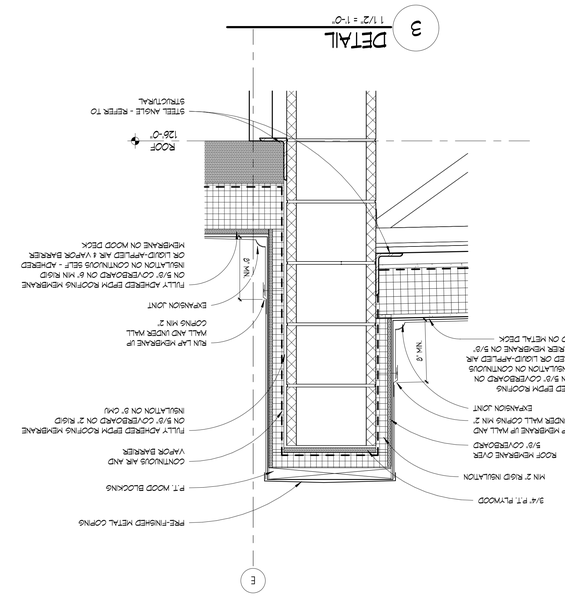
A660

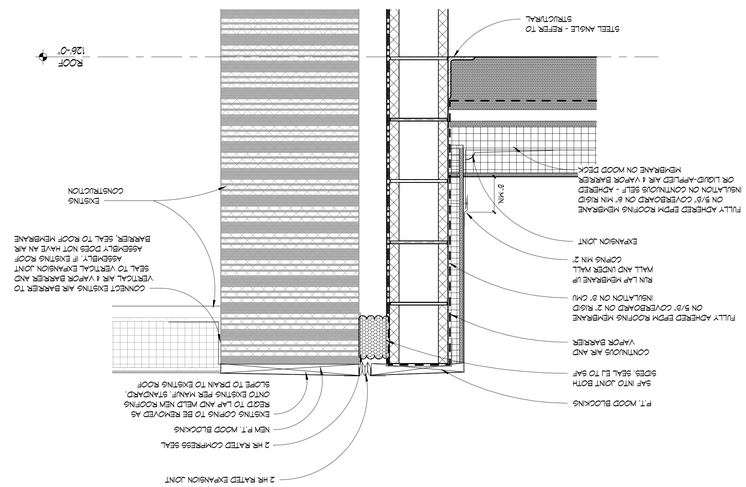
KINGSCOTT ASSOCIATES INC. ROB MICHIGAN

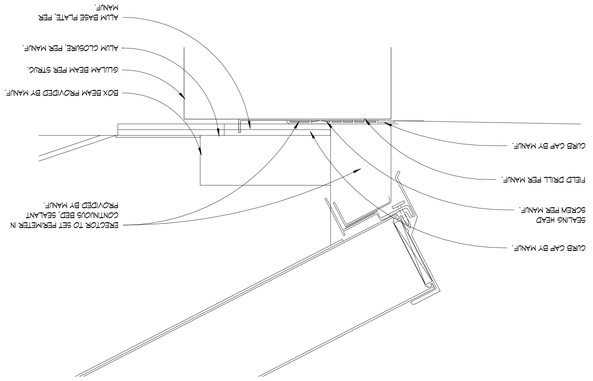


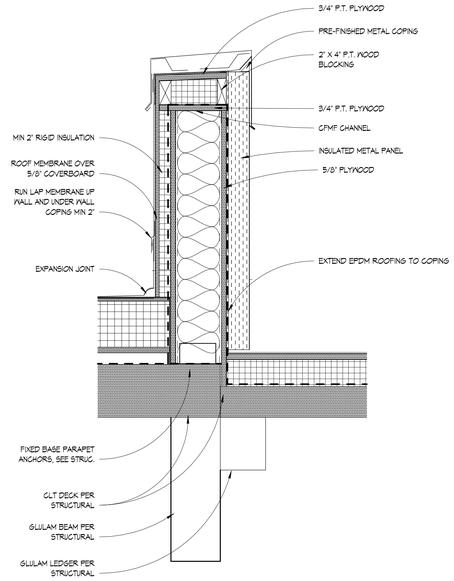




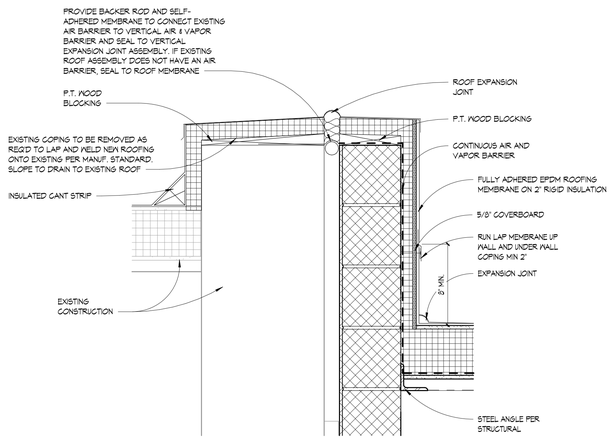




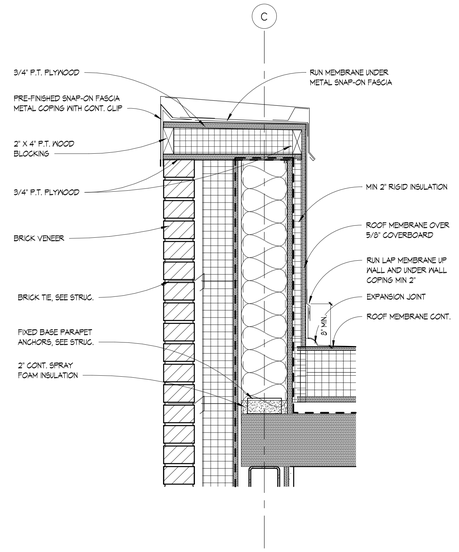




6 DETAIL
1 1/2" = 1'-0"



4 DETAIL
1 1/2" = 1'-0"



2 DETAIL
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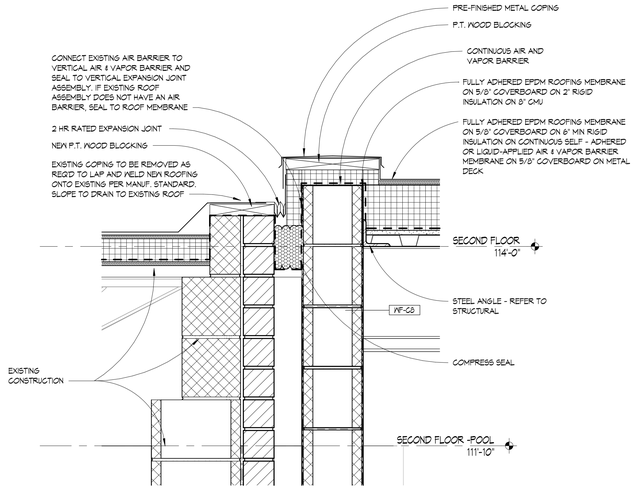
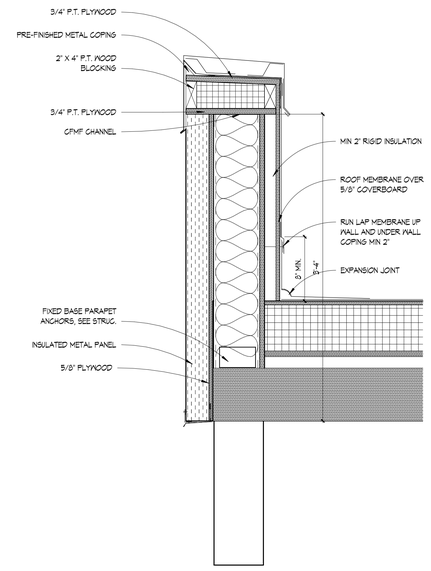
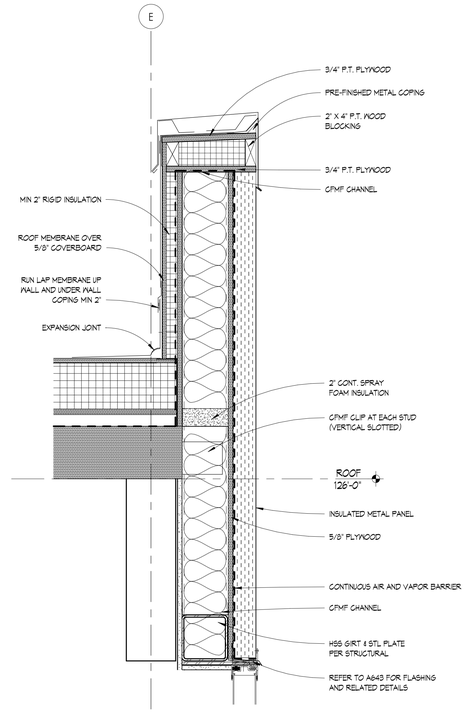


5 DETAIL
1 1/2" = 1'-0"



3 DETAIL
1 1/2" = 1'-0"



1 DETAIL
1 1/2" = 1'-0"

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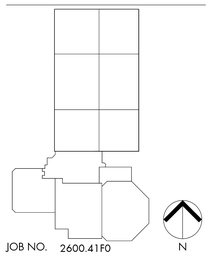
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

N

SHEET TITLE
PARAPET DETAILS

SHEET NO.
A661

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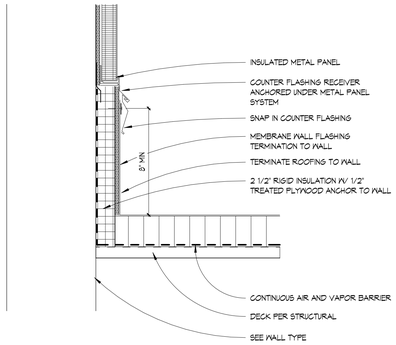
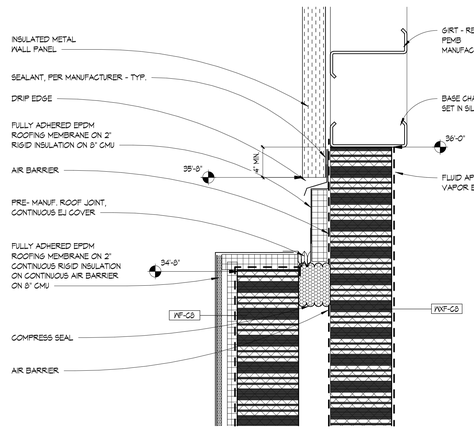
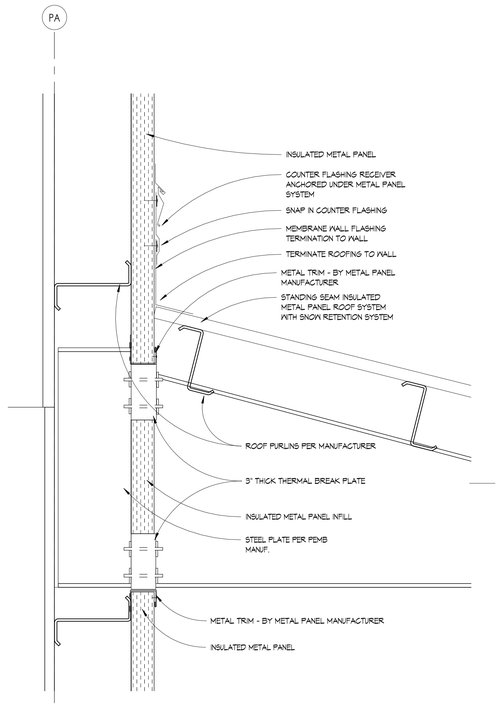


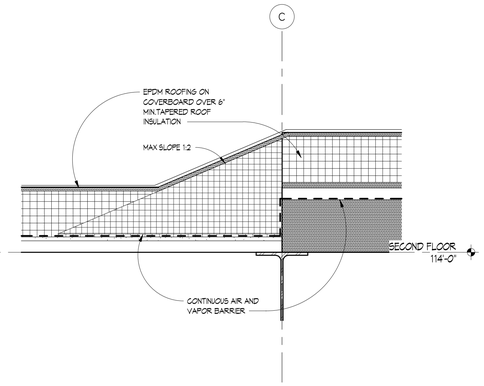
3 ROOF/WALL FLASHING
1 1/2" = 1'-0"



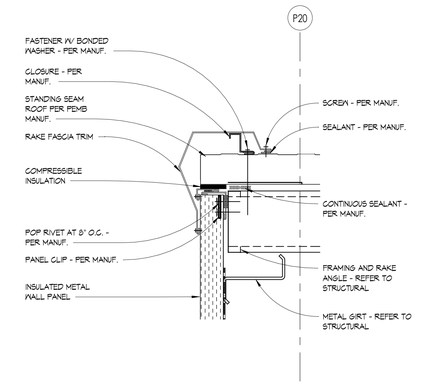
7 WALL TRANSITION AT GL-A
1 1/2" = 1'-0"



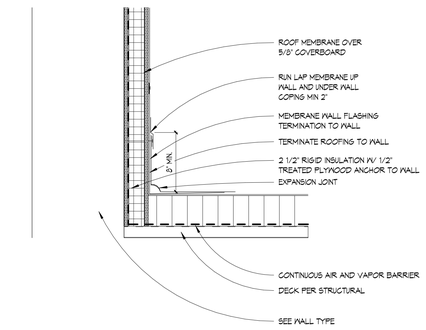
5 ROOF/WALL FLASHING - PEMB
1 1/2" = 1'-0"



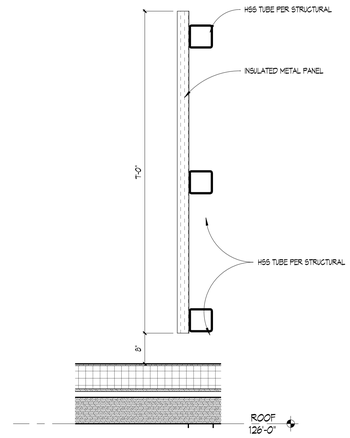
2 DETAIL
1 1/2" = 1'-0"



6 TRIM AT FIELD
1 1/2" = 1'-0"



4 ROOF/WALL FLASHING
1 1/2" = 1'-0"



1 ROOF SCREEN WALL
3/4" = 1'-0" PROVIDE THERMAL BREAK PLATE AT ROOF AND POST JOINT

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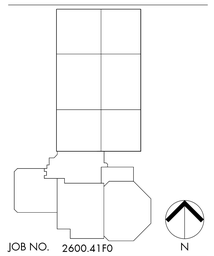
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

N

SHEET TITLE
ROOF DETAILS

SHEET NO.
A670

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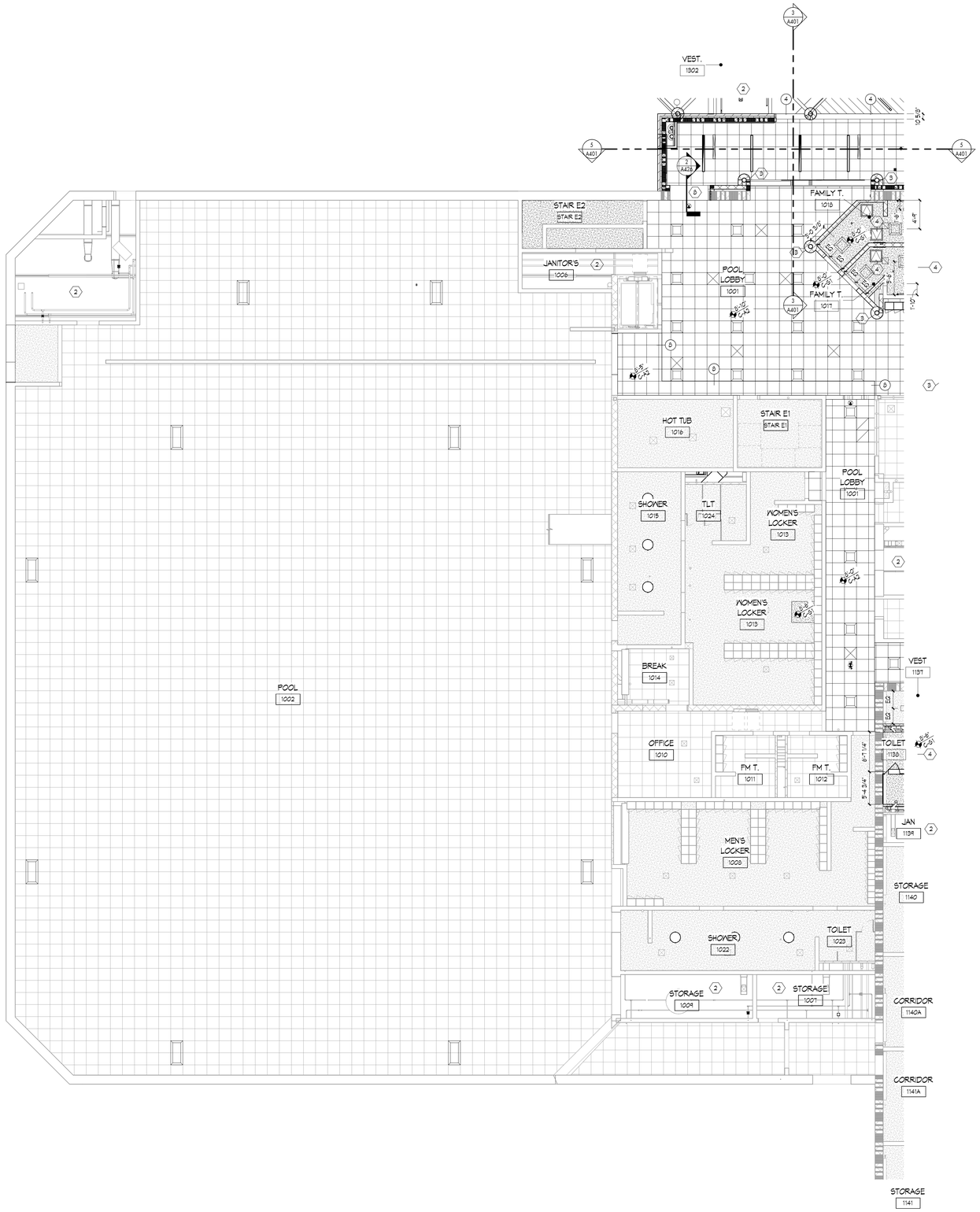

1 FIRST FLOOR REFLECTED CEILING PLAN - UNIT 1000

1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' GWB UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- B — BULKHEAD TYPE
- 2x4' SURFACE MOUNTED LIGHT FIXTURE
- 1x4' SURFACE MOUNTED LIGHT FIXTURE
- 2x2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"x12' SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2x4' RECESSED LIGHT FIXTURE
- 1x4' RECESSED LIGHT FIXTURE
- 2x2' RECESSED LIGHT FIXTURE
- 12"x12' RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SD — SMOKE DETECTOR
- S — PUBLIC ADDRESS SPEAKER
- S — SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M C — SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2'X2' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2x4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. G/H, CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18'X18' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO HAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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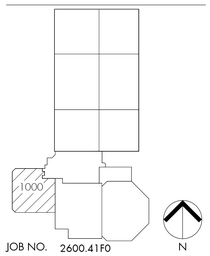
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1000

SHEET NO.

A701.a

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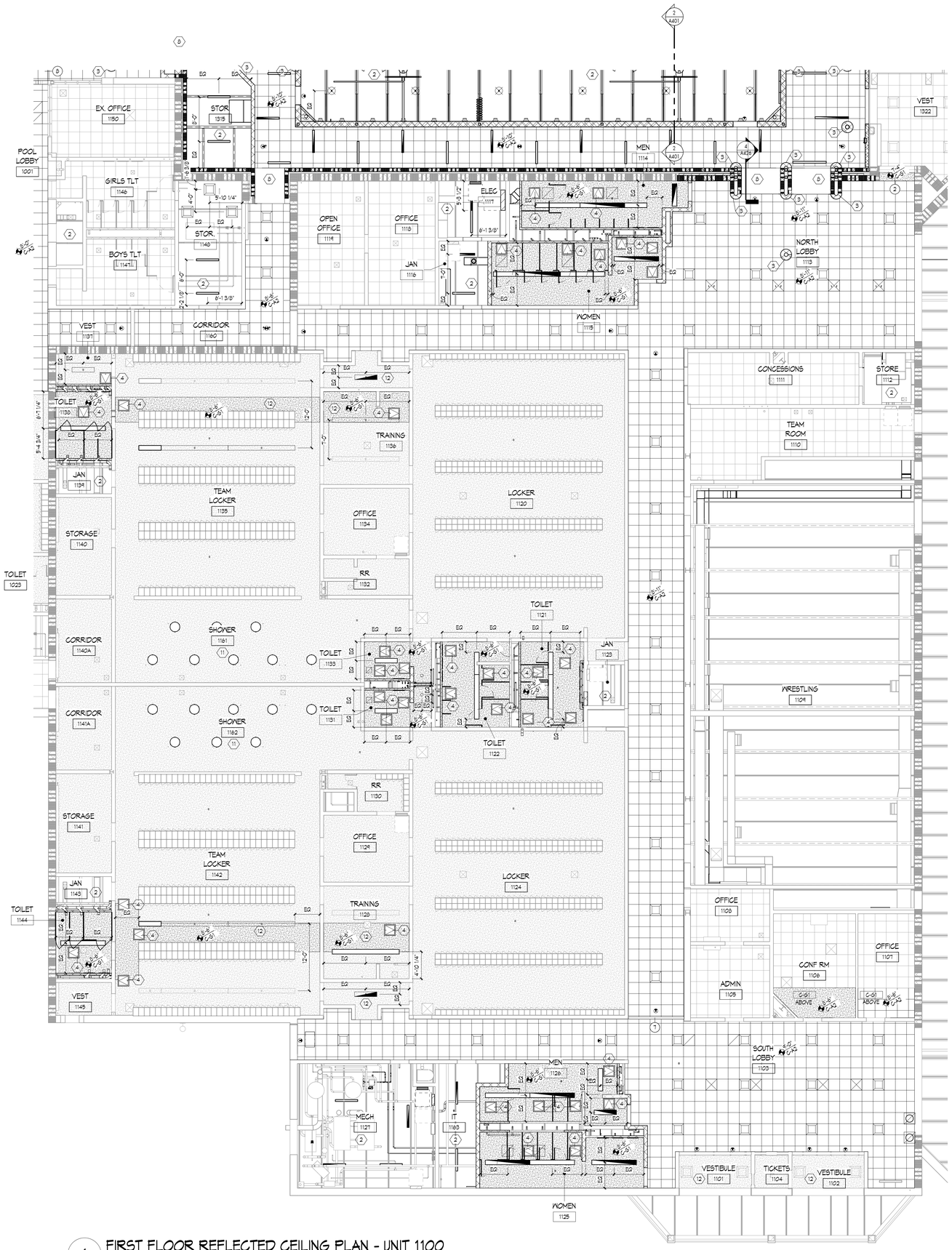

1 FIRST FLOOR REFLECTED CEILING PLAN - UNIT 1100
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A010 .
2. PROVIDE 'BULLNOSE' GWB UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR SYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APG SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APG-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- BULKHEAD TYPE
- 2x4 SURFACE MOUNTED LIGHT FIXTURE
- 1x4 SURFACE MOUNTED LIGHT FIXTURE
- 2x2 SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"x12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2x4 RECESSED LIGHT FIXTURE
- 1x4 RECESSED LIGHT FIXTURE
- 2x2 RECESSED LIGHT FIXTURE
- 12"x12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SD SMOKE DETECTOR
- S PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2'X2' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2'x4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED GONG. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18"X18" ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO HAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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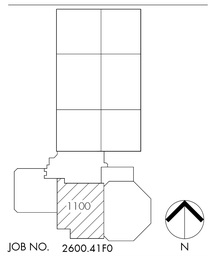

JOB NO. 2600.41F0

SHEET TITLE

REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1100

SHEET NO.

A701.b

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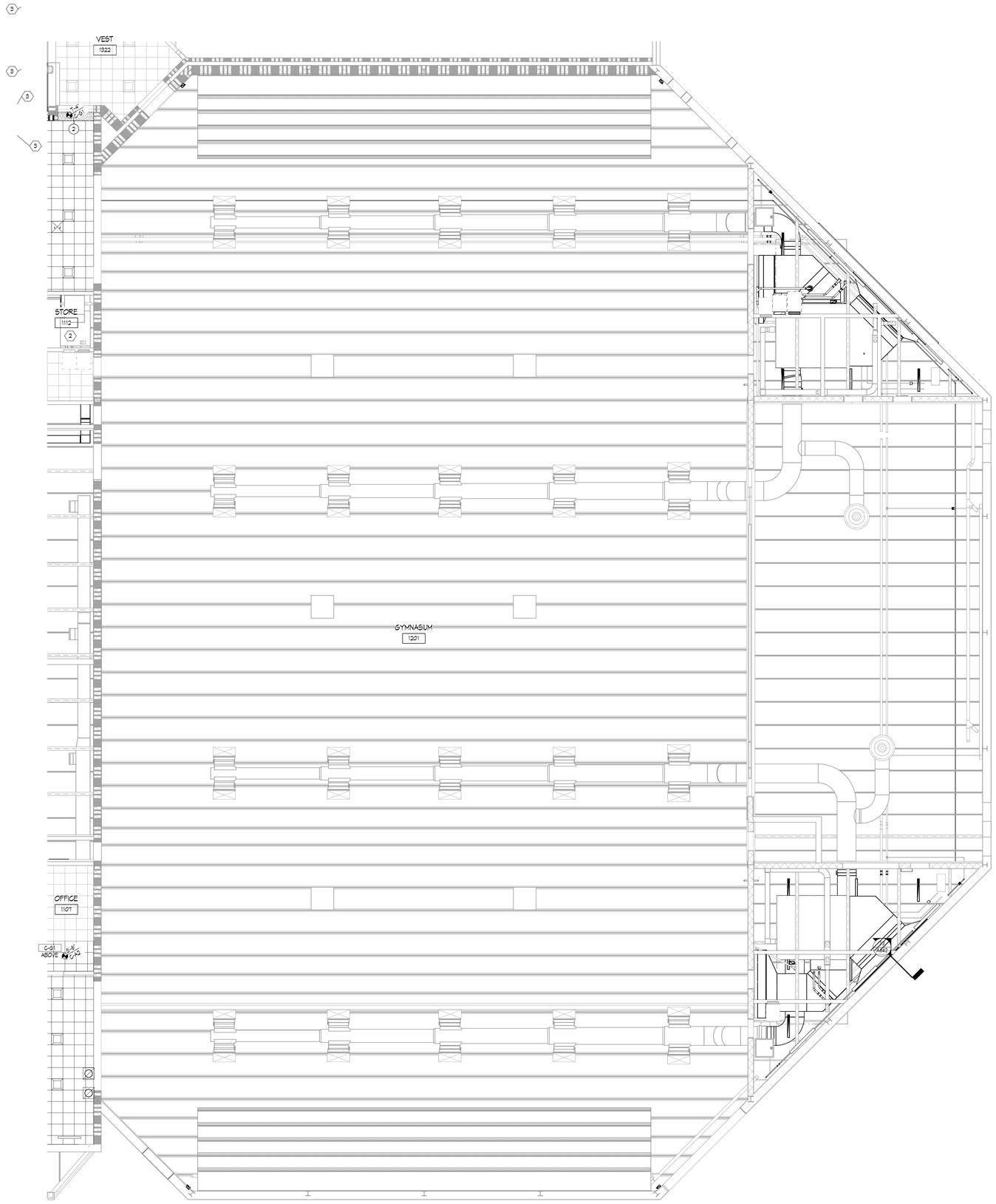

1 FIRST FLOOR REFLECTED CEILING PLAN - UNIT 1200
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR SYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APG SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APG-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (B) BULKHEAD TYPE
- 2X4' SURFACE MOUNTED LIGHT FIXTURE
- 1X4' SURFACE MOUNTED LIGHT FIXTURE
- 2X2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4' RECESSED LIGHT FIXTURE
- 1X4' RECESSED LIGHT FIXTURE
- 2X2' RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- (SD) SMOKE DETECTOR
- (S) PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M C SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE WALLS STOP BELOW THE DUCTS.
6. 2X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GM, CEILING MOUNT. SEE MEGH.
8. PAINTED REINFORCED GONG, LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18'X18' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO HAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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HOWELL
PUBLIC SCHOOLS

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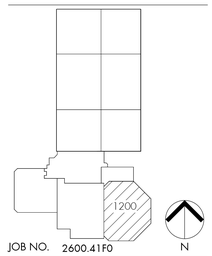

JOB NO. 2600.41F0

SHEET TITLE
REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1200

SHEET NO.
A701.c

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REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021. FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
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6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE NFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (B) BULKHEAD TYPE
- 2X4' SURFACE MOUNTED LIGHT FIXTURE
- 1X4' SURFACE MOUTNED LIGHT FIXTURE
- 2X2 SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4' RECESSED LIGHT FIXTURE
- 1X4' RECESSED LIGHT FIXTURE
- 2X2 RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- (SD) SMOKE DETECTOR
- (S) PUBLIC ADDRESS SPEAKER
- (S) SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- (M) SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2'X2' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE WALLS STOP BELOW THE DUCTS.
6. 2'X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GW, CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
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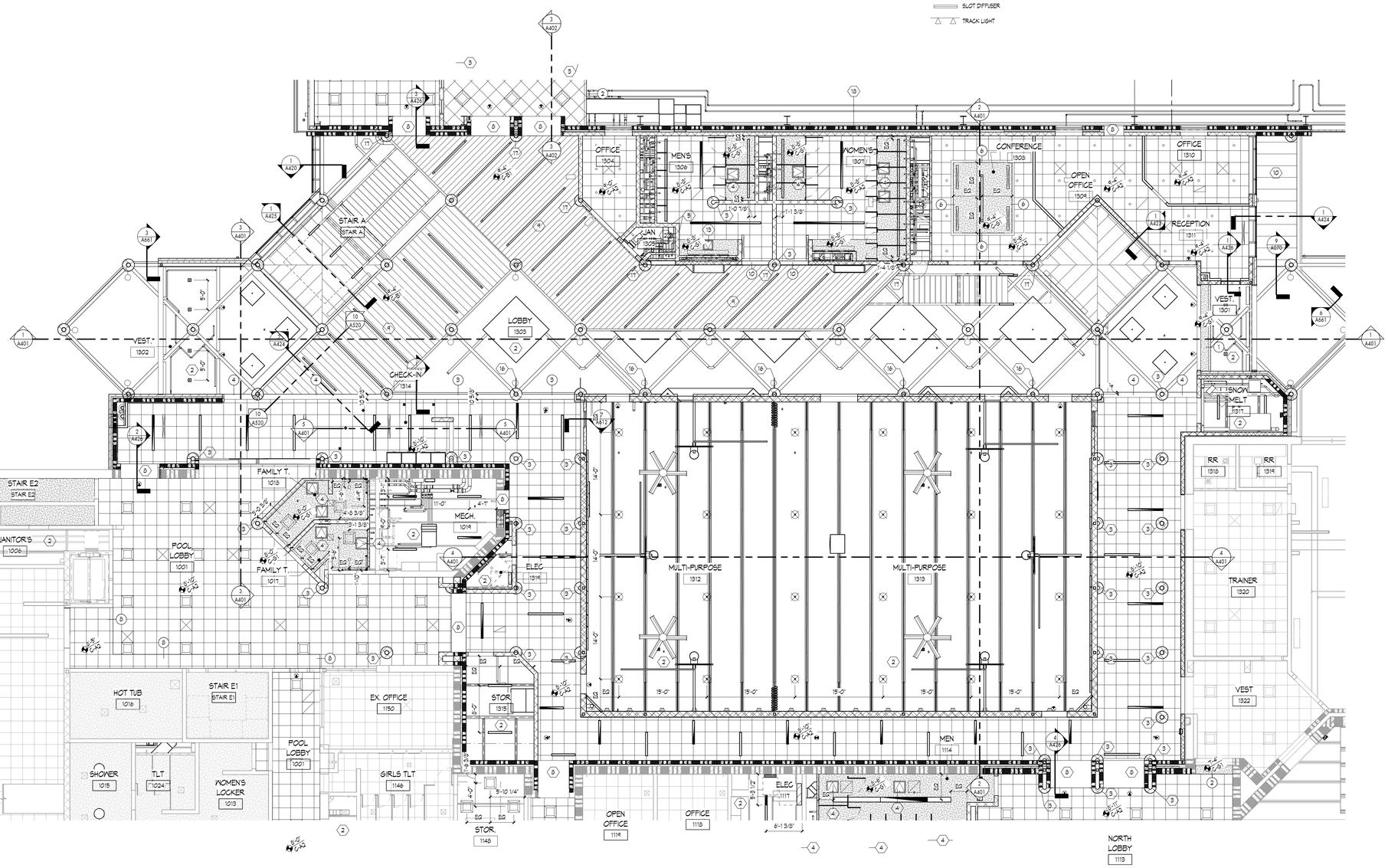
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.



1 FIRST FLOOR REFLECTED CEILING PLAN - UNIT 1300A
1/8" = 1'-0"

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

1300A

JOB NO. 2600.41F0

N

SHEET TITLE

REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1300A

SHEET NO.

A701.d

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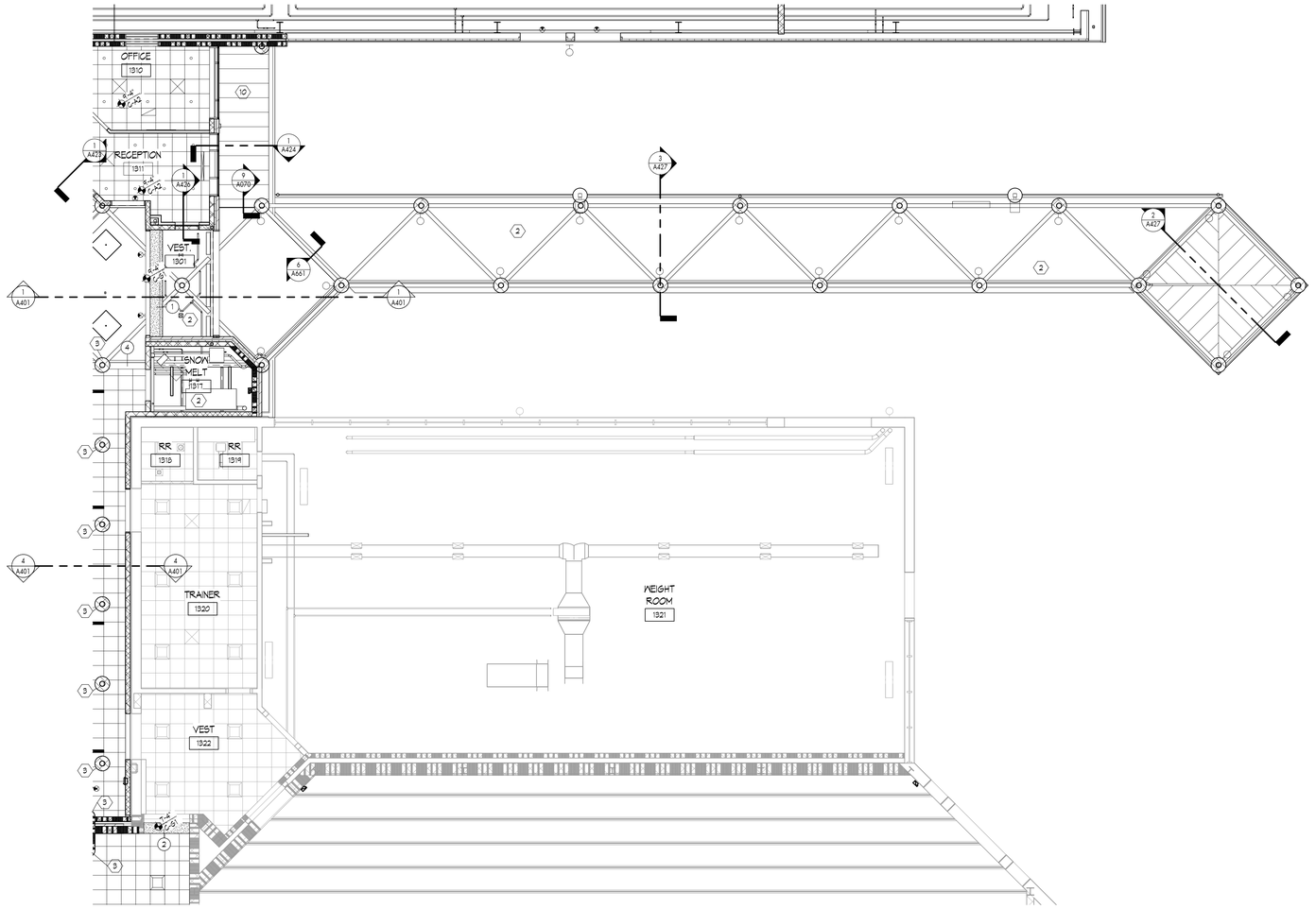

1 FIRST FLOOR REFLECTED CEILING PLAN - UNIT 1300B
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021. FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- BULKHEAD TYPE
- 2X4 SURFACE MOUNTED LIGHT FIXTURE
- 1X4 SURFACE MOUNTED LIGHT FIXTURE
- 2X2 SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4 RECESSED LIGHT FIXTURE
- 1X4 RECESSED LIGHT FIXTURE
- 2X2 RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SD SMOKE DETECTOR
- S PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB. CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18"X18" ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO MAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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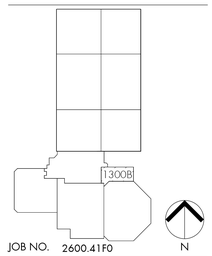

JOB NO. 2600.41F0

SHEET TITLE
REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1300B

SHEET NO.
A701.e

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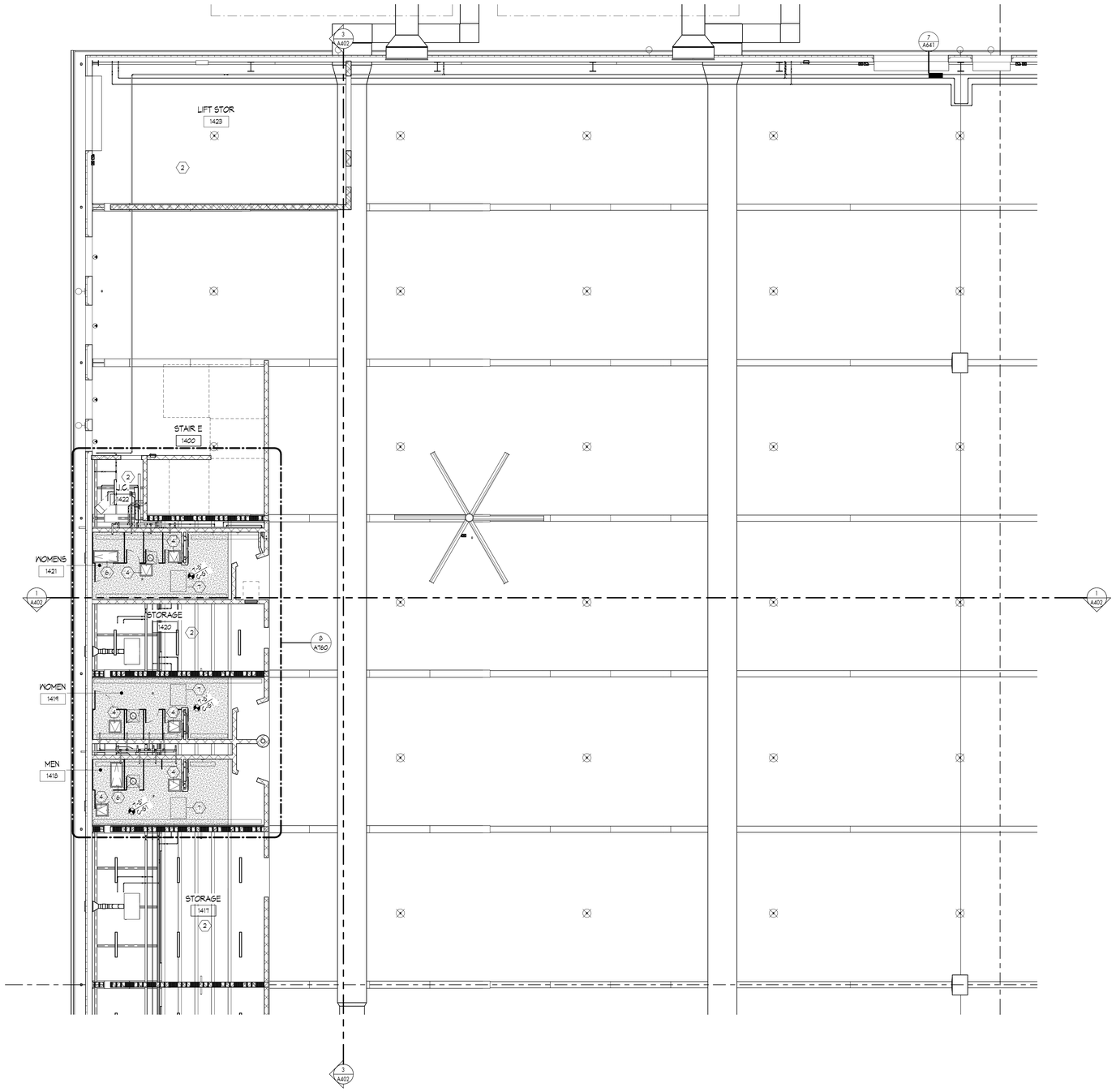

1 FIRST FLOOR REFLECTED CEILING PLAN - UNIT 1400A
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (x) BULKHEAD TYPE
- 2X4' SURFACE MOUNTED LIGHT FIXTURE
- 1X4' SURFACE MOUNTED LIGHT FIXTURE
- 2X2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12' SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4' RECESSED LIGHT FIXTURE
- 1X4' RECESSED LIGHT FIXTURE
- 2X2' RECESSED LIGHT FIXTURE
- 12"X12' RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SD SMOKE DETECTOR
- S PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE WALLS STOP BELOW THE DUCTS.
6. 2X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB, CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED GONG. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
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14. VIDEO SCREEN. REFER TO HAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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PUBLIC SCHOOLS

ISSUANCES	DATE
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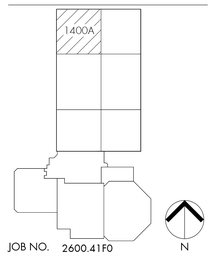

JOB NO. 2600.41F0

SHEET TITLE
REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1400A

SHEET NO.
A701.f

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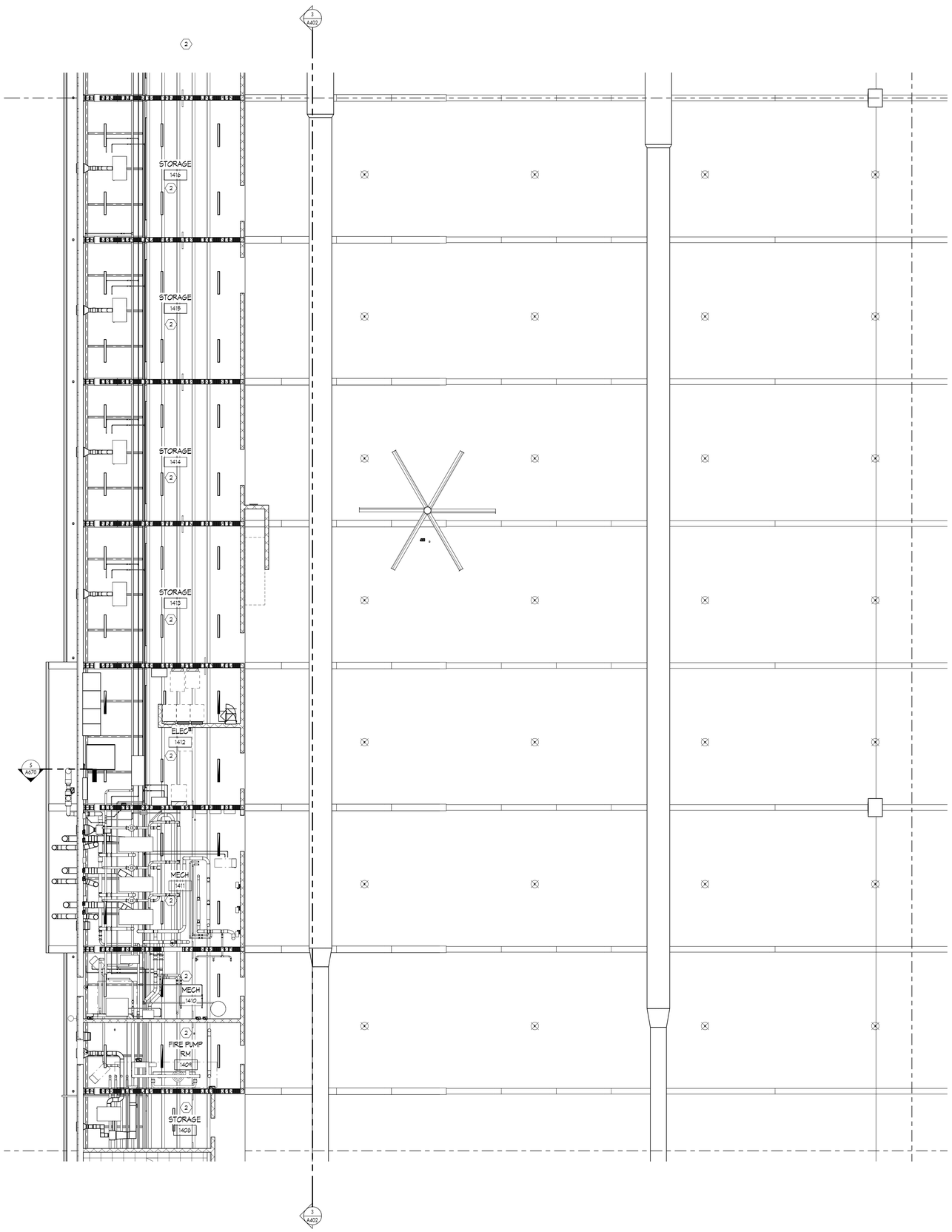

1 FIRST FLOOR REFLECTED CEILING PLAN - UNIT 1400C

1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' GWB UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR SYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- BULKHEAD TYPE
- 2X4' SURFACE MOUNTED LIGHT FIXTURE
- 1X4' SURFACE MOUNTED LIGHT FIXTURE
- 2X2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4' RECESSED LIGHT FIXTURE
- 1X4' RECESSED LIGHT FIXTURE
- 2X2' RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SD SMOKE DETECTOR
- S PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB. CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED GONS. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMNUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18"X18" ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO MAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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PUBLIC SCHOOLS

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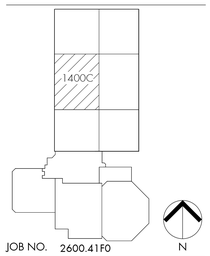

JOB NO. 2600.41F0

SHEET TITLE

REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1400C

SHEET NO.

A701.h

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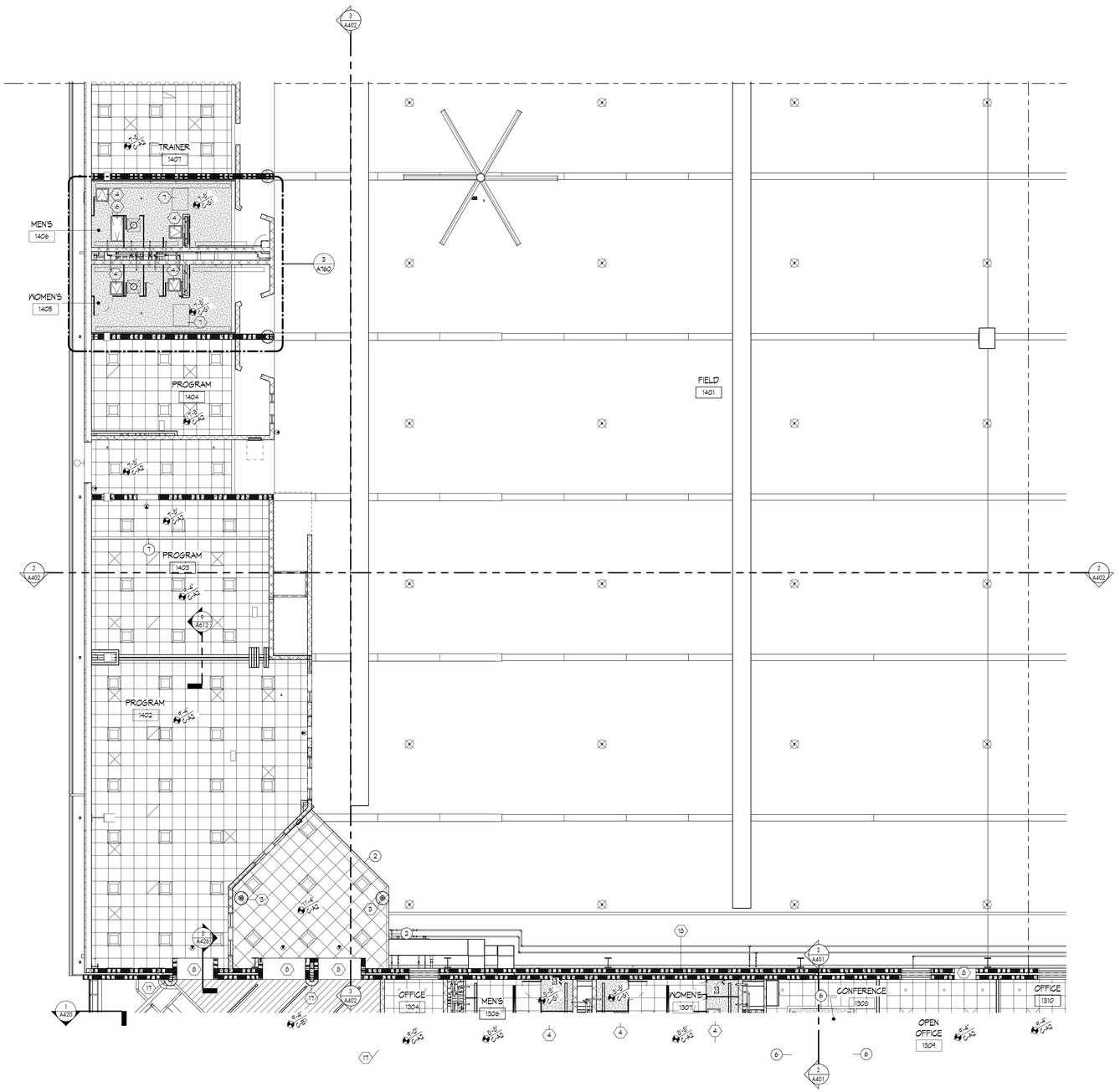

1 FIRST FLOOR REFLECTED CEILING PLAN - UNIT 1400E

1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021. FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' GWB UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
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7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
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9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (x) BULKHEAD TYPE
- 2X4 SURFACE MOUNTED LIGHT FIXTURE
- 1X4 SURFACE MOUNTED LIGHT FIXTURE
- 2X2 SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4 RECESSED LIGHT FIXTURE
- 1X4 RECESSED LIGHT FIXTURE
- 2X2 RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
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- S PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. G/H, CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID. SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMNUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
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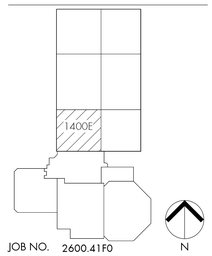

JOB NO. 2600.41F0

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SHEET TITLE

REFLECTED CEILING PLAN - FIRST FLOOR - UNIT 1400E

SHEET NO.

A701.k

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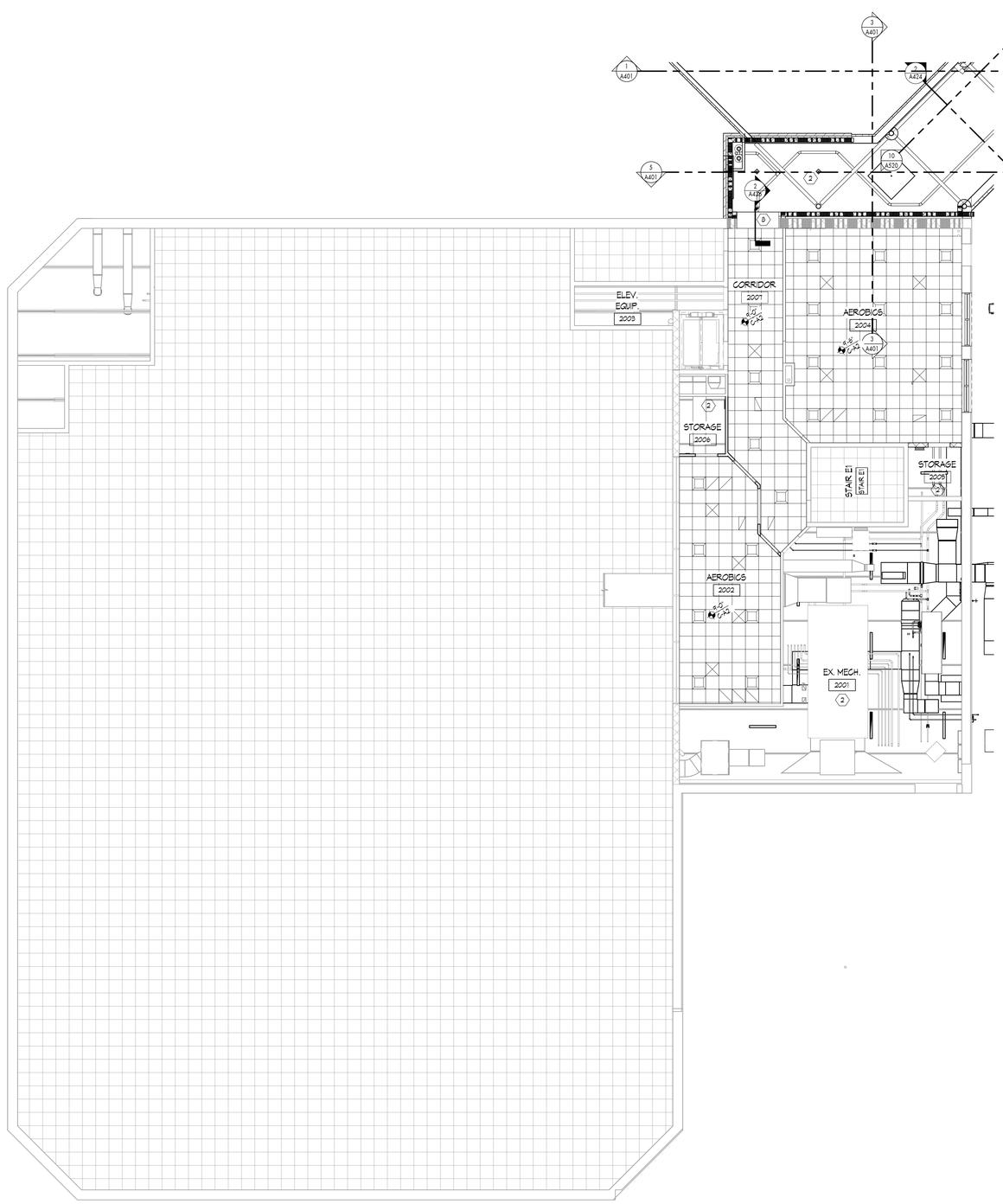

1 SECOND FLOOR REFLECTED CEILING PLAN - UNIT 2000
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR SYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (8) BULKHEAD TYPE
- 2X4 SURFACE MOUNTED LIGHT FIXTURE
- 1X4 SURFACE MOUNTED LIGHT FIXTURE
- 2X2 SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4 RECESSED LIGHT FIXTURE
- 1X4 RECESSED LIGHT FIXTURE
- 2X2 RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- (SD) SMOKE DETECTOR
- (S) PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB. CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED GONG. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18"X18" ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO HAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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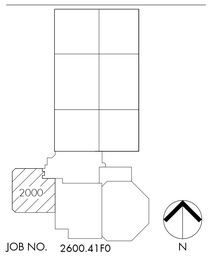
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
REFLECTED CEILING PLAN - SECOND FLOOR - UNIT 2000

SHEET NO.
A702.a

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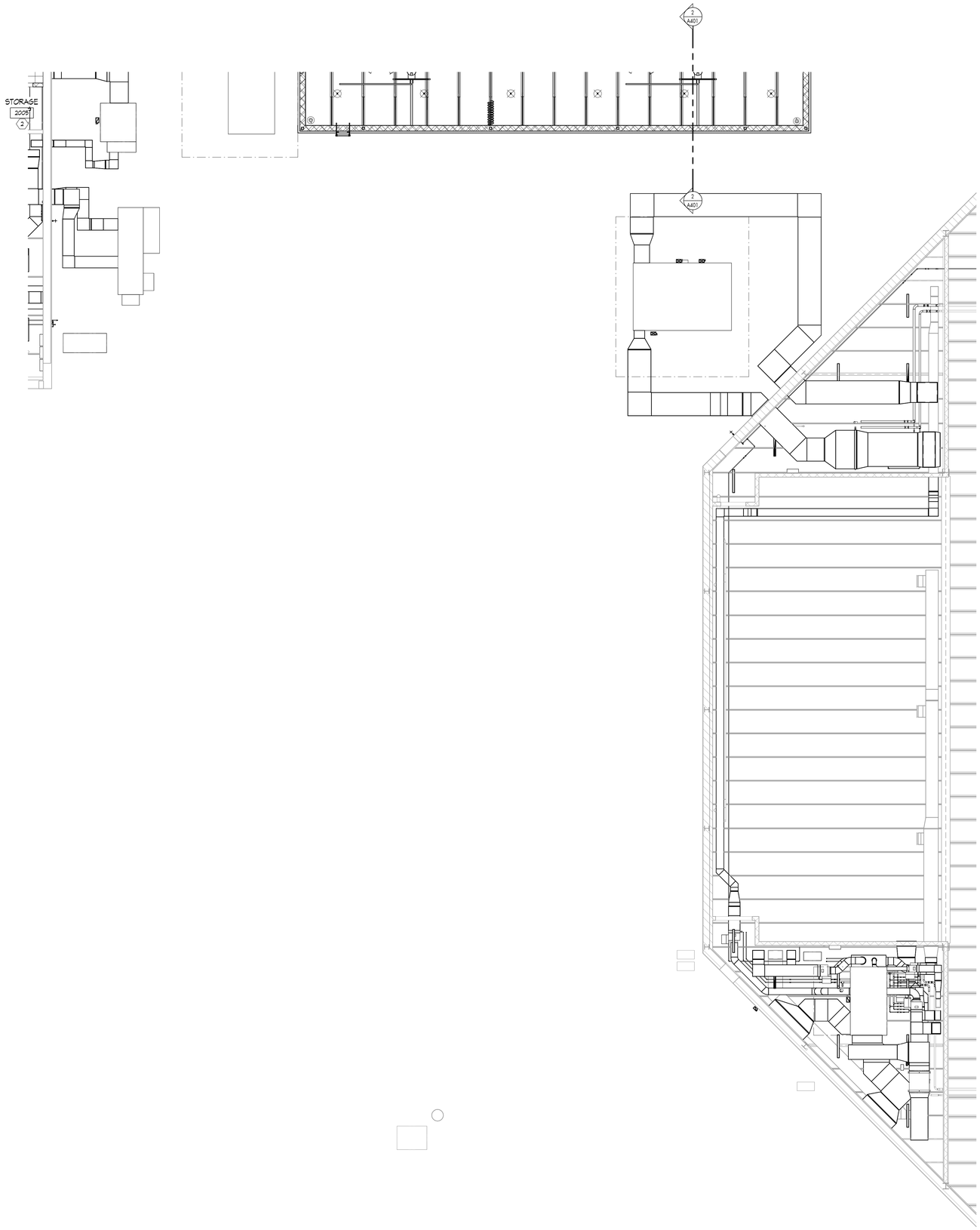

1 SECOND FLOOR REFLECTED CEILING PLAN - UNIT 2100
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' GWB UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (B) BULKHEAD TYPE
- 2X4 SURFACE MOUNTED LIGHT FIXTURE
- 1X4 SURFACE MOUNTED LIGHT FIXTURE
- 2X2 SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4 RECESSED LIGHT FIXTURE
- 1X4 RECESSED LIGHT FIXTURE
- 2X2 RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- (SD) SMOKE DETECTOR
- (S) PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB. CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMNUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18"X18" ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO HAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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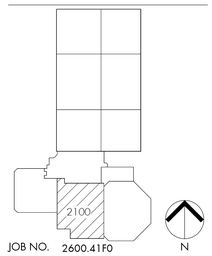

JOB NO. 2600.41F0

SHEET TITLE

REFLECTED CEILING PLAN - SECOND FLOOR - UNIT 2100

SHEET NO.

A702.b

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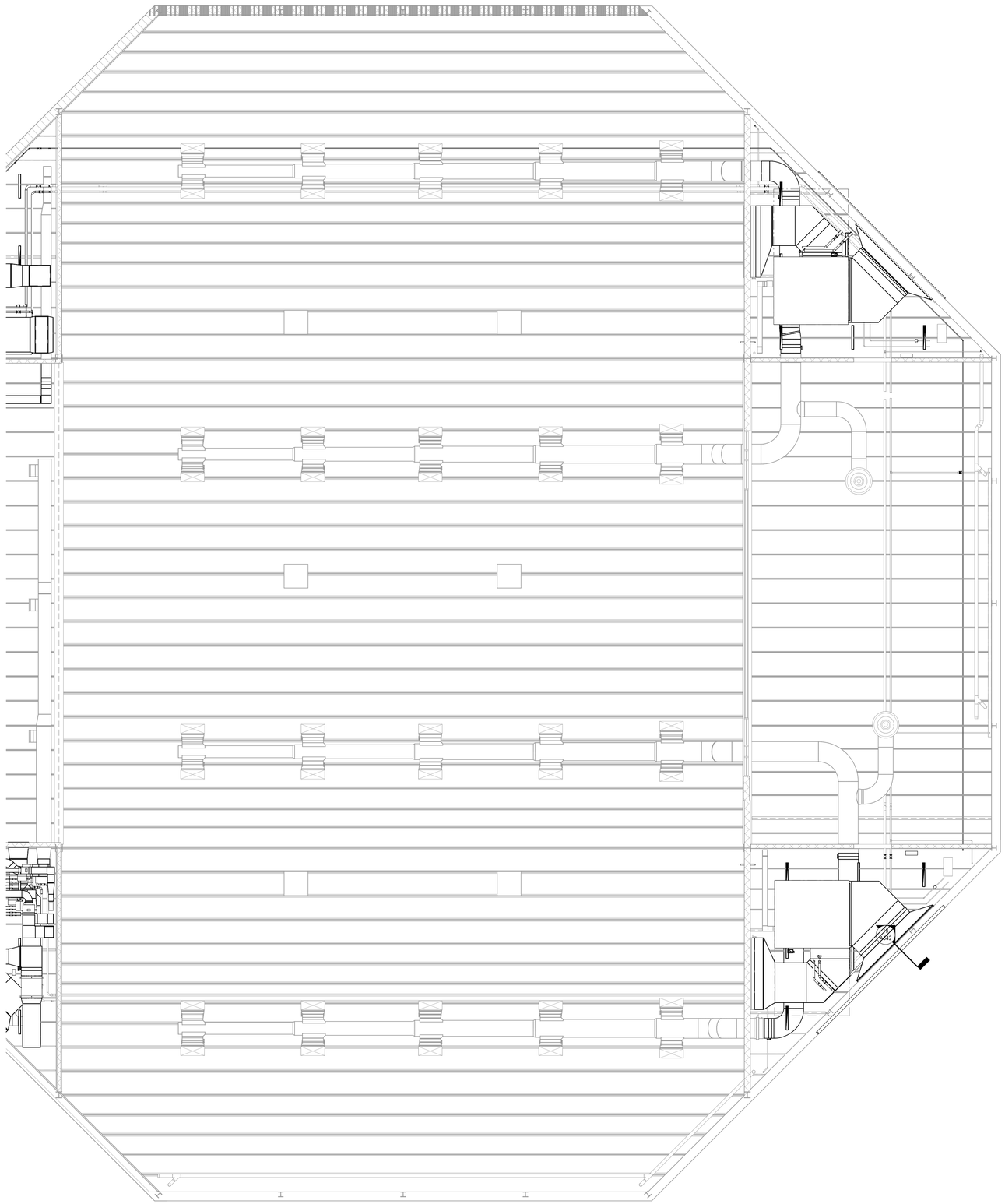

1 SECOND FLOOR REFLECTED CEILING PLAN - UNIT 2200
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (B) BULKHEAD TYPE
- 2X4 SURFACE MOUNTED LIGHT FIXTURE
- 1X4 SURFACE MOUNTED LIGHT FIXTURE
- 2X2 SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4 RECESSED LIGHT FIXTURE
- 1X4 RECESSED LIGHT FIXTURE
- 2X2 RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- (SD) SMOKE DETECTOR
- (S) PUBLIC ADDRESS SPEAKER
- [S] SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- (M)C SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB. CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMNUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18"X18" ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO HAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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HOWELL PUBLIC SCHOOLS

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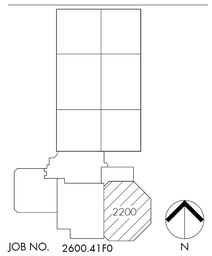

JOB NO. 2600.41F0

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SHEET TITLE

REFLECTED CEILING PLAN - SECOND FLOOR - UNIT 2200

SHEET NO.

A702.c

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REFLECTED CEILING PLAN GENERAL NOTES

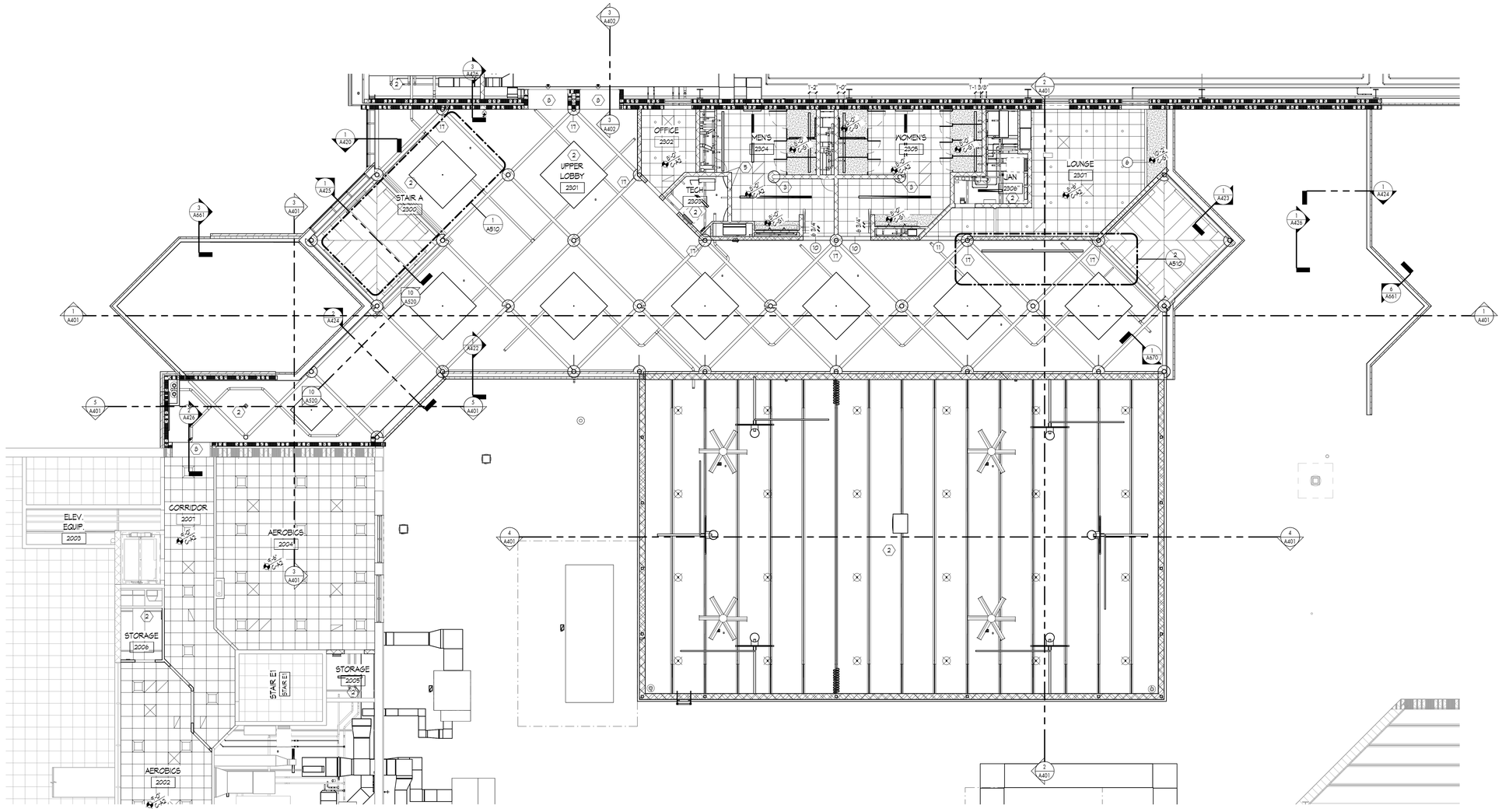
1. FOR CEILINGS REFER TO SHEET A021. FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE "BULLNOSE" CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2'X2' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE, WALLS STOP BELOW THE DUCTS.
6. 2'x4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB, CEILING MOUNT, SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMNUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18'X18' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO HAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL) REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A811.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

REFLECTED CEILING LEGEND

- BULKHEAD TYPE
- 2'x4' SURFACE MOUNTED LIGHT FIXTURE
- 1'x4' SURFACE MOUNTED LIGHT FIXTURE
- 2'x2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"x12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2'x4' RECESSED LIGHT FIXTURE
- 1'x4' RECESSED LIGHT FIXTURE
- 2'x2' RECESSED LIGHT FIXTURE
- 12"x12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SD SMOKE DETECTOR
- S PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT



1 SECOND FLOOR REFLECTED CEILING PLAN - UNIT 2300A
1/8" = 1'-0"

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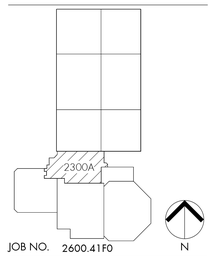

JOB NO. 2600.41F0

SHEET TITLE

REFLECTED CEILING PLAN - SECOND FLOOR - UNIT 2300

SHEET NO.

A702.d

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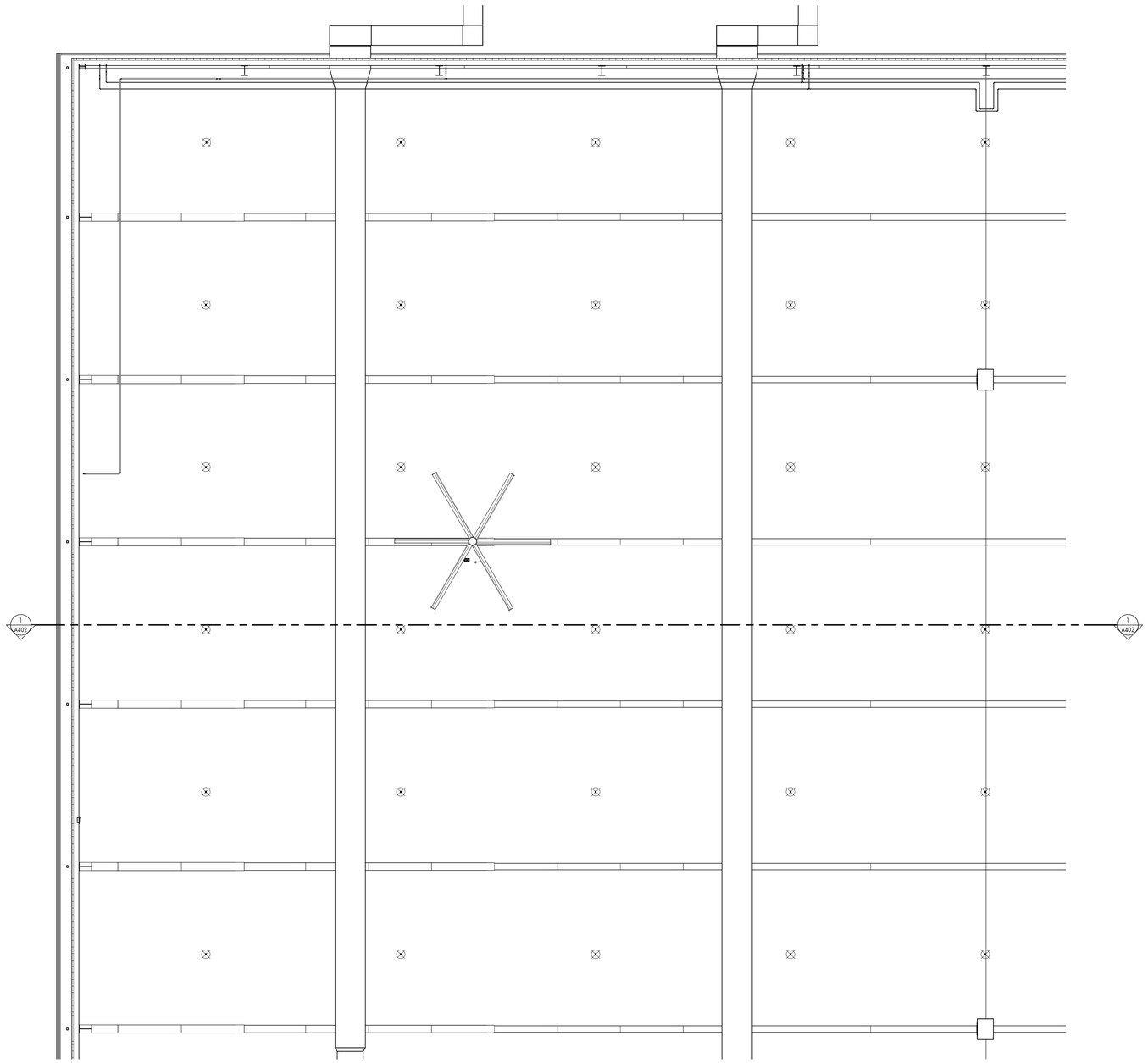

1 SECOND FLOOR REFLECTED CEILING PLAN - UNIT 2400A
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
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7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (B) BULKHEAD TYPE
- 2X4 SURFACE MOUNTED LIGHT FIXTURE
- 1X4 SURFACE MOUNTED LIGHT FIXTURE
- 2X2 SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4 RECESSED LIGHT FIXTURE
- 1X4 RECESSED LIGHT FIXTURE
- 2X2 RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- (SD) SMOKE DETECTOR
- (S) PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2X4 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GJH, CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED GONG. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18"X18" ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO HAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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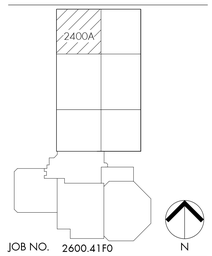
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE

REFLECTED CEILING PLAN - SECOND FLOOR - UNIT 2400A

SHEET NO.

A702.f

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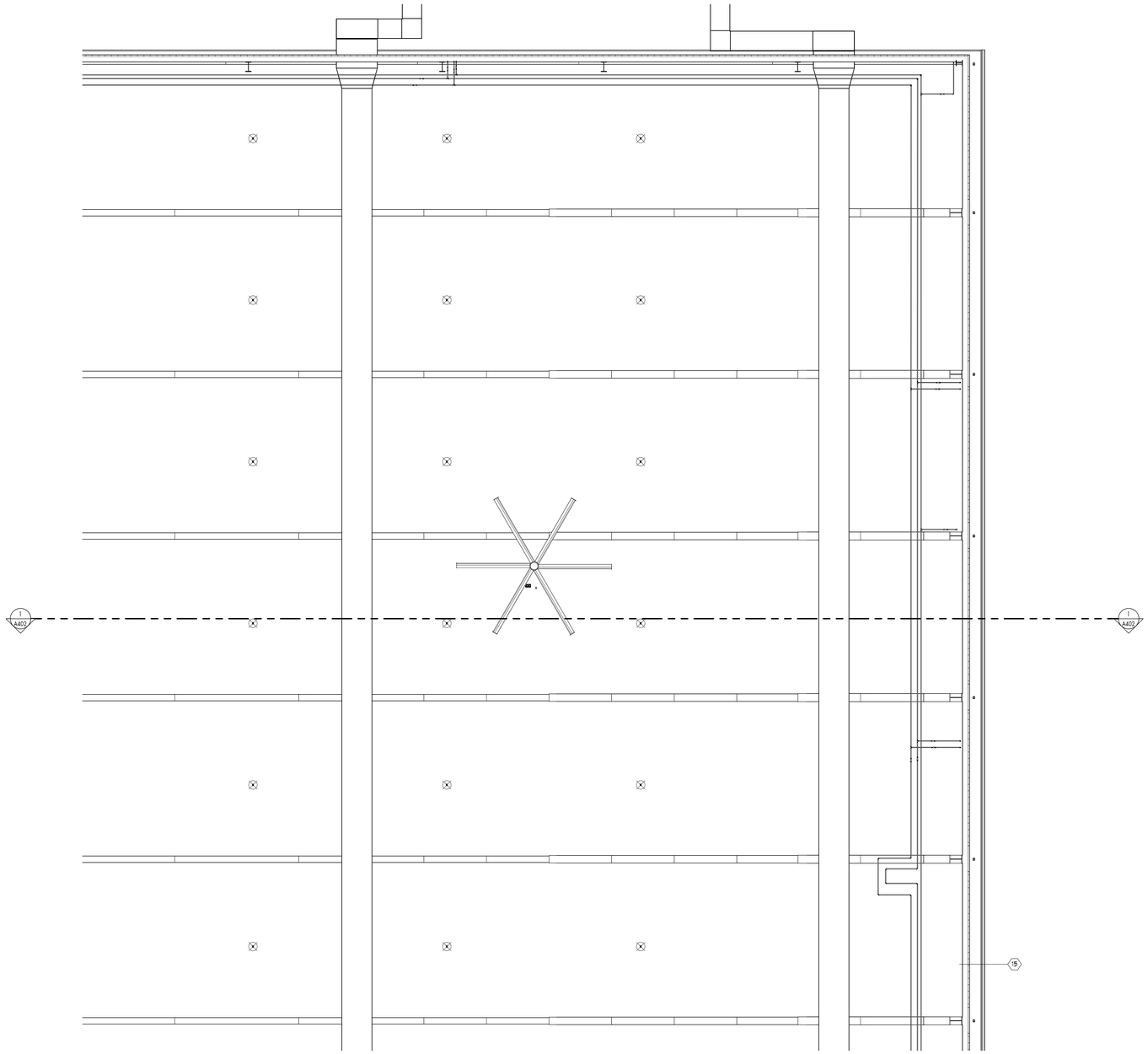

1 SECOND FLOOR REFLECTED CEILING PLAN - UNIT 2400B
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (B) BULKHEAD TYPE
- 2X4' SURFACE MOUNTED LIGHT FIXTURE
- 1X4' SURFACE MOUNTED LIGHT FIXTURE
- 2X2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4' RECESSED LIGHT FIXTURE
- 1X4' RECESSED LIGHT FIXTURE
- 2X2' RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- (SD) SMOKE DETECTOR
- (S) PUBLIC ADDRESS SPEAKER
- (S) SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- (M) SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. GOLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWH, CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18"X18" ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO HAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTAGHMENTS. SEE DETAIL ON A611.
17. GOLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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HOWELL
PUBLIC SCHOOLS

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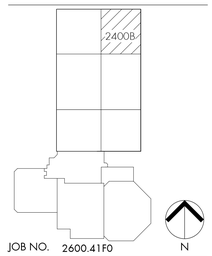
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
REFLECTED CEILING PLAN
-SECOND FLOOR - UNIT 2400B

SHEET NO.
A702.g

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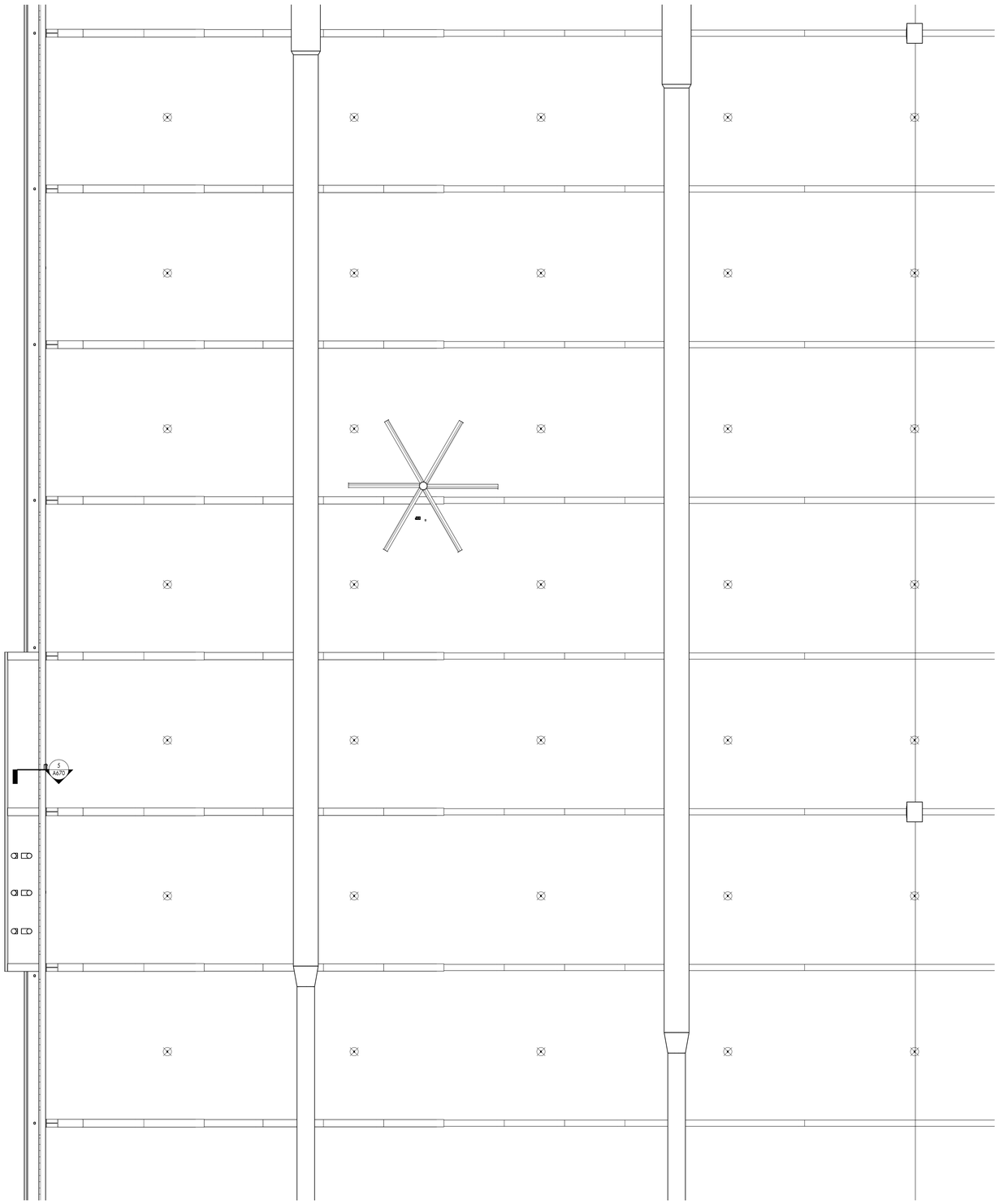

1 SECOND FLOOR REFLECTED CEILING PLAN - UNIT 2400C
1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (a) BULKHEAD TYPE
- 2X4' SURFACE MOUNTED LIGHT FIXTURE
- 1X4' SURFACE MOUNTED LIGHT FIXTURE
- 2X2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4' RECESSED LIGHT FIXTURE
- 1X4' RECESSED LIGHT FIXTURE
- 2X2' RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- (SD) SMOKE DETECTOR
- (S) PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB. CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMNUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18"X18" ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO MAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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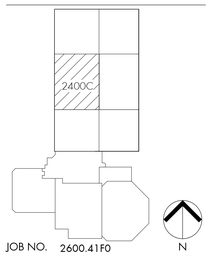

JOB NO. 2600.41F0 N

SHEET TITLE
REFLECTED CEILING PLAN - SECOND FLOOR - UNIT 2400C

SHEET NO.
A702.h

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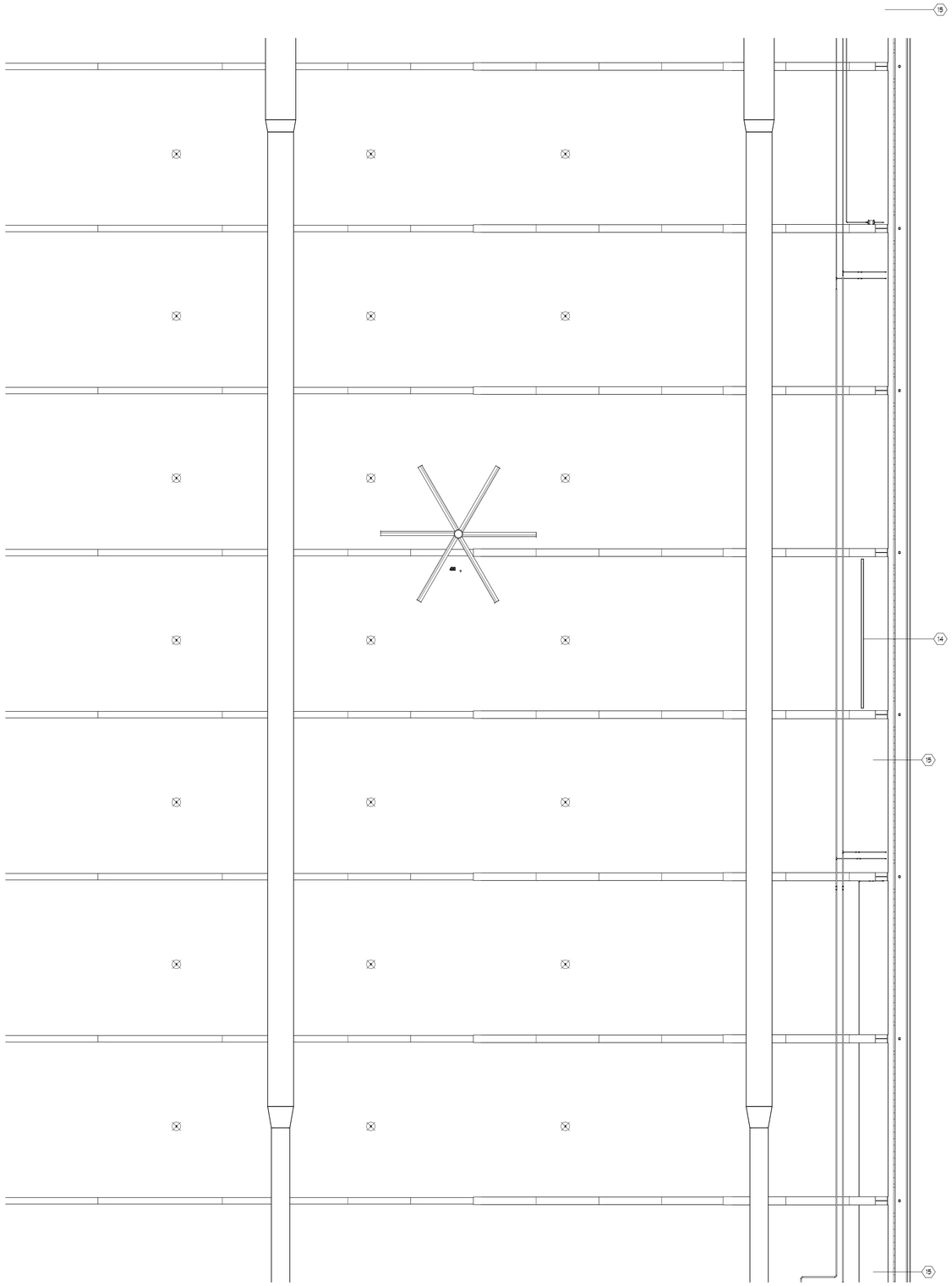

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (a) BULKHEAD TYPE
- 2X4' SURFACE MOUNTED LIGHT FIXTURE
- 1X4' SURFACE MOUNTED LIGHT FIXTURE
- 2X2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12' SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4' RECESSED LIGHT FIXTURE
- 1X4' RECESSED LIGHT FIXTURE
- 2X2' RECESSED LIGHT FIXTURE
- 12"X12' RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SD SMOKE DETECTOR
- S PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2'X2' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2'X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB. CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMNUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18'X18' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO A4V FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

1 SECOND FLOOR REFLECTED CEILING PLAN - UNIT 2400D
1/8" = 1'-0"

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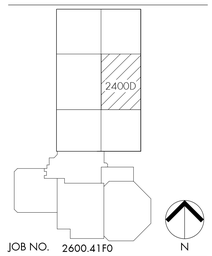

JOB NO. 2600.41F0

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SHEET TITLE

REFLECTED CEILING PLAN - SECOND FLOOR - UNIT 2400D

SHEET NO.

A702.i

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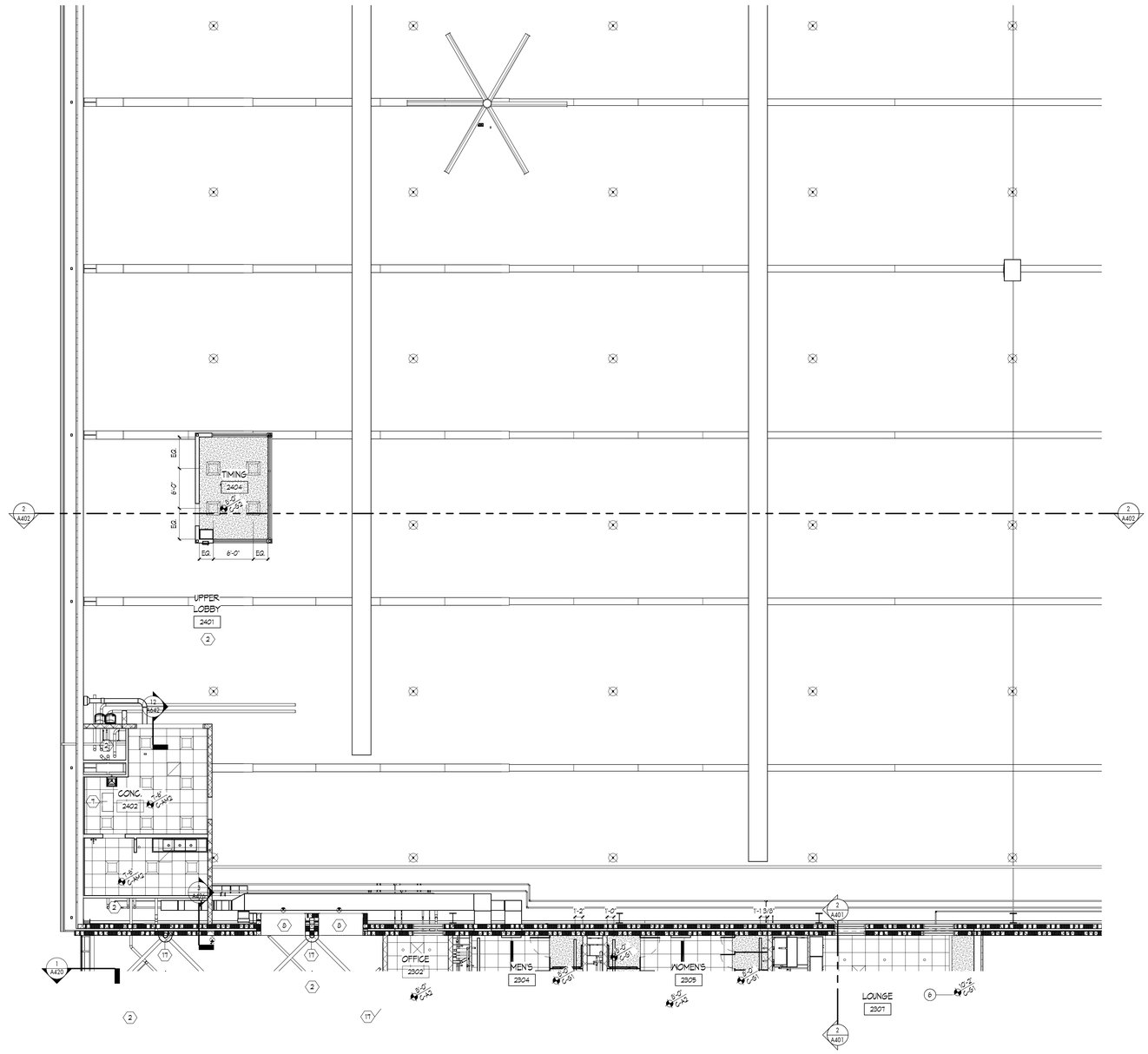

1 SECOND FLOOR REFLECTED CEILING PLAN - UNIT 2400E

1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- BULKHEAD TYPE
- 2X4 SURFACE MOUNTED LIGHT FIXTURE
- 1X4 SURFACE MOUNTED LIGHT FIXTURE
- 2X2 SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12" SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4 RECESSED LIGHT FIXTURE
- 1X4 RECESSED LIGHT FIXTURE
- 2X2 RECESSED LIGHT FIXTURE
- 12"X12" RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SD SMOKE DETECTOR
- S PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2X2 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2X4 ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB. CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18"X18" ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO MAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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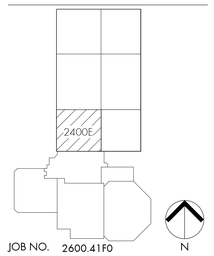
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE

REFLECTED CEILING PLAN - SECOND FLOOR - UNIT 2400E

SHEET NO.

A702.k

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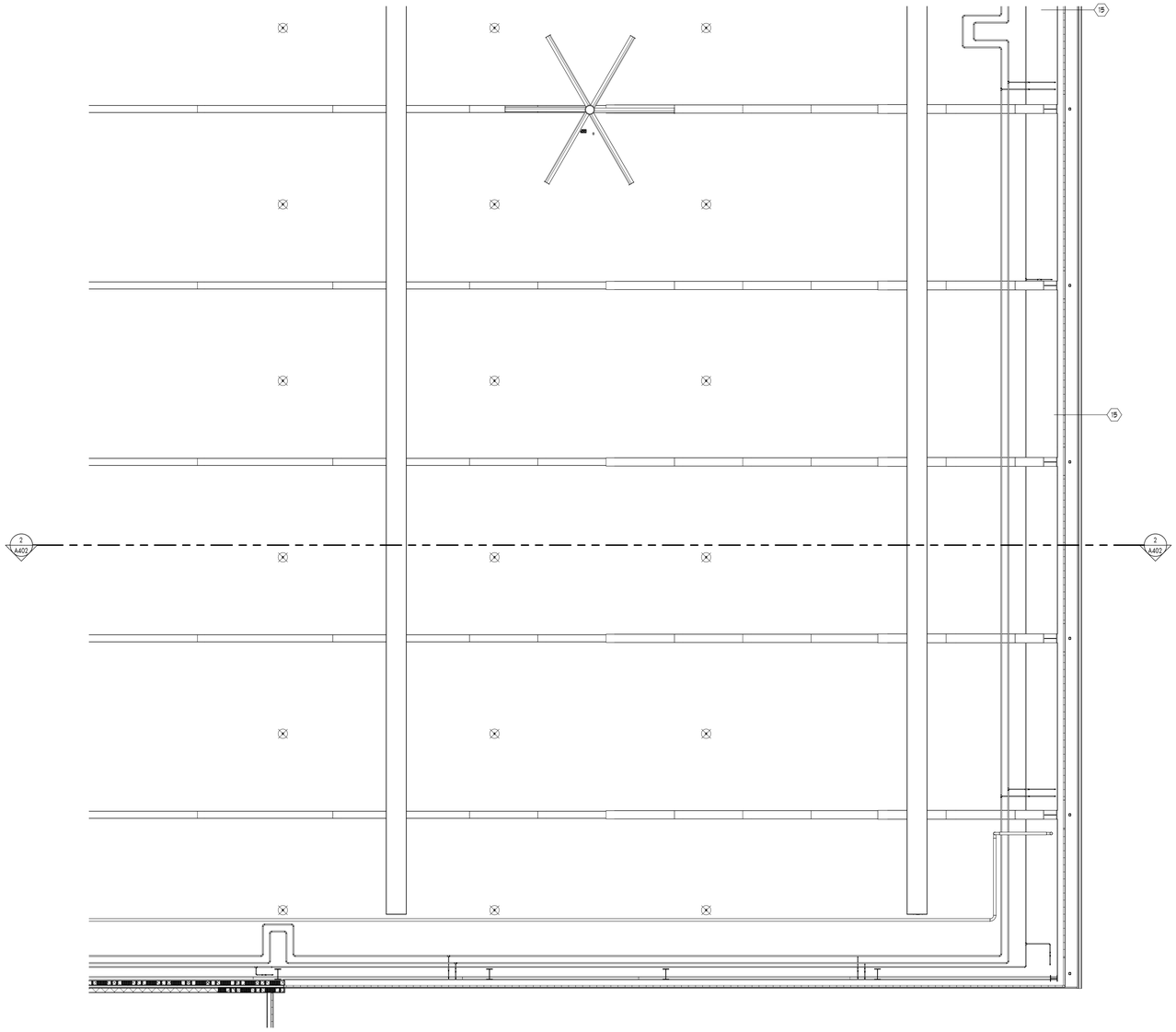

1 SECOND FLOOR REFLECTED CEILING PLAN - UNIT 2400F

1/8" = 1'-0"

REFLECTED CEILING PLAN GENERAL NOTES

1. FOR CEILINGS REFER TO SHEET A021 FOR BULKHEAD DETAILS REFER TO SHEET A070 .
2. PROVIDE 'BULLNOSE' CMU UP TO FINISH CEILINGS, TYPICAL AT ALL OUTSIDE CORNERS OF WALLS.
3. REFER TO CODE COMPLIANCE PLANS FOR VERTICAL FIRE RESISTANT RATINGS AT WALLS AND HORIZONTAL FIRE RESISTANT RATINGS AT CEILINGS.
4. PROVIDE RATED SEALANT AND/ OR FIRESTOPPING AT ALL PENETRATIONS AND OPENING THROUGH ALL EXISTING AND NEW CORRIDOR WALLS AND FIRE RATED PARTITIONS.
5. COORDINATE EXACT LOCATION REQUIRED FOR GYP. CEILING 24" x 24" ACCESS PANELS INDICATED WITH OTHER TRADES. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
6. PROVIDE ACOUSTICAL SEALANT AND/ OR STOPPING AT ALL PENETRATIONS THROUGH NON-FIRE RATED WALLS.
7. △ REFER TO PAINT SPECIFICATIONS FOR COLOR INFORMATION.
8. REFER TO ACOUSTICAL PANEL CEILING SPECIFICATIONS FOR TILE INFORMATION.
9. FACTORY FINISH ALL EXPOSED GRID ON ALL SURFACE. REFER TO APC SPECIFICATIONS.
10. IF CONTROL JOINTS ARE NOT INDICATED IN GYPSUM BOARD CEILINGS, PROVIDE AS RECOMMENDED.
11. ACOUSTICAL PANEL CEILINGS SHALL BE APC-1, U.N.O.
12. SEE COLOR LAYOUT PLANS FOR CEILING PAINT COLORS. GYP CEILINGS PAINTED P-1, U.N.O.
13. REPAINT ALL EXISTING DUCTWORK IN THE EXISTING FIELDHOUSE.
14. PAINT ALL EXPOSED NEW AND EXISTING DUCTS, GRILLS AND PIPING PER FINISH SCHEDULE AND SPECIFICATIONS.

REFLECTED CEILING LEGEND

- (a) BULKHEAD TYPE
- 2X4' SURFACE MOUNTED LIGHT FIXTURE
- 1X4' SURFACE MOUNTED LIGHT FIXTURE
- 2X2' SURFACED / PENDANT MOUNTED LIGHT FIXTURE
- 12"X12' SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- SURFACE / PENDANT MOUNTED LIGHT FIXTURE
- 2X4' RECESSED LIGHT FIXTURE
- 1X4' RECESSED LIGHT FIXTURE
- 2X2' RECESSED LIGHT FIXTURE
- 12"X12' RECESSED LIGHT FIXTURE
- RECESSED LIGHT FIXTURE
- CEILING MOUNTED EXIT SIGN
- INDUSTRIAL FLUORESCENT
- COVE LIGHT FIXTURE
- SD SMOKE DETECTOR
- S PUBLIC ADDRESS SPEAKER
- S SOUND SYSTEM SPEAKER
- DROP CORD RECEPTACLE
- CEILING FAN
- SPRINKLER HEAD
- SUPPLY DIFFUSER
- M SUPPLY DIFFUSER
- RETURN / EXHAUST GRILLE
- SLOT DIFFUSER
- TRACK LIGHT

REFLECTED CEILING PLAN KEYNOTES

1. PAINTED EXPOSED STRUCTURE.
2. EXPOSED CEILING.
3. COLUMN BLOCK UP TO CEILING. PROVIDE METAL EDGE TRIM AT PERIMETER.
4. 2'X2' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
5. DUCTWORK ABOVE. WALLS STOP BELOW THE DUCTS.
6. 2'X4' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
7. GWB. CEILING MOUNT. SEE MECH.
8. PAINTED REINFORCED CONC. LID, SEE STRUC.
9. PAINT ALL DUCTWORK ABOVE.
10. ALUMINUM SOFFIT.
11. REPAIR CEILING AS NEEDED FOR SHOWER REPLACEMENT. COORDINATE WITH MEP.
12. REPAIR CEILING AS NEEDED FOR NEW CONTROL VALVES, CAT CABLES ETC. COORDINATE WITH ELECTRICAL, TECHNOLOGY AND MECHANICAL.
13. 18'X18' ACCESS PANEL- RATED FOR WET ENVIRONMENT.
14. VIDEO SCREEN. REFER TO MAV FOR MOUNTING HT. REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
15. SCOREBOARDS (3 TOTAL). REFER TO ELECTRICAL FOR POWER. FINAL LOCATION TO BE SELECTED UPON OWNER APPROVAL & PEMB BRACING LAYOUT.
16. BANNER BY OWNER. PROVIDE ATTACHMENTS. SEE DETAIL ON A611.
17. COLUMN BLOCK UP TO ROOF DECK.
18. CLOCK BY OWNER. REFER TO ELECTRICAL FOR POWER. LOCATION TO BE FINALIZED UPON OWNER APPROVAL.

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HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

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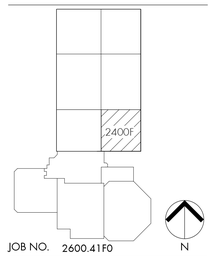

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JOB NO. 2600.41F0

SHEET TITLE

REFLECTED CEILING PLAN - SECOND FLOOR - UNIT 2400F

SHEET NO.

A702.m

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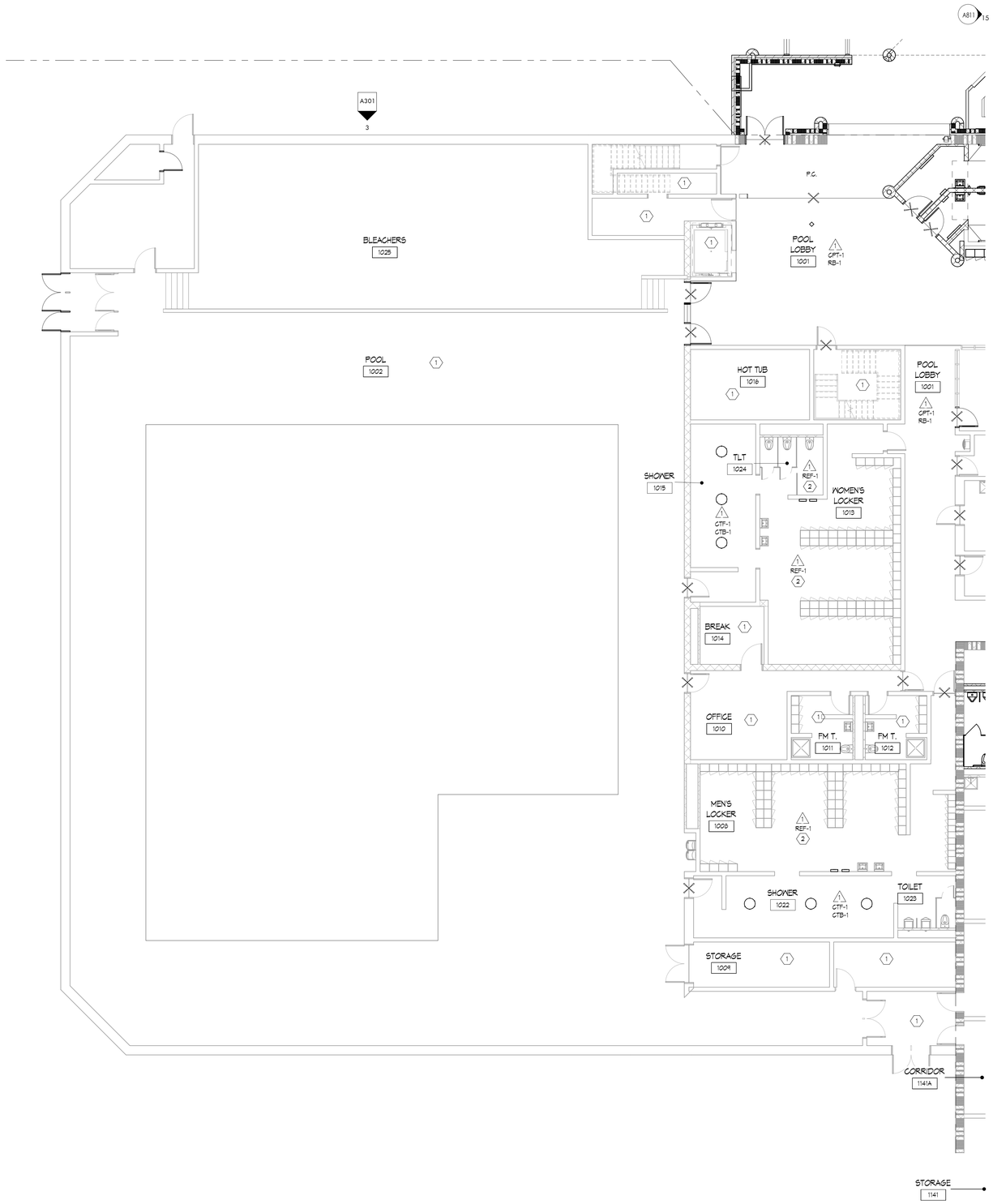

1 FIRST FLOOR COLOR LAYOUT PLAN - UNIT 1000
1/8" = 1'-0"

COLOR LAYOUT PLAN GENERAL NOTES

1. PAINT ALL NEW HOLLOW METAL DOORS AND B.I. FRAMES, SEMI-GLOSS P-5 UNLESS NOTED OTHERWISE. DO NOT PAINT ALUMINUM DOOR FRAMES.
2. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES AND BAFFLE LOCATIONS.
3. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
4. DO NOT PAINT EXISTING UNPAINTED CLAY MASONRY WALLS. U.N.O.
5. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10'.
6. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
7. REFER TO COLOR PLANS FOR PAINT COLORS AT EXPOSED CEILING, MECHANICAL & STRUCTRIAL ELEMENTS.
8. VERIFY LETTERING FONT AND SIZES WITH OWNER.
9. PROVIDE CAULK WHERE HARD SURFACE FLOORING EDGES MEET DOOR / BORROWED LITE FRAMES.
10. VERIFY THAT ALL COURT MARKINGS MEET MHSAA STANDARDS WITH OWNER.

COLOR LAYOUT PLAN LEGEND

A	PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
#	CERAMIC TILE FLOOR, SEE SPECIFICATION SECTION 093013
#	CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
CTF-#	CERAMIC TILE FLOOR.
CPT-#	CARPET TILE, SEE SPECIFICATION SECTION 096813
LVT-#	LUXURY VINYL TILE, SEE SPECIFICATION SECTION 096519
MT	BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP
P.C.	POLISHED CONCETE FLOOR, (NOTE GRIND LEVEL)
RB-#	RUBBER BASE, SEE SPECIFICATION SECTION 096513
REF-#	RESINOUS EPOXY FLOORING
RAF-#	RESILIENT ATHLETIC FLOOR
RSTA-#	RUBBER STAIR ACCESSORIES, SEE SPECIFICATION SECTION 096513
RT	RESILIENT TRANSITION, SEE SPECIFICATION SECTION 096513
S.C.	SEALED CONCRETE FLOOR
	CONTROL JOINT
	PRODUCT EXTENTS WITH MATERIAL INDICATED
WP	WORK POINT
	FLOORING TRANSITION
	MATERIAL INSTALL DIRECTION
A / B	CHANGE OF MATERIAL

COLOR LAYOUT PLAN KEYNOTES

1. EXISTING FINISHES TO REMAIN.
2. INTEGRAL RESILIENT EPOXY BASE (4").
3. ALUMINUM CORNER GUARD, 8'-0"H - MOUNT 5'A.F.F.
4. METAL TRIM AT EXPOSED EDGES OF WALL TILE.
5. EXPOSED CEILING AND PIPING TO BE PAINTED P-1. SEE SPEC 099124.
6. DUCTWORK TO BE PAINTED P-5. SEE SPEC 099124.
7. HOLLOW METAL DOORS AND FRAMES TO BE PAINTED P-3.
8. FABRIC WRAPPED ACOUSTICAL PANELS, 8'-0" TO 10'-0".
9. FABRIC WRAPPED ACOUSTICAL PANELS, 24'-0" TO 28'-0".
10. WATERJET JET LOGO BLOCK 'H' CENTERED WITH COLUMN. SEE SPEC SECTION 096813.
11. EXISTING DUCTWORK TO BE PAINTED P-3. SEE SPEC 099124.
12. EXISTING GRILLE COVERS TO BE PAINTED P-5. SEE SPEC 099124.

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HOWELL COMMUNITY CENTER

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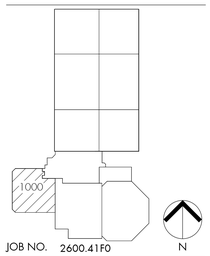
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR COLOR LAYOUT PLAN - UNIT 1000

SHEET NO.
A711.1

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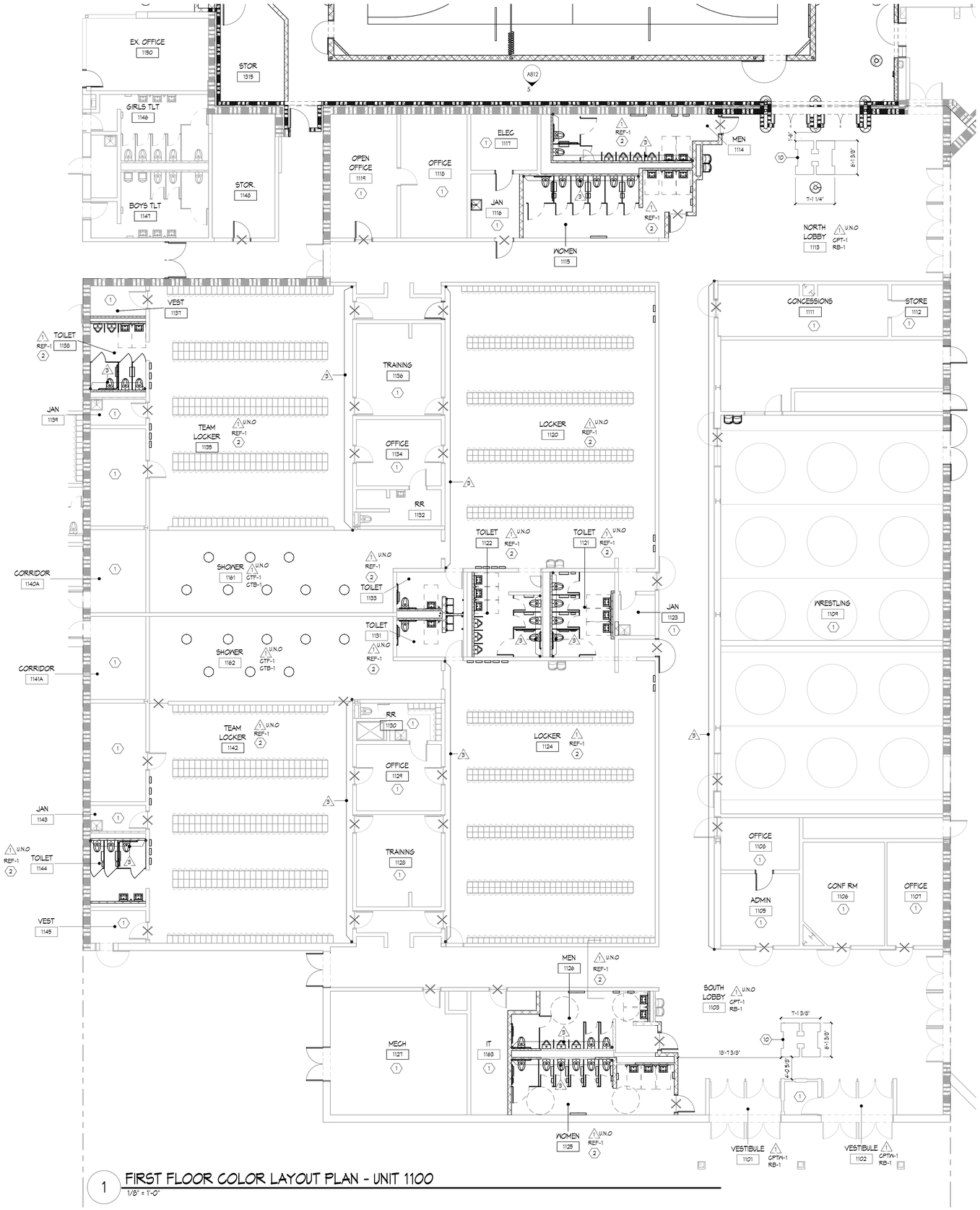

1 FIRST FLOOR COLOR LAYOUT PLAN - UNIT 1100
1/8" = 1'-0"

COLOR LAYOUT PLAN GENERAL NOTES

1. PAINT ALL NEW HOLLOW METAL DOORS AND B.L. FRAMES, SEMI-GLOSS P-5 UNLESS NOTED OTHERWISE. DO NOT PAINT ALUMINUM DOOR FRAMES.
2. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES AND BAFFLE LOCATIONS.
3. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
4. DO NOT PAINT EXISTING UNPAINTED CLAY MASONRY WALLS. U.N.O.
5. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10'.
6. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
7. REFER TO COLOR PLANS FOR PAINT COLORS AT EXPOSED CEILING, MECHANICAL & STRUCTRUAL ELEMENTS.
8. VERIFY LETTERING FONT AND SIZES WITH OWNER.
9. PROVIDE CAULK WHERE HARD SURFACE FLOORING EDGES MEET DOOR / BORROWED LITE FRAMES.
10. VERIFY THAT ALL COURT MARKINGS MEET MHSAA STANDARDS WITH OWNER.

COLOR LAYOUT PLAN LEGEND

A	PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
B	CERAMIC TILE FLOOR, SEE SPECIFICATION SECTION 093013
B	CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
CTF-#	CERAMIC TILE FLOOR.
CPT-#	CARPET TILE, SEE SPECIFICATION SECTION 096813
LVT-#	LUXURY VINYL TILE, SEE SPECIFICATION SECTION 096519
MT	BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP
P.C.	POLISHED CONCRETE FLOOR, (NOTE GRIND LEVEL)
RB-#	RUBBER BASE, SEE SPECIFICATION SECTION 096513
REF-#	RESINOUS EPOXY FLOORING
RAF-#	RESILIENT ATHLETIC FLOOR
RSTA-#	RUBBER STAIR ACCESSORIES, SEE SPECIFICATION SECTION 096513
RT	RESILIENT TRANSITION, SEE SPECIFICATION SECTION 096513
S.C.	SEALED CONCRETE FLOOR
	CONTROL JOINT
	PRODUCT EXTENTS WITH MATERIAL INDICATED
WP	WORK POINT
	FLOORING TRANSITION
	MATERIAL INSTALL DIRECTION
A \ B	CHANGE OF MATERIAL

COLOR LAYOUT PLAN KEYNOTES

1. EXISTING FINISHES TO REMAIN.
2. INTEGRAL RESILIENT EPOXY BASE (4").
3. ALUMINUM CORNER GUARD, 5'-0"H - MOUNT 5"A.F.F.
4. METAL TRIM AT EXPOSED EDGES OF WALL TILE.
5. EXPOSED CEILING AND PIPING TO BE PAINTED P-7. SEE SPEC 099124.
6. DUCTWORK TO BE PAINTED P-5. SEE SPEC 099124.
7. HOLLOW METAL DOORS AND FRAMES TO BE PAINTED P-3.
8. FABRIC WRAPPED ACOUSTICAL PANELS, 5'-0" TO 10'-0".
9. FABRIC WRAPPED ACOUSTICAL PANELS, 24'-0" TO 28'-0".
10. WATERJET JET LOGO BLOCK "H" CENTERED WITH COLUMN. SEE SPEC SECTION 098813.
11. EXISTING DUCTWORK TO BE PAINTED P-3. SEE SPEC 099124.
12. EXISTING GRILLE COVERS TO BE PAINTED P-5. SEE SPEC 099124.

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HOWELL PUBLIC SCHOOLS

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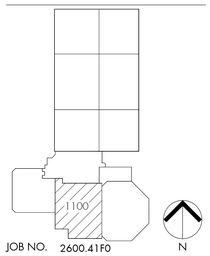
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

FIRST FLOOR COLOR LAYOUT PLAN - UNIT 1100

SHEET NO.

A711.2

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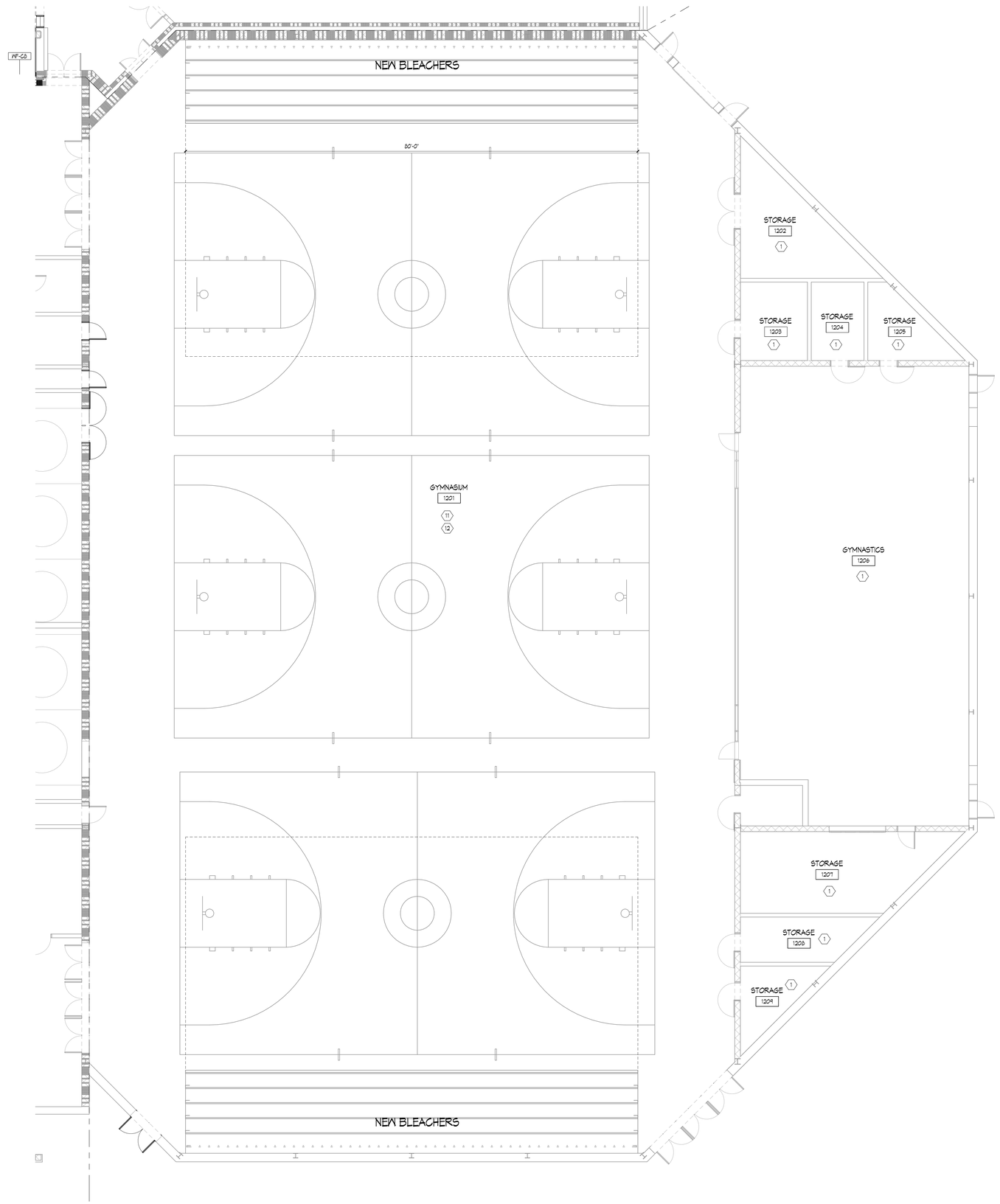

COLOR LAYOUT PLAN GENERAL NOTES

1. PAINT ALL NEW HOLLOW METAL DOORS AND B.L. FRAMES, SEMI-GLOSS P-5 UNLESS NOTED OTHERWISE. DO NOT PAINT ALUMINUM DOOR FRAMES.
2. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES AND BAFFLE LOCATIONS.
3. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
4. DO NOT PAINT EXISTING UNPAINTED CLAY MASONRY WALLS. U.N.O.
5. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10'.
6. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
7. REFER TO COLOR PLANS FOR PAINT COLORS AT EXPOSED CEILING, MECHANICAL & STRUCTRUAL ELEMENTS.
8. VERIFY LETTERING FONT AND SIZES WITH OWNER.
9. PROVIDE CAULK WHERE HARD SURFACE FLOORING EDGES MEET DOOR / BORROWED LITE FRAMES.
10. VERIFY THAT ALL COURT MARKINGS MEET MHSAA STANDARDS WITH OWNER.

COLOR LAYOUT PLAN LEGEND

A	PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
B	CERAMIC TILE FLOOR, SEE SPECIFICATION SECTION 093013
B	CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
CTF-#	CERAMIC TILE FLOOR.
CPT-#	CARPET TILE, SEE SPECIFICATION SECTION 096813
LVT-#	LUXURY VINYL TILE, SEE SPECIFICATION SECTION 096516
MT	BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP
P.C.	POLISHED CONCETE FLOOR, (NOTE GRIND LEVEL)
RB-#	RUBBER BASE, SEE SPECIFICATION SECTION 096513
REF-#	RESINOUS EPOXY FLOORING
RAF-#	RESILIENT ATHLETIC FLOOR
RSTA-#	RUBBER STAIR ACCESSORIES, SEE SPECIFICATION SECTION 096513
RT	RESILIENT TRANSITION, SEE SPECIFICATION SECTION 096513
S.C.	SEALED CONCRETE FLOOR
CJ	CONTROL JOINT
	PRODUCT EXTENTS WITH MATERIAL INDICATED
WP	WORK POINT
	FLOORING TRANSITION
	MATERIAL INSTALL DIRECTION
A | B	CHANGE OF MATERIAL

COLOR LAYOUT PLAN KEYNOTES

1. EXISTING FINISHES TO REMAIN.
2. INTEGRAL RESILIENT EPOXY BASE (4").
3. ALUMNUM CORNER GUARD, 5'-0"H - MOUNT 5'A.F.F.
4. METAL TRIM AT EXPOSED EDGES OF WALL TILE.
5. EXPOSED CEILING AND PIPING TO BE PAINTED P-1. SEE SPEC 099124.
6. DUCTWORK TO BE PAINTED P-5. SEE SPEC 099124.
7. HOLLOW METAL DOORS AND FRAMES TO BE PAINTED P-3.
8. FABRIC WRAPPED ACOUSTICAL PANELS, 5'-0" TO 10'-0".
9. FABRIC WRAPPED ACOUSTICAL PANELS, 24'-0" TO 28'-0".
10. WATERCUT JET LOGO BLOCK 'H' CENTERED WITH COLUMN. SEE SPEC SECTION 098813.
11. EXISTING DUCTWORK TO BE PAINTED P-3. SEE SPEC 099124.
12. EXISTING GRILLE COVERS TO BE PAINTED P-5. SEE SPEC 099124.

1 FIRST FLOOR COLOR LAYOUT PLAN - UNIT 1200
1/8" = 1'-0"

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HOWELL COMMUNITY CENTER

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HOWELL PUBLIC SCHOOLS

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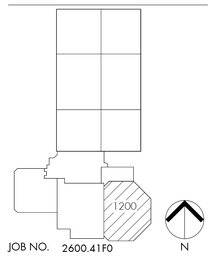
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

FIRST FLOOR COLOR LAYOUT PLAN - UNIT 1200

SHEET NO.

A711.3

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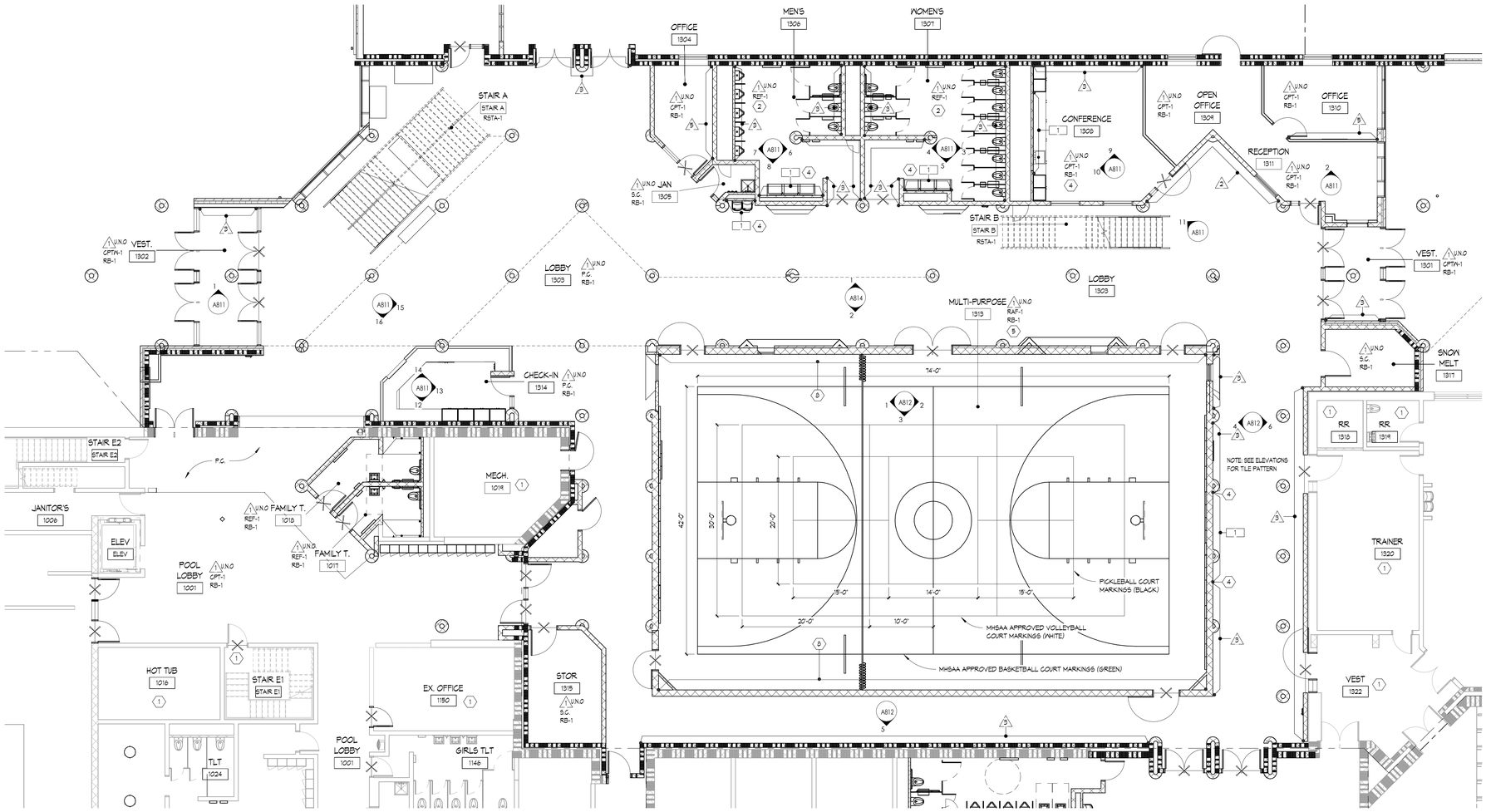

1 FIRST FLOOR COLOR LAYOUT PLAN - UNIT 1300A
1/8" = 1'-0"

COLOR LAYOUT PLAN GENERAL NOTES

1. PAINT ALL NEW HOLLOW METAL DOORS AND B.U. FRAMES, SEMI-GLOSS P-5 UNLESS NOTED OTHERWISE. DO NOT PAINT ALUMINUM DOOR FRAMES.
2. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES AND BAFFLE LOCATIONS.
3. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
4. DO NOT PAINT EXISTING UNPAINTED CLAY MASONRY WALLS, U.N.O.
5. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10'.
6. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
7. REFER TO COLOR PLANS FOR PAINT COLORS AT EXPOSED CEILING, MECHANICAL & STRUCTRUAL ELEMENTS.
8. VERIFY LETTERING FONT AND SIZES WITH OWNER.
9. PROVIDE CAULK WHERE HARD SURFACE FLOORING EDGES MEET DOOR / BORROWED LITE FRAMES.
10. VERIFY THAT ALL COURT MARKINGS MEET MHSAA STANDARDS WITH OWNER.

COLOR LAYOUT PLAN LEGEND

- (A) PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
- (#) CERAMIC TILE FLOOR, SEE SPECIFICATION SECTION 093013
- (#) CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
- CTF-# CERAMIC TILE FLOOR.
- CPT-# CARPET TILE, SEE SPECIFICATION SECTION 096813
- LVT-# LUXURY VINYL TILE, SEE SPECIFICATION SECTION 096519
- MT BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP
- P.C. POLISHED CONCRETE FLOOR, (NOTE GRIND LEVEL)
- RB-# RUBBER BASE, SEE SPECIFICATION SECTION 096513
- REF-# RESINOUS EPOXY FLOORING
- RAF-# RESILIENT ATHLETIC FLOOR
- RSTA-# RUBBER STAIR ACCESSORIES, SEE SPECIFICATION SECTION 096513
- RT RESILIENT TRANSITION, SEE SPECIFICATION SECTION 096513
- S.C. SEALED CONCRETE FLOOR
- C CONTROL JOINT
- PRODUCT EXTENTS WITH MATERIAL INDICATED
- WP WORK POINT
- FLOORING TRANSITION
- MATERIAL INSTALL DIRECTION
- A | B CHANGE OF MATERIAL

COLOR LAYOUT PLAN KEYNOTES

1. EXISTING FINISHES TO REMAIN.
2. INTEGRAL RESILIENT EPOXY BASE (4").
3. ALUMINUM CORNER GUARD, 5'-0"H - MOUNT 5'A.F.F.
4. METAL TRIM AT EXPOSED EDGES OF WALL TILE.
5. EXPOSED CEILING AND PIPING TO BE PAINTED P-7. SEE SPEC 099124.
6. DUCTWORK TO BE PAINTED P-5. SEE SPEC 099124.
7. HOLLOW METAL DOORS AND FRAMES TO BE PAINTED P-3.
8. FABRIC WRAPPED ACOUSTICAL PANELS, 5'-0" TO 10'-0".
9. FABRIC WRAPPED ACOUSTICAL PANELS, 24'-0" TO 28'-0".
10. WATERCUT JET LOGO BLOCK 'H' CENTERED WITH COLUMN. SEE SPEC SECTION 096813.
11. EXISTING DUCTWORK TO BE PAINTED P-3. SEE SPEC 099124.
12. EXISTING GRILLE COVERS TO BE PAINTED P-5. SEE SPEC 099124.

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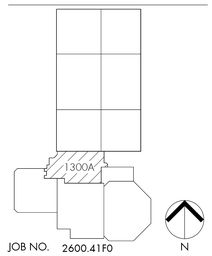
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR COLOR LAYOUT PLAN - UNIT 1300A

SHEET NO.
A711.4

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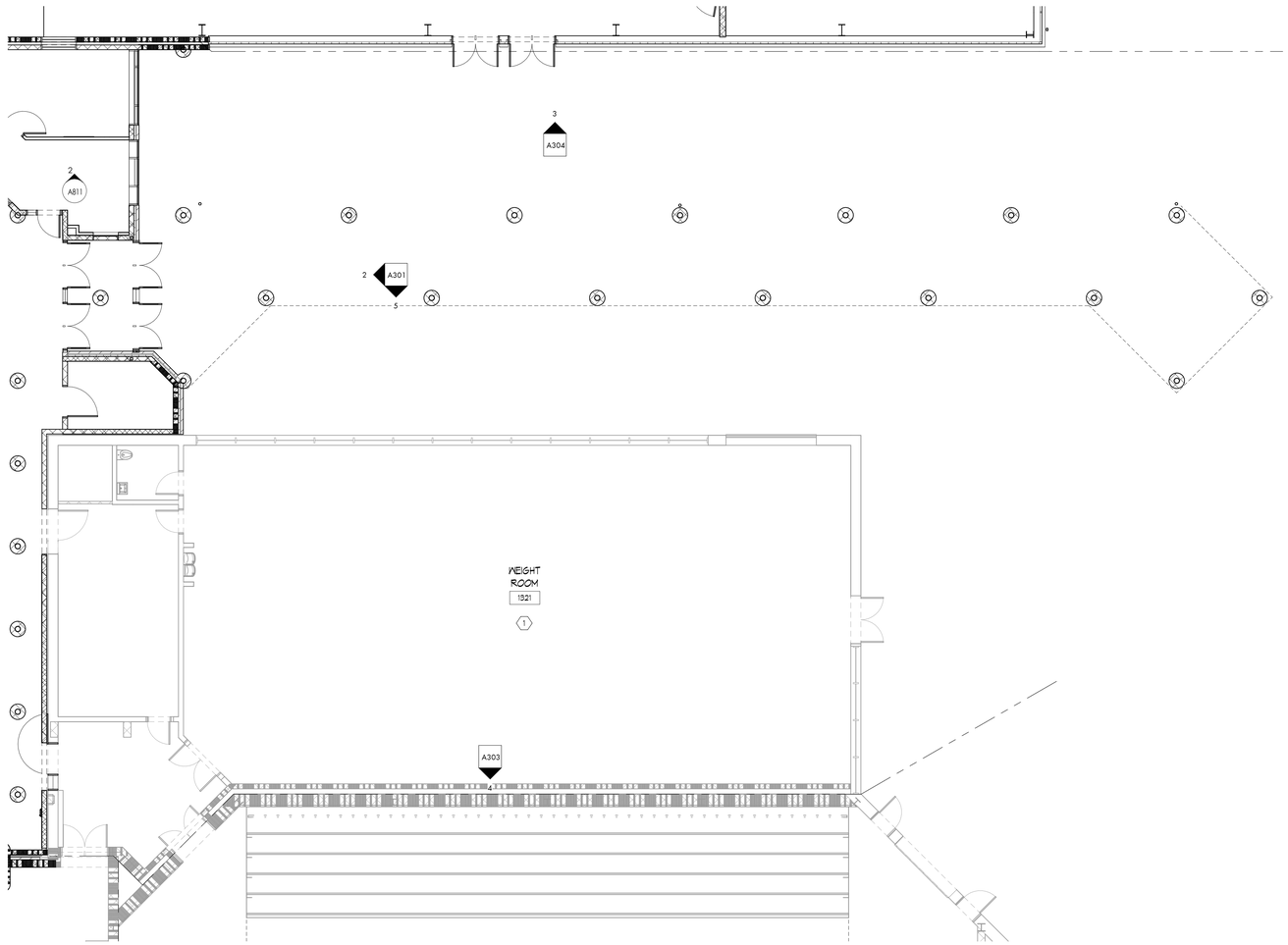

1 FIRST FLOOR COLOR - UNIT 1300B
1/8" = 1'-0"

COLOR LAYOUT PLAN GENERAL NOTES

1. PAINT ALL NEW HOLLOW METAL DOORS AND B.L. FRAMES, SEMI-GLOSS P-5 UNLESS NOTED OTHERWISE. DO NOT PAINT ALUMINUM DOOR FRAMES.
2. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES AND BAFFLE LOCATIONS.
3. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
4. DO NOT PAINT EXISTING UNPAINTED CLAY MASONRY WALLS. U.N.O.
5. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10'.
6. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
7. REFER TO COLOR PLANS FOR PAINT COLORS AT EXPOSED CEILING, MECHANICAL & STRUCTRUAL ELEMENTS.
8. VERIFY LETTERING FONT AND SIZES WITH OWNER.
9. PROVIDE CAULK WHERE HARD SURFACE FLOORING EDGES MEET DOOR / BORROWED LITE FRAMES.
10. VERIFY THAT ALL COURT MARKINGS MEET MHSAA STANDARDS WITH OWNER.

COLOR LAYOUT PLAN LEGEND

	PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
	CERAMIC TILE FLOOR, SEE SPECIFICATION SECTION 093013
	CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
CTF-#	CERAMIC TILE FLOOR.
CPT-#	CARPET TILE, SEE SPECIFICATION SECTION 096813
LVT-#	LUXURY VINYL TILE, SEE SPECIFICATION SECTION 096519
MT	BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP
P.C.	POLISHED CONCETE FLOOR, (NOTE GRIND LEVEL)
RB-#	RUBBER BASE, SEE SPECIFICATION SECTION 096513
REF-#	RESINOUS EPOXY FLOORING
RAF-#	RESILIENT ATHLETIC FLOOR
RSTA-#	RUBBER STAIR ACCESSORIES, SEE SPECIFICATION SECTION 096513
RT	RESILIENT TRANSITION, SEE SPECIFICATION SECTION 096513
S.C.	SEALED CONCRETE FLOOR
	CONTROL JOINT
	PRODUCT EXTENTS WITH MATERIAL INDICATED
WP	WORK POINT
	FLOORING TRANSITION
	MATERIAL INSTALL DIRECTION
A B	CHANGE OF MATERIAL

COLOR LAYOUT PLAN KEYNOTES

1. EXISTING FINISHES TO REMAIN.
2. INTEGRAL RESILIENT EPOXY BASE (4").
3. ALUMINUM CORNER GUARD, 8'-0"H - MOUNT 8'A.F.F.
4. METAL TRIM AT EXPOSED EDGES OF WALL TILE.
5. EXPOSED CEILING AND PIPING TO BE PAINTED P-7. SEE SPEC 099124.
6. DUCTWORK TO BE PAINTED P-5. SEE SPEC 099124.
7. HOLLOW METAL DOORS AND FRAMES TO BE PAINTED P-3.
8. FABRIC WRAPPED ACOUSTICAL PANELS. 8'-0" TO 10'-0".
9. FABRIC WRAPPED ACOUSTICAL PANELS. 24'-0" TO 28'-0".
10. WATERCUT JET LOGO BLOCK "H" CENTERED WITH COLUMN. SEE SPEC SECTION 096813.
11. EXISTING DUCTWORK TO BE PAINTED P-3. SEE SPEC 099124.
12. EXISTING GRILLE COVERS TO BE PAINTED P-5. SEE SPEC 099124.

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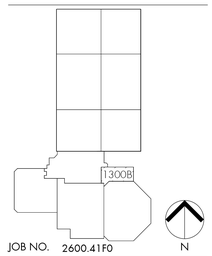
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR COLOR LAYOUT PLAN - UNIT 1300B

SHEET NO.
A711.5

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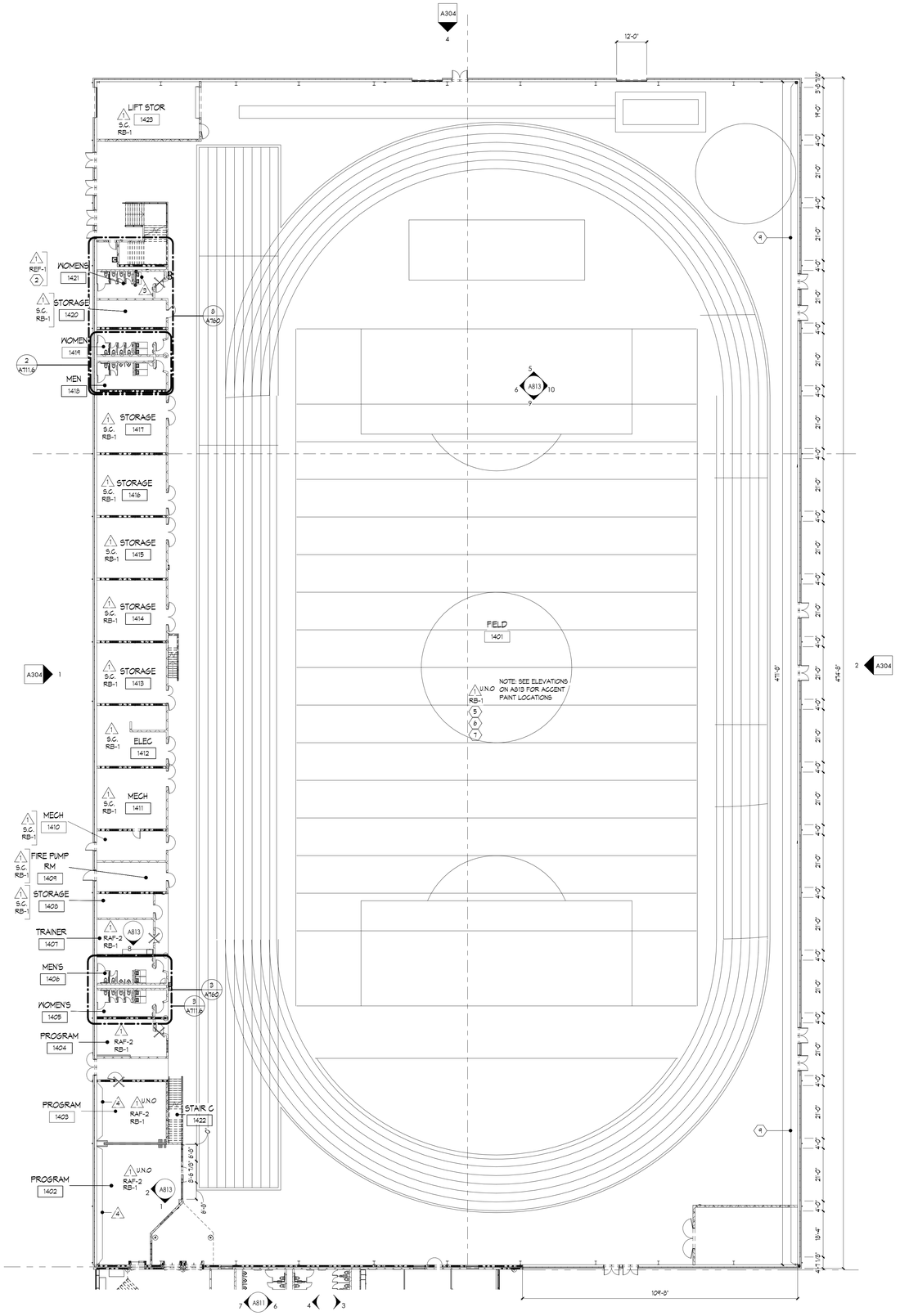
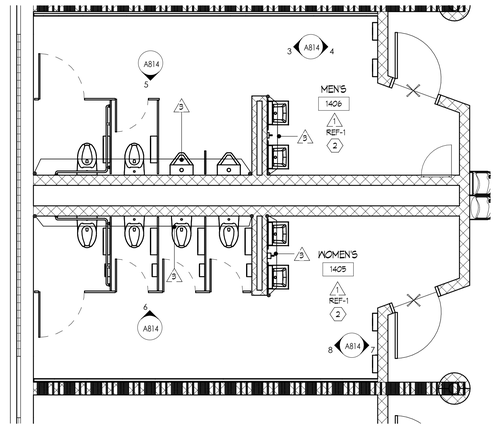
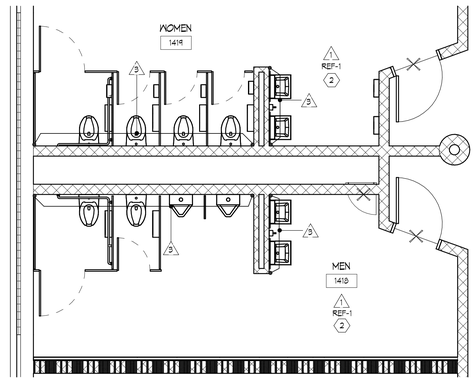


1 FIRST FLOOR COLOR LAYOUT - UNIT 1400
1" = 20'-0"



3 ENLARGED COLOR LAYOUT PLANS - 1405 & 1406
1/4" = 1'-0"



2 ENLARGED COLOR LAYOUT PLANS - 1418 & 1419
1/4" = 1'-0"

COLOR LAYOUT PLAN GENERAL NOTES

1. PAINT ALL NEW HOLLOW METAL DOORS AND B.L. FRAMES, SEMI-GLOSS P-5 UNLESS NOTED OTHERWISE. DO NOT PAINT ALUMINUM DOOR FRAMES.
2. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES AND BAFFLE LOCATIONS.
3. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
4. DO NOT PAINT EXISTING UNPAINTED CLAY MASONRY WALLS, U.N.O.
5. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10'.
6. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
7. REFER TO COLOR PLANS FOR PAINT COLORS AT EXPOSED CEILING, MECHANICAL & STRUCTRUAL ELEMENTS.
8. VERIFY LETTERING FONT AND SIZES WITH OWNER.
9. PROVIDE CAULK WHERE HARD SURFACE FLOORING EDGES MEET DOOR / BORROWED LITE FRAMES.
10. VERIFY THAT ALL COURT MARKINGS MEET MHSAA STANDARDS WITH OWNER.

COLOR LAYOUT PLAN LEGEND

A	PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
#	CERAMIC TILE FLOOR, SEE SPECIFICATION SECTION 093013
#	CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
CTF-#	CERAMIC TILE FLOOR.
CPT-#	CARPET TILE, SEE SPECIFICATION SECTION 096813
LVT-#	LUXURY VINYL TILE, SEE SPECIFICATION SECTION 096519
MT	BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP
P.C.	POLISHED CONCETE FLOOR, (NOTE GRIND LEVEL)
RB-#	RUBBER BASE, SEE SPECIFICATION SECTION 096513
REF-#	RESINOUS EPOXY FLOORING
RAF-#	RESILIENT ATHLETIC FLOOR
RSTA-#	RUBBER STAIR ACCESSORIES, SEE SPECIFICATION SECTION 096513
RT	RESILIENT TRANSITION, SEE SPECIFICATION SECTION 096513
S.C.	SEALED CONCRETE FLOOR
	CONTROL JOINT
	PRODUCT EXTENTS WITH MATERIAL INDICATED
PNP	WORK POINT
	FLOORING TRANSITION
	MATERIAL INSTALL DIRECTION
A | B	CHANGE OF MATERIAL

COLOR LAYOUT PLAN KEYNOTES

1. EXISTING FINISHES TO REMAIN.
2. INTEGRAL RESILIENT EPOXY BASE (4").
3. ALUMINUM CORNER GUARD, 8'-0"H - MOUNT 8"A.F.F.
4. METAL TRIM AT EXPOSED EDGES OF WALL TILE
5. EXPOSED CEILING AND PIPING TO BE PAINTED P-1, SEE SPEC 099124.
6. DUCTWORK TO BE PAINTED P-5, SEE SPEC 099124.
7. HOLLOW METAL DOORS AND FRAMES TO BE PAINTED P-3.
8. FABRIC WRAPPED ACOUSTICAL PANELS, 8'-0" TO 10'-0".
9. FABRIC WRAPPED ACOUSTICAL PANELS, 24'-0" TO 28'-0".
10. WATERJET JET LOGO BLOCK 'H' CENTERED WITH COLUMN. SEE SPEC SECTION 098613.
11. EXISTING DUCTWORK TO BE PAINTED P-3. SEE SPEC 099124.
12. EXISTING GRILLE COVERS TO BE PAINTED P-5. SEE SPEC 099124.

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HOWELL PUBLIC SCHOOLS

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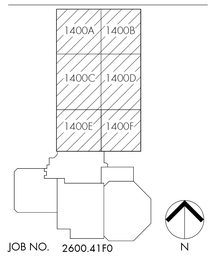

JOB NO. 2600.41F0

SHEET TITLE

FIRST FLOOR COLOR LAYOUT PLAN - UNIT 1400A-1400F

SHEET NO.

A711.6

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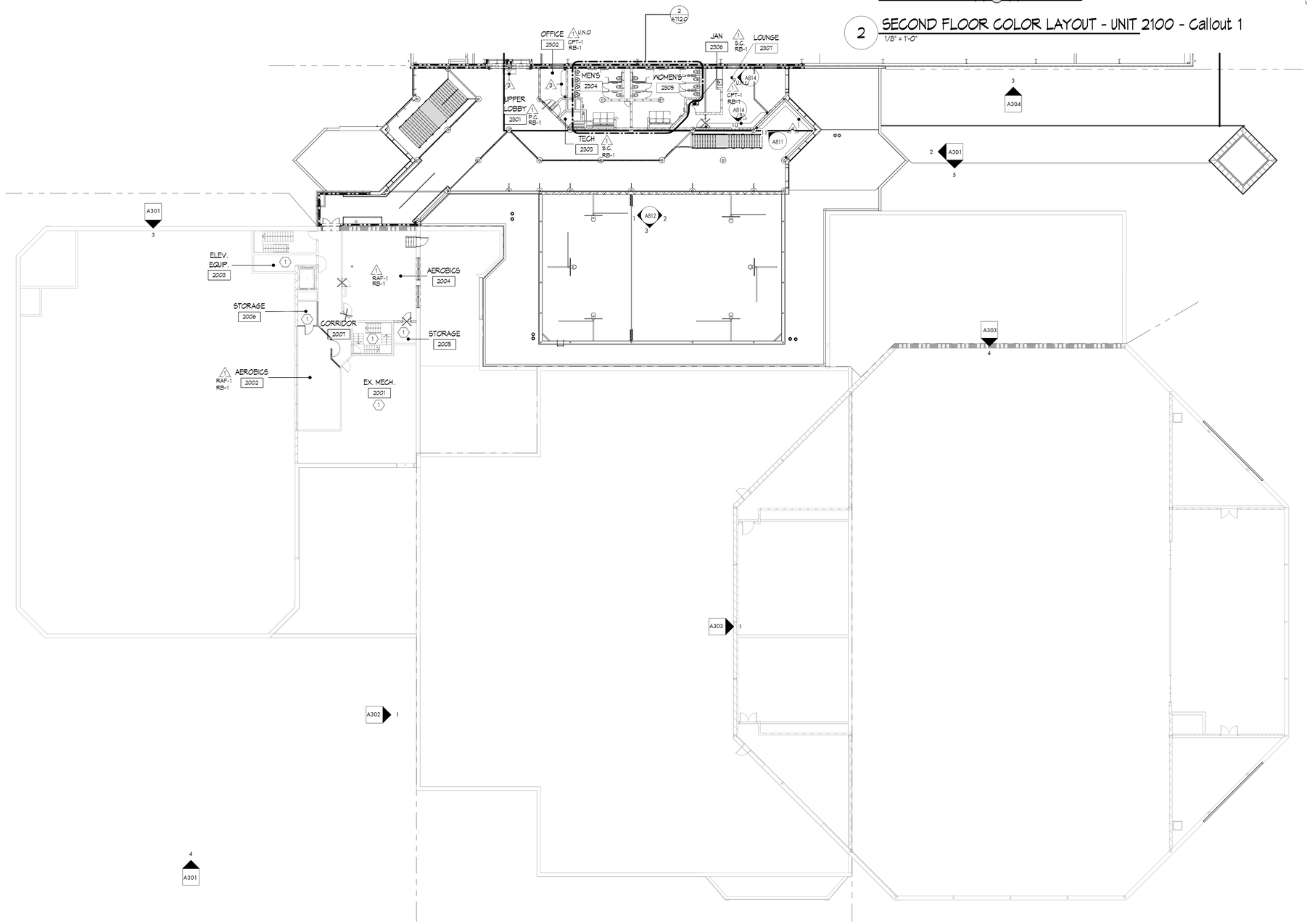

2 SECOND FLOOR COLOR LAYOUT - UNIT 2100 - Callout 1
1/8" = 1'-0"

1 SECOND FLOOR COLOR LAYOUT - UNIT 2100
1/16" = 1'-0"

COLOR LAYOUT PLAN GENERAL NOTES

1. PAINT ALL NEW HOLLOW METAL DOORS AND B.I. FRAMES, SEMI-GLOSS P-5 UNLESS NOTED OTHERWISE. DO NOT PAINT ALUMINUM DOOR FRAMES.
2. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES AND BAFFLE LOCATIONS.
3. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
4. DO NOT PAINT EXISTING UNPAINTED CLAY MASONRY WALLS, U.N.O.
5. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10'.
6. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
7. REFER TO COLOR PLANS FOR PAINT COLORS AT EXPOSED CEILING, MECHANICAL & STRUCTRUAL ELEMENTS.
8. VERIFY LETTERING FONT AND SIZES WITH OWNER.
9. PROVIDE CAULK WHERE HARD SURFACE FLOORING EDGES MEET DOOR / BORROWED LITE FRAMES.
10. VERIFY THAT ALL COURT MARKINGS MEET MHSAA STANDARDS WITH OWNER.

COLOR LAYOUT PLAN LEGEND

A	PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
B	CERAMIC TILE FLOOR, SEE SPECIFICATION SECTION 093013
B	CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
CTF-#	CERAMIC TILE FLOOR.
CPT-#	CARPET TILE, SEE SPECIFICATION SECTION 096813
LVT-#	LUXURY VINYL TILE, SEE SPECIFICATION SECTION 096519
MT	BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER RENO-RAMP
P.C.	POLISHED CONCRETE FLOOR, (NOTE GRIND LEVEL)
RB-#	RUBBER BASE, SEE SPECIFICATION SECTION 096513
REF-#	RESINOUS EPOXY FLOORING
RAF-#	RESILIENT ATHLETIC FLOOR
RSTA-#	RUBBER STAIR ACCESSORIES, SEE SPECIFICATION SECTION 096513
RT	RESILIENT TRANSITION, SEE SPECIFICATION SECTION 096513
S.C.	SEALED CONCRETE FLOOR
	CONTROL JOINT
	PRODUCT EXTENTS WITH MATERIAL INDICATED
WP	WORK POINT
	FLOORING TRANSITION
	MATERIAL INSTALL DIRECTION
A \ B	CHANGE OF MATERIAL

COLOR LAYOUT PLAN KEYNOTES

1. EXISTING FINISHES TO REMAIN.
2. INTEGRAL RESILIENT EPOXY BASE (4").
3. ALUMINUM CORNER GUARD, 5'-0"H - MOUNT 5"A.F.F.
4. METAL TRIM AT EXPOSED EDGES OF WALL TILE.
5. EXPOSED CEILING AND PIPING TO BE PAINTED P-7. SEE SPEC 099124.
6. DUCTWORK TO BE PAINTED P-5. SEE SPEC 099124.
7. HOLLOW METAL DOORS AND FRAMES TO BE PAINTED P-3.
8. FABRIC WRAPPED ACOUSTICAL PANELS. 5'-0" TO 10'-0".
9. FABRIC WRAPPED ACOUSTICAL PANELS. 24'-0" TO 28'-0".
10. WATERJET JET LOGO BLOCK 'H' CENTERED WITH COLUMN. SEE SPEC SECTION 096813.
11. EXISTING DUCTWORK TO BE PAINTED P-3. SEE SPEC 099124.
12. EXISTING GRILLE COVERS TO BE PAINTED P-5. SEE SPEC 099124.

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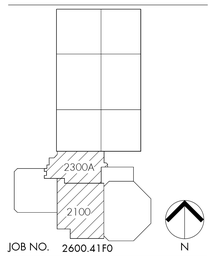

JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR COLOR LAYOUT PLAN - UNIT 2100, 2200, 2300

SHEET NO.
A712.0

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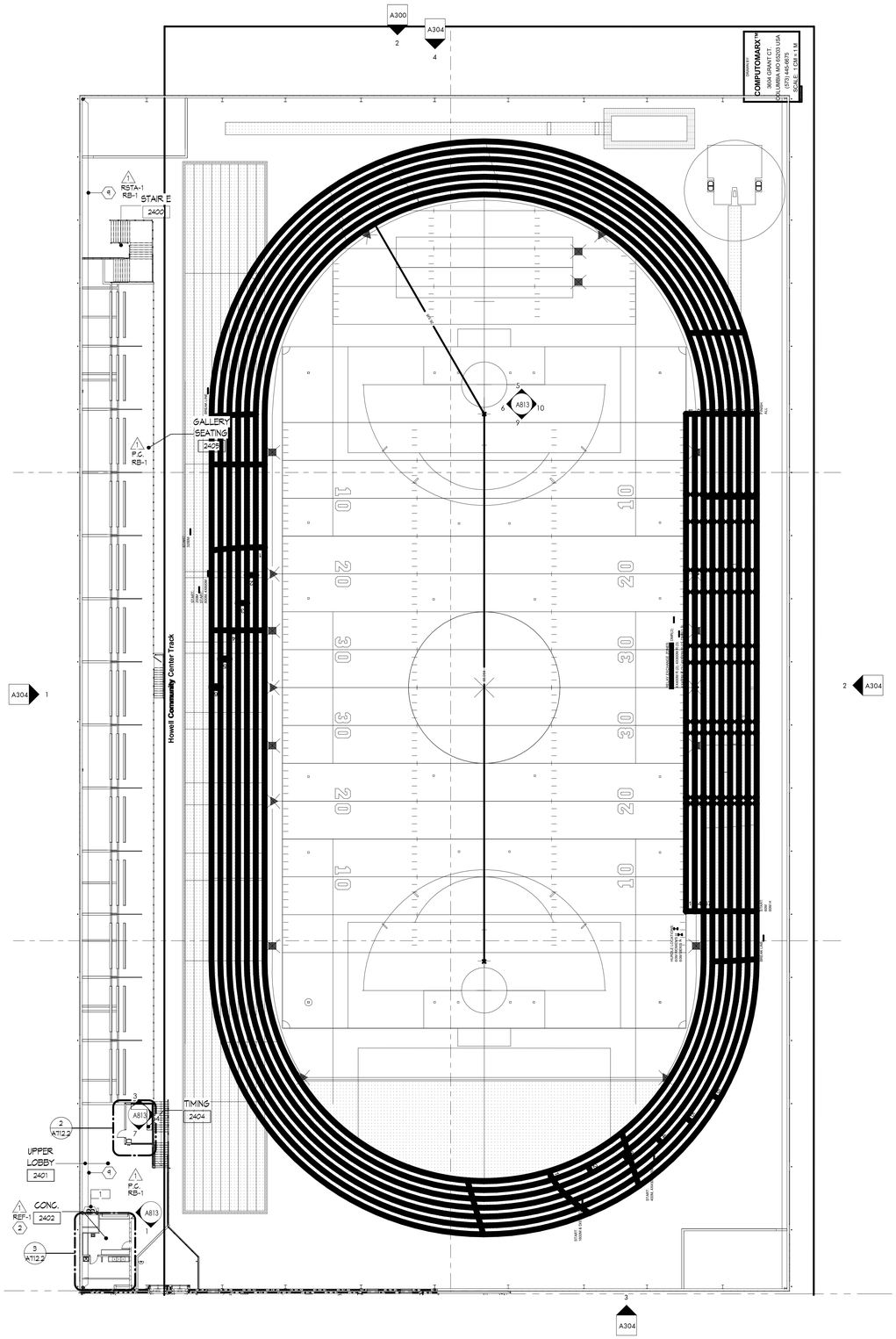
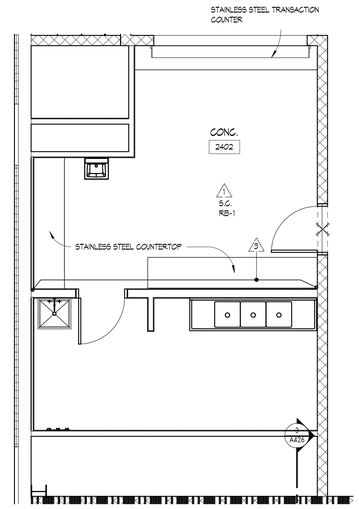
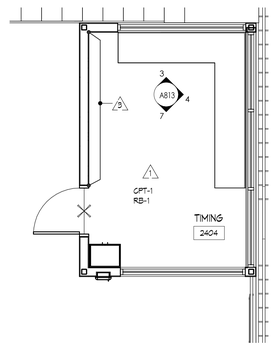


1 SECOND FLOOR COLOR LAYOUT - UNIT 2200
3/64" = 1'-0"



3 CONCESSIONS 2402 - ENLARGED PLAN
1/4" = 1'-0"



2 TIMING 2404 - ENLARGED PLAN
1/4" = 1'-0"

COLOR LAYOUT PLAN GENERAL NOTES

1. PAINT ALL NEW HOLLOW METAL DOORS AND B.L. FRAMES, SEMI-GLOSS P-5 UNLESS NOTED OTHERWISE. DO NOT PAINT ALUMINUM DOOR FRAMES.
2. SEE REFLECTED CEILING PLANS FOR ACOUSTICAL CEILING TYPES AND BAFFLE LOCATIONS.
3. UNLESS NOTED OTHERWISE, PAINT NEW BULKHEADS, GYP CEILINGS, AND EXPOSED CEILINGS IN COLORS INDICATED ON THE REFLECTED CEILING PLANS AND COLOR LAYOUT PLANS.
4. DO NOT PAINT EXISTING UNPAINTED CLAY MASONRY WALLS, U.N.O.
5. AT EXPOSED SEALED CONCRETE, PROVIDE HEAVY DUTY SEMI-RIGID EPOXY JOINT FILLER. CONTROL JOINTS AT POLISHED CONCRETE 10' X 10'.
6. FLOORING TRANSITIONS TO OCCUR IN LINE WITH THE CENTERLINE OF THE DOOR LEAF. PROVIDE A CLEAN TRANSITION BETWEEN POLISHED AND SEALED CONCRETE FLOORS.
7. REFER TO COLOR PLANS FOR PAINT COLORS AT EXPOSED CEILING, MECHANICAL & STRUCTRIAL ELEMENTS.
8. VERIFY LETTERING FONT AND SIZES WITH OWNER.
9. PROVIDE CAULK WHERE HARD SURFACE FLOORING EDGES MEET DOOR / BORROWED LITE FRAMES.
10. VERIFY THAT ALL COURT MARKINGS MEET MHSAA STANDARDS WITH OWNER.

COLOR LAYOUT PLAN LEGEND

- A — PAINT, SEE SPECIFICATION SECTIONS 099123 & 099600
- B — CERAMIC TILE FLOOR, SEE SPECIFICATION SECTION 093013
- B — CERAMIC TILE WALL, SEE SPECIFICATION SECTION 093013
- CTF-# — CERAMIC TILE FLOOR.
- CPT-# — CARPET TILE, SEE SPECIFICATION SECTION 096813
- LVT-# — LUXURY VINYL TILE, SEE SPECIFICATION SECTION 096516
- MT — BARRIER FREE METAL TRANSITION EQUAL TO SCHLUTER REND-RAMP
- P.C. — POLISHED CONCETE FLOOR, (NOTE GRIND LEVEL)
- RB-# — RUBBER BASE, SEE SPECIFICATION SECTION 096513
- REF-# — RESINOUS EPOXY FLOORING
- RAF-# — RESILIENT ATHLETIC FLOOR
- RSTA-# — RUBBER STAIR ACCESSORIES, SEE SPECIFICATION SECTION 096513
- RT — RESILIENT TRANSITION, SEE SPECIFICATION SECTION 096513
- S.C. — SEALED CONCRETE FLOOR
- CONTROL JOINT
- PRODUCT EXTENTS WITH MATERIAL INDICATED
- WP — WORK POINT
- FLOORING TRANSITION
- MATERIAL INSTALL DIRECTION
- A | B — CHANGE OF MATERIAL

COLOR LAYOUT PLAN KEYNOTES

1. EXISTING FINISHES TO REMAIN.
2. INTEGRAL RESILIENT EPOXY BASE (4").
3. ALUMNUM CORNER GUARD, 5'-0"H - MOUNT 5"A.F.F.
4. METAL TRIM AT EXPOSED EDGES OF WALL TILE.
5. EXPOSED CEILING AND PIPING TO BE PAINTED P-1. SEE SPEC 099124.
6. DUCTWORK TO BE PAINTED P-5. SEE SPEC 099124.
7. HOLLOW METAL DOORS AND FRAMES TO BE PAINTED P-3.
8. FABRIC WRAPPED ACOUSTICAL PANELS. 8'-0" TO 10'-0".
9. FABRIC WRAPPED ACOUSTICAL PANELS. 24'-0" TO 28'-0".
10. WATERGUT JET LOGO BLOCK 'H' CENTERED WITH COLUMN. SEE SPEC SECTION 096813.
11. EXISTING DUCTWORK TO BE PAINTED P-3. SEE SPEC 099124.
12. EXISTING GRILLE COVERS TO BE PAINTED P-5. SEE SPEC 099124.

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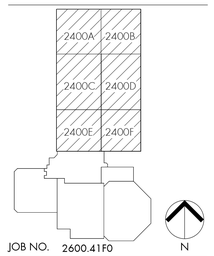
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR COLOR LAYOUT PLAN - UNIT 2400A-2400F

SHEET NO.
A712.2

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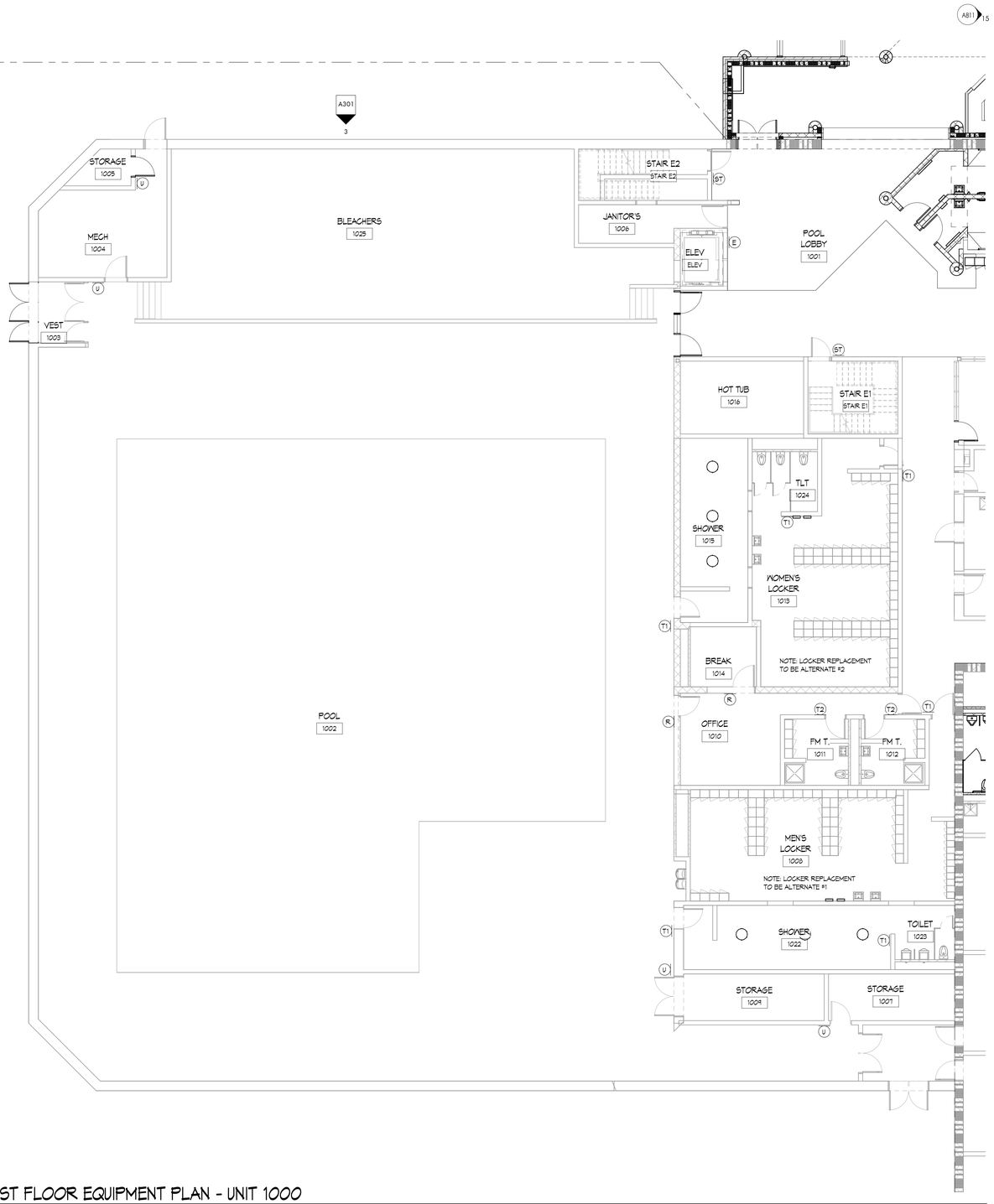

1 FIRST FLOOR EQUIPMENT PLAN - UNIT 1000

1/8" = 1'-0"

EQUIPMENT PLAN GENERAL NOTES

1. WALL CABINET TOPS TO BE AT 84" A.F.F. UNLESS NOTED OTHERWISE.
2. FILLER = PROVIDE FACE, TOP, BOTTOM AND/OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET.
3. ALL VISUAL DISPLAY BOARD INSTALLATION LOCATIONS ARE TO BE FIELD VERIFIED PRIOR TO INSTALLATION
4. REFER TO SPECIFICATIONS FOR VISUAL DISPLAY BOARD FINISHES AND COLOR DESIGNATIONS.
5. HOLD ALL TALL CABINETS ADJACENT TO BASE CABINETS OUT 1" FROM WALL OR FLUSH WITH THE FRONT EDGE OF THE COUNTERTOP. PROVIDE FILLER AT BACK WALL AS REQUIRED.
6. ALL COUNTERTOPS SHALL HAVE RADIUS CORNERS AT OUTSIDE CORNERS.
7. REFER TO SPECIFICATION **SECTION 122413** FOR DETAILED INFORMATION ON WINDOW ROLLER SHADES.
8. SEE SHEET A742.3 FOR SIGNAGE DETAILS. PROVIDE BACK PANELS AT ALL SIGNAGE MOUNTED ON GLASS.
9. TRIM WALL PROTECTION AROUND POWER/DATA OUTLETS (TYP.)
10. SEE SHEET A742.3 FOR VISUAL DISPLAY SCHEDULE.
11. REFER TO TECHNOLOGY DRAWINGS BY OTHERS TO COORDINATE VDB's and TV's. INFORM ARCHITECT OF CONFLICTS.

EQUIPMENT PLAN LEGEND

B-X = INDICATES CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINET DOORS SHALL HAVE LOCKS U.N.O.

B-# = BASE CABINET
W-# = WALL CABINET
T-# = TALL CABINET
XB-# = RELOCATED BASE CABINET SEE DEMO PLANS AND EQUIP. PLANS EDIT IN TAGS USED PER PROJECT, SCIENCE MEDIA CENTER ETC.

- = INDICATES ALTERNATE CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINET DOORS SHALL HAVE LOCKS U.N.O.

VDB-_# = VISUAL DISPLAY BOARD, SPECIFICATION SECTION 101100

RS-XX = ROLLER SHADE, SPECIFICATON SECTION 122413

= ROOM IDENTIFICATION PANEL SIGNAGE, SPECIFICATION SECTION 101423.16

CG = CORNER GUARD WALL AND DOOR PROTECTION, SPECIFICATION SECTION 102600. TAG-HT-COLOR#.

EG = END WALL GUARD AND DOOR PROTECTION, SPECIFICATION SECTION 102600. TAG-HT-COLOR#.

EQUIPMENT PLAN KEYNOTES

1. CASEWORK FILLER TYP.
2. GYM WALL PADS, 2'W X 8'H X 2" THICK, MOUNTED AT 4" AFF. REFER TO INTERIOR ELEVATIONS & SPECIFICATION SECTION 116823
3. GYM SCOREBOARD. SEE ELECTRICAL PLANS.
4. TV BY DISTRICT. SEE ELECTRICAL PLANS FOR SIZE AND MOUNTING HEIGHT.
5. BUILT IN PLASTIC LAMINATE VIEWING WINDOWS. SEE DETAIL 5 ON SHEET A812.
6. BUILT IN PLASTIC LAMINATE BENCH. SEE DETAIL X ON SHEET XXX.
7. CUSTOM LAMINATE DISPLAY CASE. SEE DETAIL 2 ON SHEET A812.
8. PRIVACY WINDOW FILM.
9. CUSTOM WALL PROTECTION MURAL OF DISTRICT APPROVED IMAGE.
10. BENCH BOARD. SEE TECHNOLOGY DRAWINGS.
11. NOT USED.
12. NOT USED.
13. CUSTOM BUILT IN PLASTIC LAMINATE RECEPTION DESK WITH SOLID SURFACE TOP.
14. OLD FIELD HOUSE FLOORING WALL FEATURE (FUTURE BID PACK). SEE ELEVATIONS.
15. GLASS MARKERBOARD WITH 'H' GHOSTED IN. SEE SPEC SECTION 101100.
16. NOT USED
17. SOLID SURFACE BENCH SILL.
18. CEILING MOUNTED HEIGHT ADJUSTABLE BASKETBALL BACKSTOP. REFER TO SPECIFICATION SECTION 116823.
19. OVERHEAD MOTORIZED GYM DIVIDER CURTAIN.
20. NOT USED
21. NOT USED.
22. CUSTOM BANNER BY OWNER. SEE DETAIL 8 ON A612 FOR BANNER HARDWARE.

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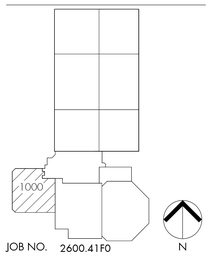
HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

FIRST FLOOR EQUIPMENT PLAN - UNIT 1000

SHEET NO.

A741.1

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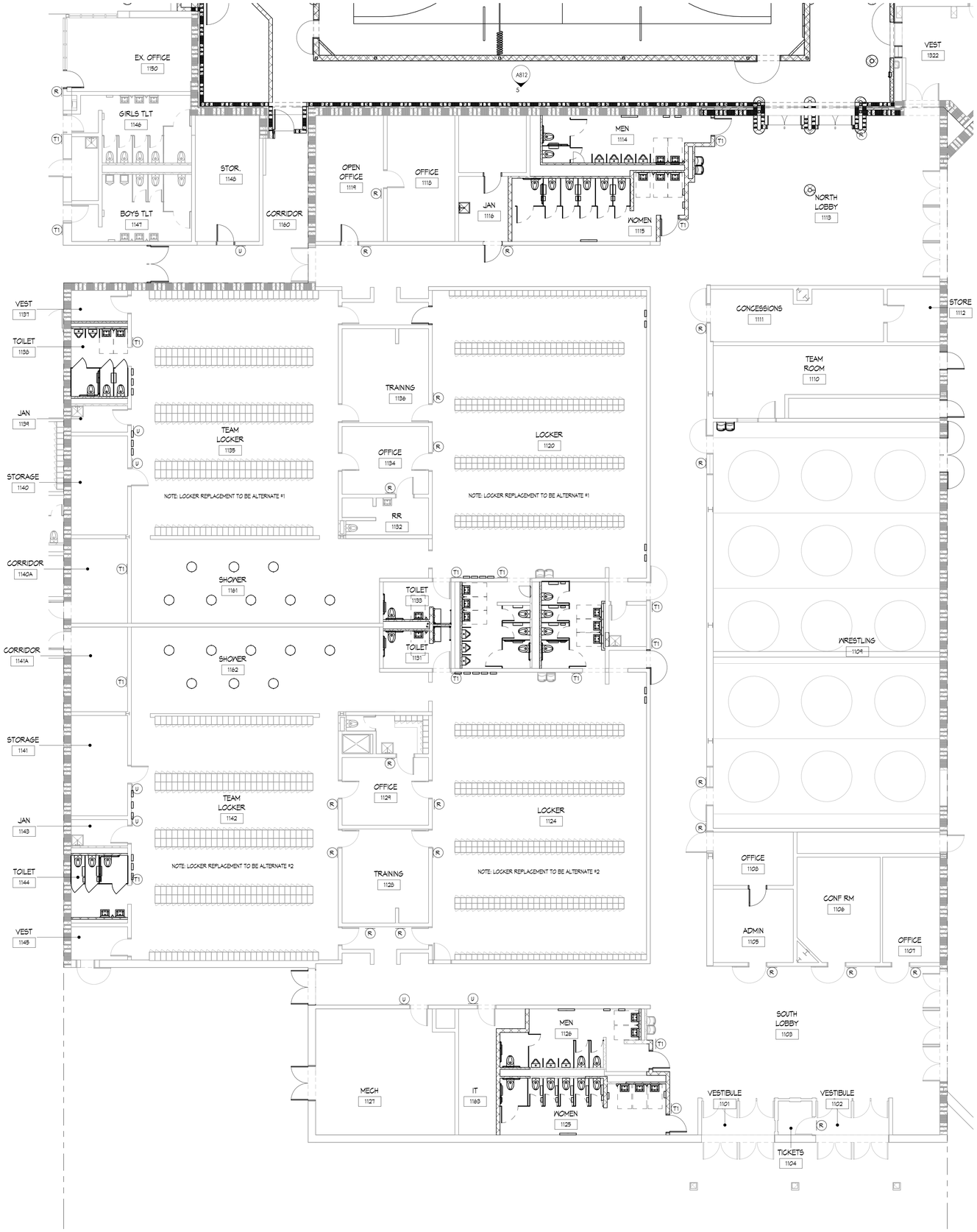

1 FIRST FLOOR EQUIPMENT PLAN - UNIT 1100
1/8" = 1'-0"

EQUIPMENT PLAN GENERAL NOTES

1. WALL CABINET TOPS TO BE AT 84" A.F.F. UNLESS NOTED OTHERWISE.
2. FILLER + PROVIDE FACE, TOP, BOTTOM AND/OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET.
3. ALL VISUAL DISPLAY BOARD INSTALLATION LOCATIONS ARE TO BE FIELD VERIFIED PRIOR TO INSTALLATION
4. REFER TO SPECIFICATIONS FOR VISUAL DISPLAY BOARD FINISHES AND COLOR DESIGNATIONS.
5. HOLD ALL TALL CABINETS ADJACENT TO BASE CABINETS OUT 1" FROM WALL OR FLUSH WITH THE FRONT EDGE OF THE COUNTERTOP. PROVIDE FILLER AT BACK WALL AS REQUIRED.
6. ALL COUNTERTOPS SHALL HAVE RADIUS CORNERS AT OUTSIDE CORNERS.
7. REFER TO SPECIFICATION **SECTION 122413** FOR DETAILED INFORMATION ON WINDOW ROLLER SHADES.
8. SEE SHEET A742.3 FOR SIGNAGE DETAILS. PROVIDE BACK PANELS AT ALL SIGNAGE MOUNTED ON GLASS.
9. TRIM WALL PROTECTION AROUND POWER/DATA OUTLETS (TYP.)
10. SEE SHEET A742.3 FOR VISUAL DISPLAY SCHEDULE.
11. REFER TO TECHNOLOGY DRAWINGS BY OTHERS TO COORDINATE VDB's and TV's. INFORM ARCHITECT OF CONFLICTS.

EQUIPMENT PLAN LEGEND

B-X = INDICATES CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINET DOORS SHALL HAVE LOCKS U.N.O.

B-_# = BASE CABINET
W-_# = WALL CABINET
T-_# = TALL CABINET
XB-# = RELOCATED BASE CABINET SEE DEMO PLANS AND EQUIP. PLANS EDIT IN TAGS USED PER PROJECT, SCIENCE MEDIA CENTER ETC.

- = INDICATES ALTERNATE CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINET DOORS SHALL HAVE LOCKS U.N.O.

VDB-_# = VISUAL DISPLAY BOARD, SPECIFICATION SECTION 101100

RS-XX = ROLLER SHADE, SPECIFICATION SECTION 122413

= ROOM IDENTIFICATION PANEL SIGNAGE, SPECIFICATION SECTION 101423.16

CG = CORNER GUARD WALL AND DOOR PROTECTION, SPECIFICATION SECTION 102800. TAG-HT-COLOR#.

ES = END WALL GUARD AND DOOR PROTECTION, SPECIFICATION SECTION 102800. TAG-HT-COLOR#

EQUIPMENT PLAN KEYNOTES

1. CASEWORK FILLER TYP.
2. GYM WALL PADS, 2' W X 8' H X 2" THICK, MOUNTED AT 4" AFF. REFER TO INTERIOR ELEVATIONS & SPECIFICATION SECTION 116623
3. GYM SCOREBOARD. SEE ELECTRICAL PLANS.
4. TV BY DISTRICT. SEE ELECTRICAL PLANS FOR SIZE AND MOUNTING HEIGHT.
5. BUILT IN PLASTIC LAMINATE VIEWING WINDOWS. SEE DETAIL 5 ON SHEET A612.
6. BUILT IN PLASTIC LAMINATE BENCH. SEE DETAIL X ON SHEET XXX.
7. CUSTOM LAMINATE DISPLAY CASE. SEE DETAIL 2 ON SHEET A612.
8. PRIVACY WINDOW FILM.
9. CUSTOM WALL PROTECTION MURAL OF DISTRICT APPROVED IMAGE.
10. BENCH BOARD. SEE TECHNOLOGY DRAWINGS.
11. NOT USED.
12. NOT USED.
13. CUSTOM BUILT IN PLASTIC LAMINATE RECEPTION DESK WITH SOLID SURFACE TOP.
14. OLD FIELD HOUSE FLOORING WALL FEATURE (FUTURE BID PACK). SEE ELEVATIONS.
15. GLASS MARKERBOARD WITH "H" GHOSTED IN. SEE SPEC SECTION 101100.
16. NOT USED
17. SOLID SURFACE BENCH SILL.
18. CEILING MOUNTED HEIGHT ADJUSTABLE BASKETBALL BACKSTOP. REFER TO SPECIFICATION SECTION 116623.
19. OVERHEAD MOTORIZED GYM DIVIDER CURTAIN.
20. NOT USED
21. NOT USED.
22. CUSTOM BANNER BY OWNER. SEE DETAIL 9 ON A612 FOR BANNER HARDWARE.

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HOWELL COMMUNITY CENTER

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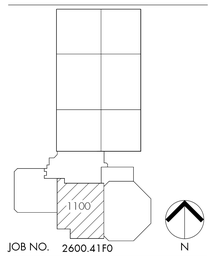
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR EQUIPMENT PLAN - UNIT 1100

SHEET NO.
A741.2

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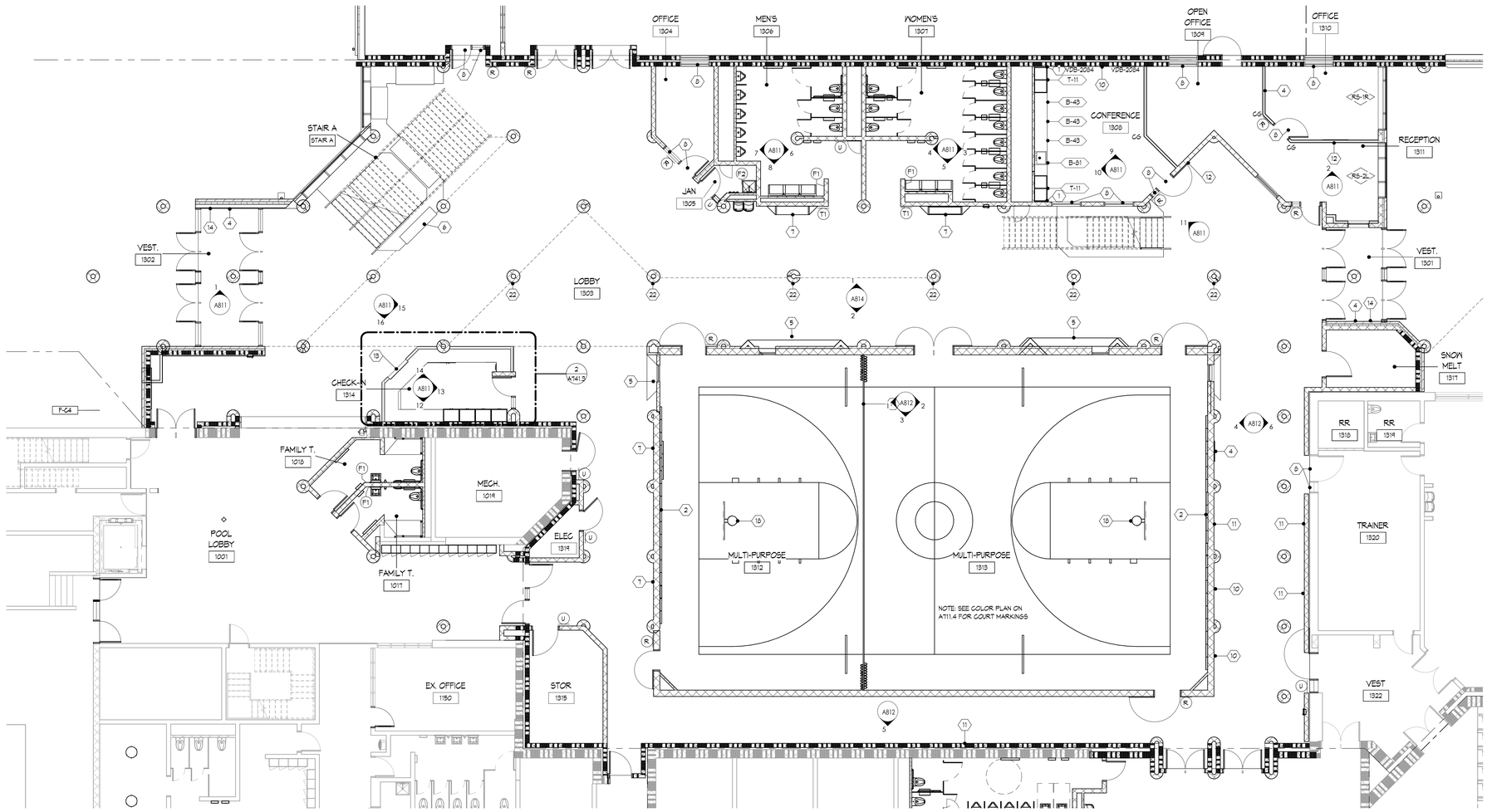
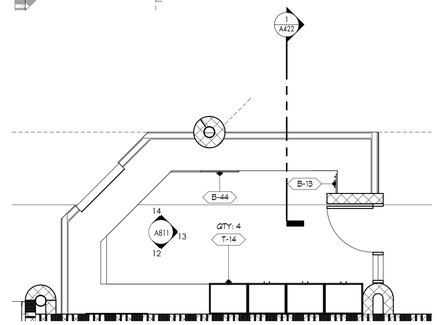


1 FIRST FLOOR EQUIPMENT PLAN - UNIT 1300A
1/8" = 1'-0"



2 FIRST FLOOR EQUIPMENT PLAN - UNIT 1300A - Callout 1
1/4" = 1'-0"

EQUIPMENT PLAN GENERAL NOTES

1. WALL CABINET TOPS TO BE AT 84" A.F.F. UNLESS NOTED OTHERWISE.
2. FILLER = PROVIDE FACE, TOP, BOTTOM AND/OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET.
3. ALL VISUAL DISPLAY BOARD INSTALLATION LOCATIONS ARE TO BE FIELD VERIFIED PRIOR TO INSTALLATION
4. REFER TO SPECIFICATIONS FOR VISUAL DISPLAY BOARD FINISHES AND COLOR DESIGNATIONS.
5. HOLD ALL TALL CABINETS ADJACENT TO BASE CABINETS OUT 1" FROM WALL OR FLUSH WITH THE FRONT EDGE OF THE COUNTERTOP. PROVIDE FILLER AT BACK WALL AS REQUIRED.
6. ALL COUNTERTOPS SHALL HAVE RADIUS CORNERS AT OUTSIDE CORNERS.
7. REFER TO SPECIFICATION **SECTION 122413** FOR DETAILED INFORMATION ON WINDOW ROLLER SHADES.
8. SEE SHEET A742.3 FOR SIGNAGE DETAILS. PROVIDE BACK PANELS AT ALL SIGNAGE MOUNTED ON GLASS.
9. TRIM WALL PROTECTION AROUND POWER/DATA OUTLETS (TYP.)
10. SEE SHEET A742.3 FOR VISUAL DISPLAY SCHEDULE.
11. REFER TO TECHNOLOGY DRAWINGS BY OTHERS TO COORDINATE VDB's and TV's. INFORM ARCHITECT OF CONFLICTS.

EQUIPMENT PLAN LEGEND

B-X = INDICATES CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINET DOORS SHALL HAVE LOCKS U.N.O.
B-_# = BASE CABINET
W-_# = WALL CABINET
T-_# = TALL CABINET
XB-# = RELOCATED BASE CABINET SEE DEMO PLANS AND EQUIP. PLANS EDIT IN TA99 USED PER PROJECT, SCIENCE MEDIA CENTER ETC.

- = INDICATES ALTERNATE CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINET DOORS SHALL HAVE LOCKS U.N.O.

VDB-_# = VISUAL DISPLAY BOARD, SPECIFICATION SECTION 101100

<RS-XX> = ROLLER SHADE, SPECIFICATION SECTION 122413

= ROOM IDENTIFICATION PANEL SIGNAGE, SPECIFICATION SECTION 101423.16

CG = CORNER GUARD WALL AND DOOR PROTECTION, SPECIFICATION SECTION 102800. TAG-HT-COLOR#.

EG = END WALL GUARD AND DOOR PROTECTION, SPECIFICATION SECTION 102800. TAG-HT-COLOR#.

EQUIPMENT PLAN KEYNOTES

1. CASEWORK FILLER TYP.
2. GYM WALL PADS, 2'-W X 6'-H X 2" THICK, MOUNTED AT 4" AFF. REFER TO INTERIOR ELEVATIONS & SPECIFICATION SECTION 116623
3. GYM SCOREBOARD. SEE ELECTRICAL PLANS.
4. TV BY DISTRICT. SEE ELECTRICAL PLANS FOR SIZE AND MOUNTING HEIGHT.
5. BUILT IN PLASTIC LAMINATE VIEWING WINDOWS. SEE DETAIL 5 ON SHEET A812.
6. BUILT IN PLASTIC LAMINATE BENCH. SEE DETAIL X ON SHEET XXX.
7. CUSTOM LAMINATE DISPLAY CASE. SEE DETAIL 2 ON SHEET A812.
8. PRIVACY WINDOW FILM.
9. CUSTOM WALL PROTECTION MURAL OF DISTRICT APPROVED IMAGE.
10. BEING BOARD. SEE TECHNOLOGY DRAWINGS.
11. NOT USED.
12. NOT USED.
13. CUSTOM BUILT IN PLASTIC LAMINATE RECEPTION DESK WITH SOLID SURFACE TOP.
14. OLD FIELD HOUSE FLOORING WALL FEATURE (FUTURE BID PACK). SEE ELEVATIONS.
15. GLASS MARKERBOARD WITH "H" GHOSTED IN. SEE SPEC SECTION 101100.
16. NOT USED
17. SOLID SURFACE BENCH SILL.
18. CEILING MOUNTED HEIGHT ADJUSTABLE BASKETBALL BACKSTOP. REFER TO SPECIFICATION SECTION 116623.
19. OVERHEAD MOTORIZED GYM DIVIDER CURTAIN.
20. NOT USED
21. NOT USED.
22. CUSTOM BANNER BY OWNER. SEE DETAIL 8 ON A812 FOR BANNER HARDWARE.

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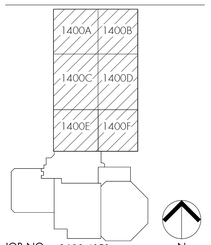

JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR EQUIPMENT PLAN - UNIT 1300A

SHEET NO.
A741.3

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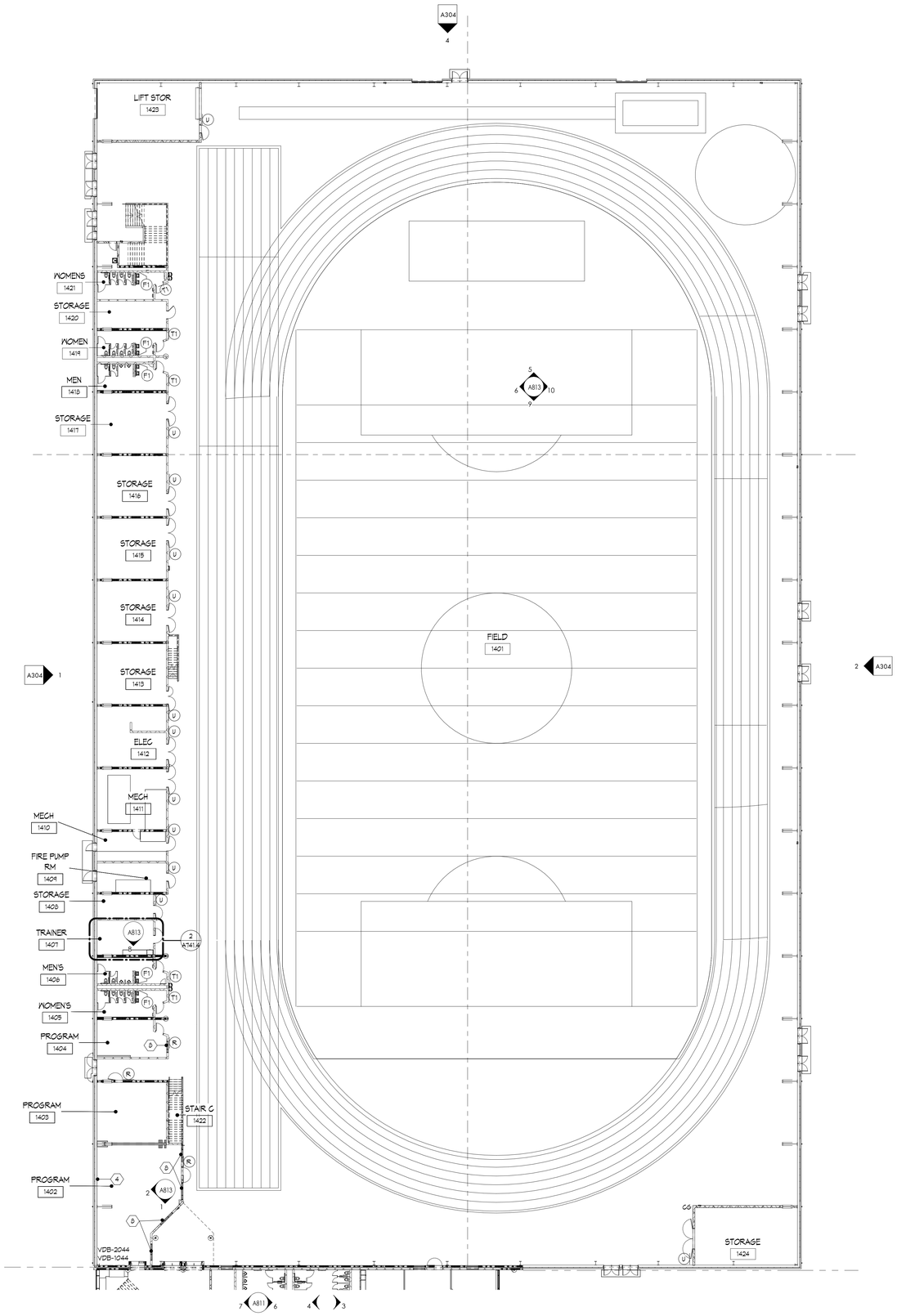
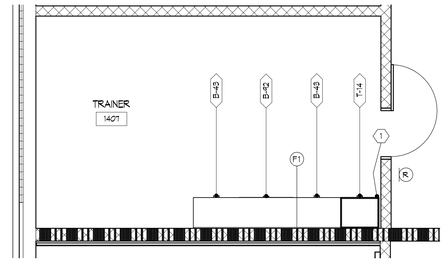


1 FIRST FLOOR COLOR LAYOUT - UNIT 1400 Copy 1
1" = 20'-0"



2 TRAINER 1407 - ENLARGED PLAN
1/4" = 1'-0"

EQUIPMENT PLAN GENERAL NOTES

1. WALL CABINET TOPS TO BE AT 84" A.F.F. UNLESS NOTED OTHERWISE.
2. FILLER + PROVIDE FACE, TOP, BOTTOM AND/OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET.
3. ALL VISUAL DISPLAY BOARD INSTALLATION LOCATIONS ARE TO BE FIELD VERIFIED PRIOR TO INSTALLATION
4. REFER TO SPECIFICATIONS FOR VISUAL DISPLAY BOARD FINISHES AND COLOR DESIGNATIONS.
5. HOLD ALL TALL CABINETS ADJACENT TO BASE CABINETS OUT 1" FROM WALL OR FLUSH WITH THE FRONT EDGE OF THE COUNTERTOP. PROVIDE FILLER AT BACK WALL AS REQUIRED.
6. ALL COUNTERTOPS SHALL HAVE RADIUS CORNERS AT OUTSIDE CORNERS.
7. REFER TO SPECIFICATION **SECTION 122413** FOR DETAILED INFORMATION ON WINDOW ROLLER SHADES.
8. SEE SHEET A742.3 FOR SIGNAGE DETAILS. PROVIDE BACK PANELS AT ALL SIGNAGE MOUNTED ON GLASS.
9. TRIM WALL PROTECTION AROUND POWER/DATA OUTLETS (TYP.)
10. SEE SHEET A742.3 FOR VISUAL DISPLAY SCHEDULE.
11. REFER TO TECHNOLOGY DRAWINGS BY OTHERS TO COORDINATE VDB's and TV's. INFORM ARCHITECT OF CONFLICTS.

EQUIPMENT PLAN LEGEND

B-X = INDICATES CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINET DOORS SHALL HAVE LOCKS U.N.O.

B-_# = BASE CABINET
W-_# = WALL CABINET
T-_# = TALL CABINET
VB-# = RELOCATED BASE CABINET SEE DEMO PLANS AND EQUIP. PLANS
EDIT IN TAGS USED PER PROJECT, SCIENCE MEDIA CENTER ETC.

- = INDICATES ALTERNATE CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINET DOORS SHALL HAVE LOCKS U.N.O.

VDB-_# = VISUAL DISPLAY BOARD, SPECIFICATION SECTION 101100

RS-XX = ROLLER SHADE, SPECIFICATION SECTION 122413

= ROOM IDENTIFICATION PANEL SIGNAGE, SPECIFICATION SECTION 101423.16

CG = CORNER GUARD WALL AND DOOR PROTECTION, SPECIFICATION SECTION 102800. TAG-HT-COLOR#.

ES = END WALL GUARD AND DOOR PROTECTION, SPECIFICATION SECTION 102800. TAG-HT-COLOR#.

EQUIPMENT PLAN KEYNOTES

1. CASEWORK FILLER TYP.
2. GYM WALL PADS, 2' W X 8' H X 2" THICK, MOUNTED AT 4" AFF. REFER TO INTERIOR ELEVATIONS & SPECIFICATION SECTION 116823
3. GYM SCOREBOARD. SEE ELECTRICAL PLANS.
4. TV BY DISTRICT. SEE ELECTRICAL PLANS FOR SIZE AND MOUNTING HEIGHT.
5. BUILT IN PLASTIC LAMINATE VIEWING WINDOWS. SEE DETAIL 5 ON SHEET A812.
6. BUILT IN PLASTIC LAMINATE BENCH. SEE DETAIL X ON SHEET XXX.
7. CUSTOM LAMINATE DISPLAY CASE. SEE DETAIL 2 ON SHEET A812.
8. PRIVACY WINDOW FILM.
9. CUSTOM WALL PROTECTION MURAL OF DISTRICT APPROVED IMAGE.
10. BENG BOARD. SEE TECHNOLOGY DRAWINGS.
11. NOT USED.
12. NOT USED.
13. CUSTOM BUILT IN PLASTIC LAMINATE RECEPTION DESK WITH SOLID SURFACE TOP.
14. OLD FIELD HOUSE FLOORING WALL FEATURE (FUTURE BID PACK). SEE ELEVATIONS.
15. GLASS MARKERBOARD WITH "H" GHOSTED IN. SEE SPEC SECTION 101100.
16. NOT USED
17. SOLID SURFACE BENCH SILL.
18. CEILING MOUNTED HEIGHT ADJUSTABLE BASKETBALL BACKSTOP. REFER TO SPECIFICATION SECTION 116823.
19. OVERHEAD MOTORIZED GYM DIVIDER CURTAIN.
20. NOT USED
21. NOT USED.
22. CUSTOM BANNER BY OWNER. SEE DETAIL 8 ON A812 FOR BANNER HARDWARE.

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HOWELL COMMUNITY CENTER

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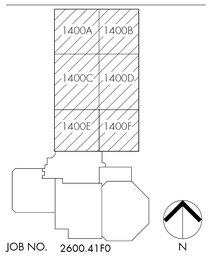
HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR EQUIPMENT PLAN - UNIT 1400

SHEET NO.
A741.4

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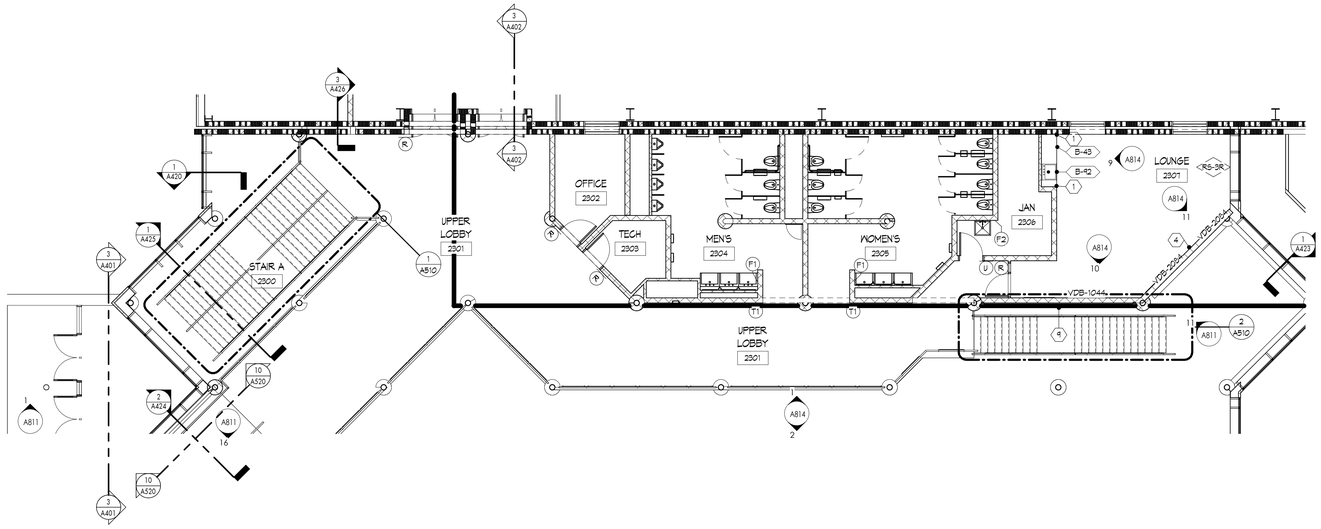
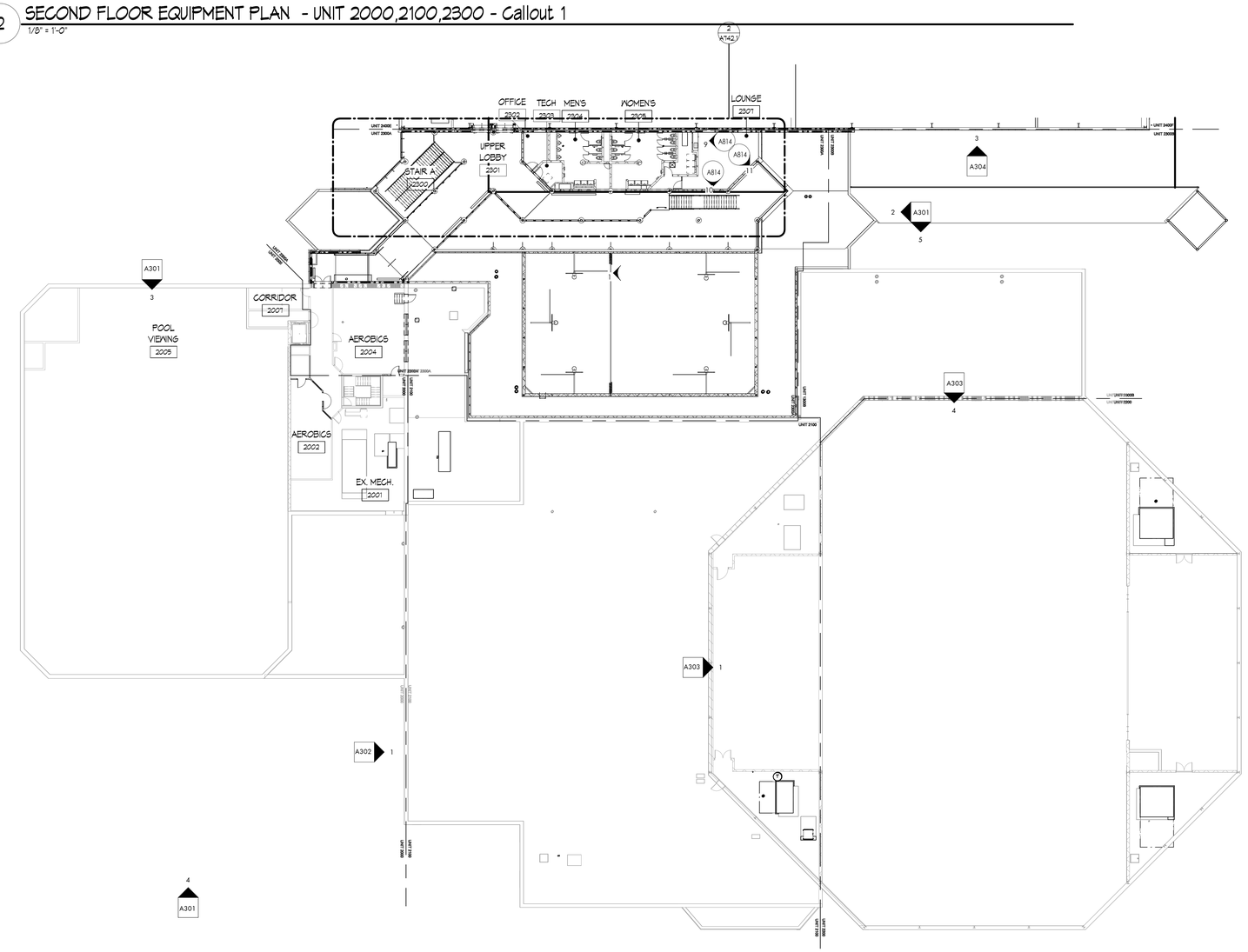


2 SECOND FLOOR EQUIPMENT PLAN - UNIT 2000,2100,2300 - Callout 1

1/8" = 1'-0"



1 SECOND FLOOR EQUIPMENT PLAN - UNIT 2000,2100,2300

1" = 20'-0"

EQUIPMENT PLAN GENERAL NOTES

1. WALL CABINET TOPS TO BE AT 84" A.F.F. UNLESS NOTED OTHERWISE.
2. FILLER + PROVIDE FACE, TOP, BOTTOM AND/OR COUNTERTOP FILLER AS REQUIRED BY TYPE OF CABINET.
3. ALL VISUAL DISPLAY BOARD INSTALLATION LOCATIONS ARE TO BE FIELD VERIFIED PRIOR TO INSTALLATION
4. REFER TO SPECIFICATIONS FOR VISUAL DISPLAY BOARD FINISHES AND COLOR DESIGNATIONS.
5. HOLD ALL TALL CABINETS ADJACENT TO BASE CABINETS OUT 1" FROM WALL OR FLUSH WITH THE FRONT EDGE OF THE COUNTERTOP. PROVIDE FILLER AT BACK WALL AS REQUIRED.
6. ALL COUNTERTOPS SHALL HAVE RADIUS CORNERS AT OUTSIDE CORNERS.
7. REFER TO SPECIFICATION **SECTION 122413** FOR DETAILED INFORMATION ON WINDOW ROLLER SHADES.
8. SEE SHEET A742.3 FOR SIGNAGE DETAILS. PROVIDE BACK PANELS AT ALL SIGNAGE MOUNTED ON GLASS.
9. TRIM WALL PROTECTION AROUND POWER/DATA OUTLETS (TYP.)
10. SEE SHEET A742.3 FOR VISUAL DISPLAY SCHEDULE.
11. REFER TO TECHNOLOGY DRAWINGS BY OTHERS TO COORDINATE VDB's and TV's. INFORM ARCHITECT OF CONFLICTS.

EQUIPMENT PLAN LEGEND

B-X = INDICATES CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINET DOORS SHALL HAVE LOCKS U.N.O.

B-_# = BASE CABINET
W-_# = WALL CABINET
T-_# = TALL CABINET
XB-# = RELOCATED BASE CABINET SEE DEMO PLANS AND EQUIP. PLANS
EDIT IN TAGS USED PER PROJECT, SCIENCE MEDIA CENTER ETC.

= INDICATES ALTERNATE CASEWORK. REFER TO SPECIFICATION SECTION 123216 FOR SCHEDULE AND PLASTIC LAMINATE SELECTIONS. ALL CABINET DOORS SHALL HAVE LOCKS U.N.O.

VDB-_# = VISUAL DISPLAY BOARD, SPECIFICATION SECTION 101100

<RS-XX> = ROLLER SHADE, SPECIFICATION SECTION 122413

= ROOM IDENTIFICATION PANEL SIGNAGE, SPECIFICATION SECTION 101423.16

GS = CORNER GUARD WALL AND DOOR PROTECTION, SPECIFICATION SECTION 102800. TAG-HT-COLOR#.

ES = END WALL GUARD AND DOOR PROTECTION, SPECIFICATION SECTION 102800. TAG-HT-COLOR#

EQUIPMENT PLAN KEYNOTES

1. CASEWORK FILLER TYP.
2. GYM WALL PADS, 2' W X 8' H X 2" THICK, MOUNTED AT 4" AFF. REFER TO INTERIOR ELEVATIONS & SPECIFICATION SECTION 116623
3. GYM SCOREBOARD. SEE ELECTRICAL PLANS.
4. TV BY DISTRICT. SEE ELECTRICAL PLANS FOR SIZE AND MOUNTING HEIGHT.
5. BUILT IN PLASTIC LAMINATE VIEWING WINDOWS. SEE DETAIL 5 ON SHEET A812.
6. BUILT IN PLASTIC LAMINATE BENCH. SEE DETAIL X ON SHEET XXX.
7. CUSTOM LAMINATE DISPLAY CASE. SEE DETAIL 2 ON SHEET A812.
8. PRIVACY WINDOW FILM.
9. CUSTOM WALL PROTECTION MURAL OF DISTRICT APPROVED IMAGE.
10. BENQ BOARD. SEE TECHNOLOGY DRAWINGS.
11. NOT USED.
12. NOT USED.
13. CUSTOM BUILT IN PLASTIC LAMINATE RECEPTION DESK WITH SOLID SURFACE TOP.
14. OLD FIELD HOUSE FLOORING WALL FEATURE (FUTURE BID PACK). SEE ELEVATIONS.
15. GLASS MARKERBOARD WITH "H" GHOSTED IN. SEE SPEC SECTION 101100.
16. NOT USED
17. SOLID SURFACE BENCH SILL.
18. CEILING MOUNTED HEIGHT ADJUSTABLE BASKETBALL BACKSTOP. REFER TO SPECIFICATION SECTION 116623.
19. OVERHEAD MOTORIZED GYM DIVIDER CURTAIN.
20. NOT USED
21. NOT USED.
22. CUSTOM BANNER BY OWNER. SEE DETAIL 9 ON A812 FOR BANNER HARDWARE.

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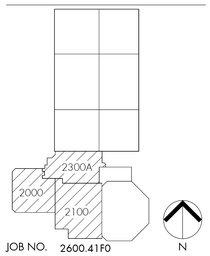
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

SECOND FLOOR EQUIPMENT PLAN - UNIT 2000-2300

SHEET NO.

A742.1

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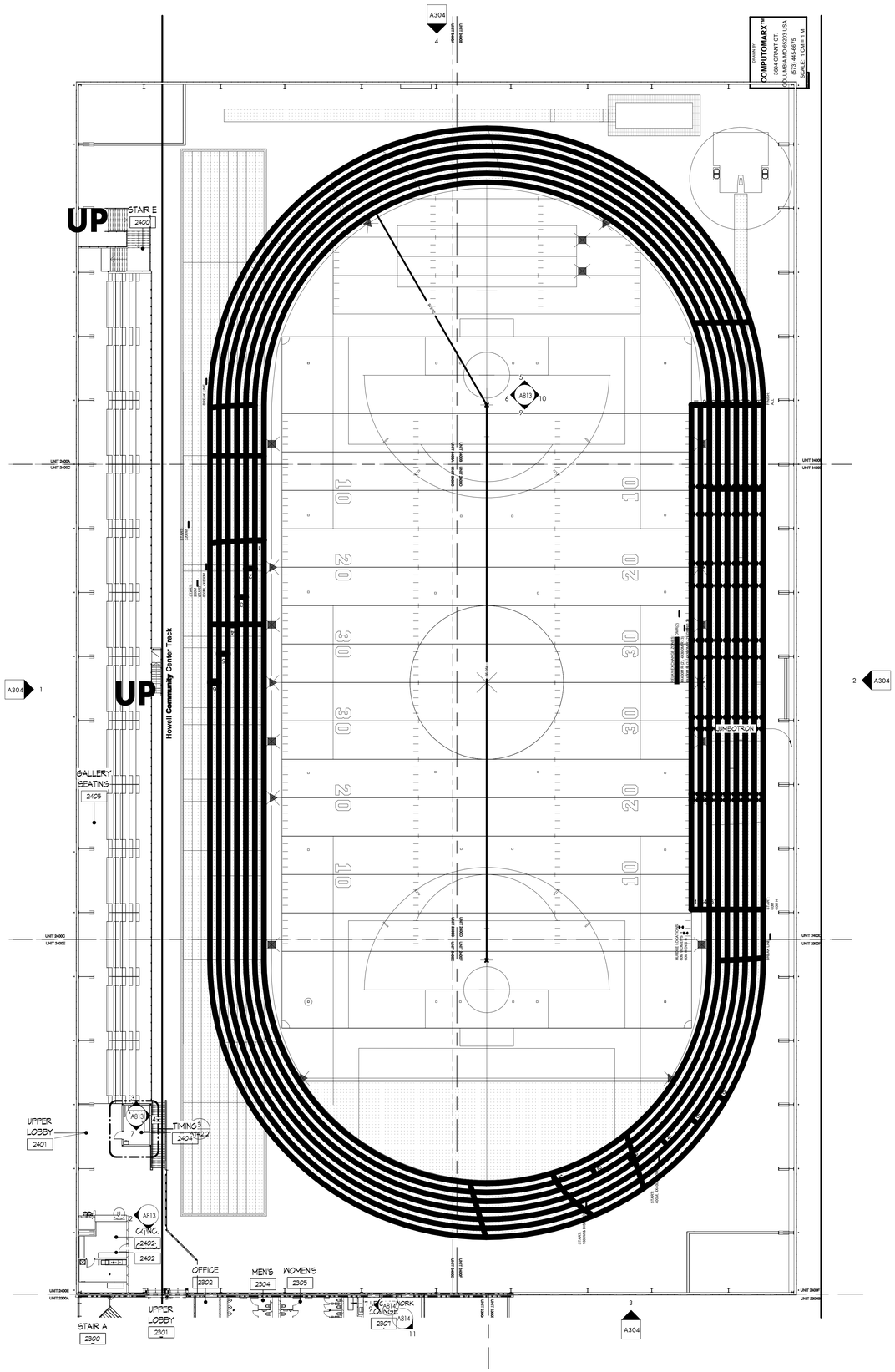
3 SECOND FLOOR EQUIPMENT PLAN - UNIT 2400A-F - Callout 1
1/4" = 1'-0"



2 SECOND FLOOR EQUIPMENT PLAN - UNIT 2400A-F
1" = 20'-0"

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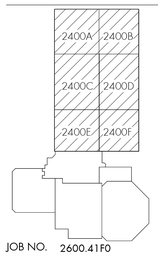
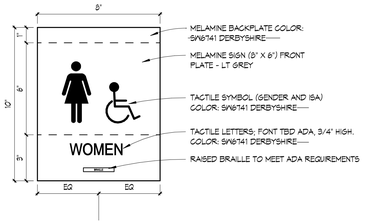
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



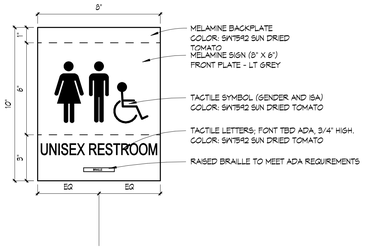
JOB NO. 2600.41F0

SHEET TITLE
SECOND EQUIPMENT PLAN - UNIT 2400A-2400F

SHEET NO.
A742.2



1 T1 SIGN TYPE
3" = 1'-0"



12 T2 SIGN TYPE
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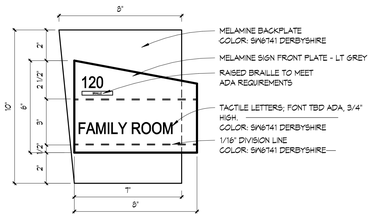

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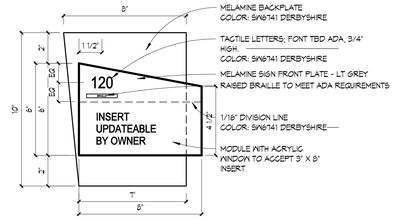
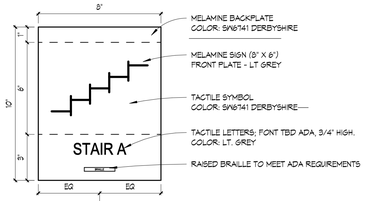


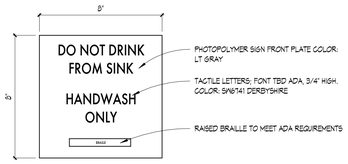
3 R SIGN TYPE
3" = 1'-0"

SIGNAGE GENERAL NOTES

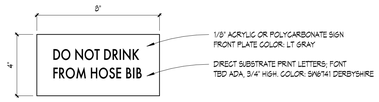
1. FINAL TEXT & NUMBERS AS PROVIDED BY OWNER OR ARCHITECT.
2. SEE SPEC SECTION 101423 FOR ADDITIONAL INFORMATION.
3. SIGNAGE AND INSTALLATION TO MEET ADA REQUIREMENTS.
4. MOUNTING HEIGHT PER ADA REQUIREMENTS.
5. PROVIDE BLANK PANEL FOR MASKING AT ALL SIGNS MOUNTED ON GLASS.



4 ST SIGN TYPE
3" = 1'-0"



8 F1 SIGN TYPE
3" = 1'-0"



9 F2 SIGN TYPE
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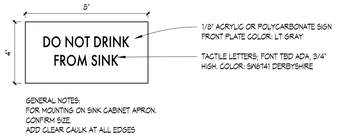
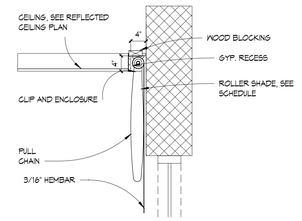


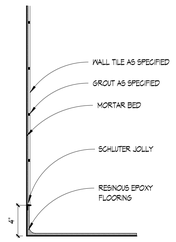
10 F3 SIGN TYPE
3" = 1'-0"

"FILTER FIRST" SIGNAGE GENERAL NOTES

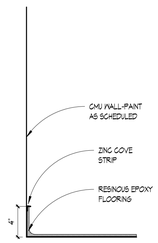
1. FINAL TEXT TO MEET REQUIREMENTS OF "EGLE -FILTER FIRST" LEGISLATION
2. SEE SPEC SECTION 101423 FOR ADDITIONAL INFORMATION
3. SIGNAGE AND INSTALLATION TO MEET ADA REQUIREMENTS
4. MOUNTING HEIGHT PER ADA REQUIREMENTS



5 RECESSED ROLLER SHADE
3/4" = 1'-0"

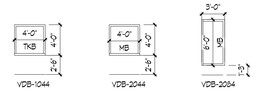


13 EPOXY COVE BASE TO TILE DETAIL
1 1/2" = 1'-0"



14 EPOXY COVE BASE TO CMU DETAIL
1 1/2" = 1'-0"

EQUIPMENT PLAN - VDB SCHEDULE



NOTE: PROVIDE TACKSTRIP, MAP RAIL & FLAG PER ROOM TYPICAL AT MARKERBOARDS. COORDINATE WITH OTHER WALL MOUNTED ITEMS. NO CHALKRAIL WHERE NOTED.

ROLLERSHADE SCHEDULE - EXTERIOR WINDOWS

NOTES: VERIFY ALL DIMENSIONS IN FIELD. DIMENSIONS INDICATE MASONRY OPENINGS.
SHADES TO BE MANUAL, SINGLE ROLLERS, 3% OPENNESS UNLESS NOTED OTHERWISE.

TAG	WIDTH	LENGTH	HAND	MOUNTING	ARCH. REFERENCE	NOTES
RS-1R	9'-1"	5'-0"	RIGHT	INSIDE		
RS-2L	0'-5"	5'-0"	LEFT	INSIDE		
RS-3R	0'-5"	5'-10"	RIGHT	INSIDE		

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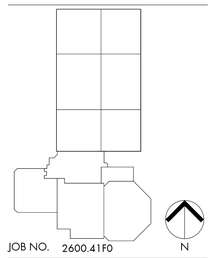
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE
EQUIPMENT DETAILS

SHEET NO.
A742.3

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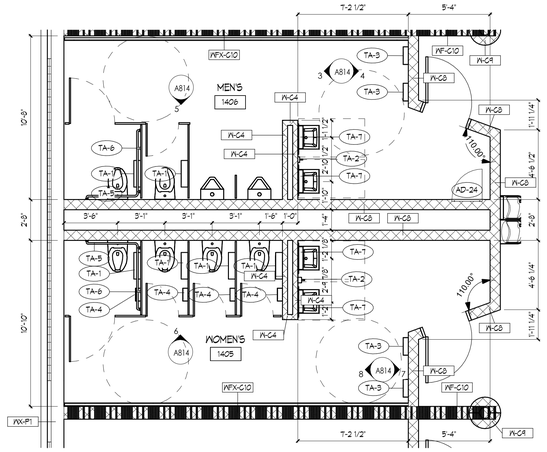
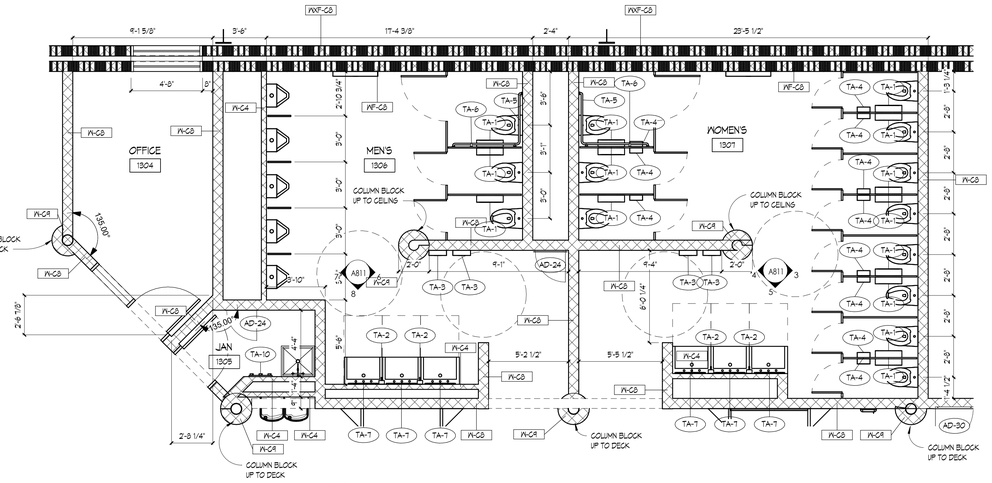


3 ENLARGED FLOOR PLANS - 1405 & 1406
1/4" = 1'-0"



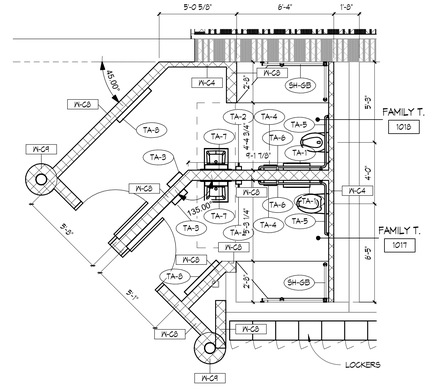
1 ENLARGED FLOOR PLANS - 1304, 1305, 1306 & 1307
1/4" = 1'-0"

TOILET ACCESSORIES

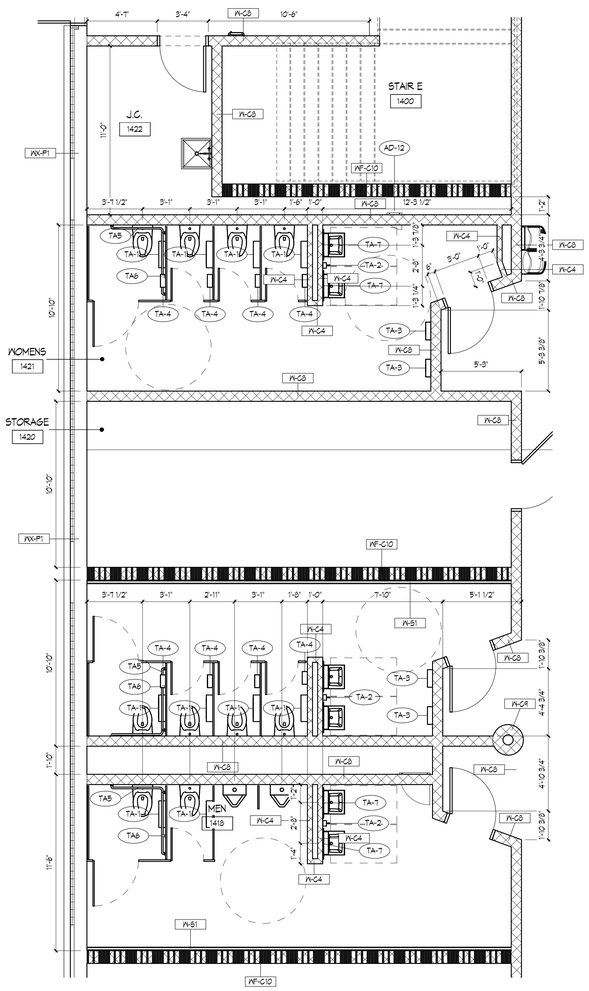
MARK	DESCRIPTION
TA-1	TOILET PAPER DISPENSER - PROVIDED BY OWNER
TA-2	LIQUID SOAP DISPENSER - PROVIDED BY OWNER
TA-3	WARM AIR DRYER
TA-4	SANITARY NAPKIN DISPOSAL UNIT
TA-5	GRAB BAR - 42" X 54"
TA-6	VERTICAL GRAB BAR - 18"
TA-7	MIRROR - 2'-0"W x 3'-0"H
TA-8	BABY CHANGING STATION
TA-9	HARDROBE HOOK
TA-10	MOP & BROOM RACK
AD-12	12X12 ACCESS DOOR @4'-8" AFF
AD-24	24X36 ACCESS DOOR @3'-6" AFF
AD-30	30X36 ACCESS DOOR @3'-6" AFF
AD-48	24X36 ACCESS DOOR @4'-8" AFF
SH-36	SHOWER SEAT
SH-GB	SHOWER GRAB BAR WITH VERTICAL

NOTES:

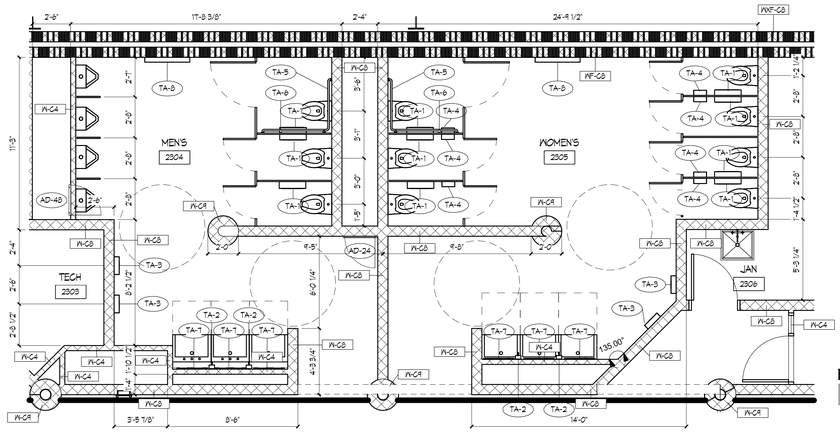
1. INSTALL UNDERLAVATORY GUARDS AT EACH LAVATORY PLUMBING CONNECTION PER SPECIFICATION SECTION 102800.
2. SEE EQUIPMENT PLANS FOR ADDITIONAL ACCESSORIES NOT LOCATED IN TOILET ROOMS.
3. TOILET ACCESSORIES NOTED 'PROVIDED BY OWNER' SHALL BE CONTRACTOR INSTALLED.
4. SLOPE FLOOR MIN. 1/8" PER FOOT TO DRAIN, U.N.O.
5. PROVIDE HARDROBE HOOK AT TOILET STALLS & SINGLE USE RESTROOMS, JG, TYP. SEE SPECIFICATION.
6. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS AT UNIT 1000 & 1100. COORDINATE WITH ELECTRICAL.



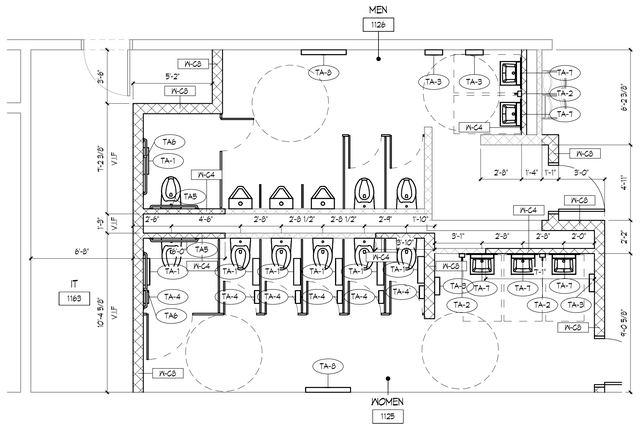
2 ENLARGED FLOOR PLANS - 1017 & 1018
1/4" = 1'-0"



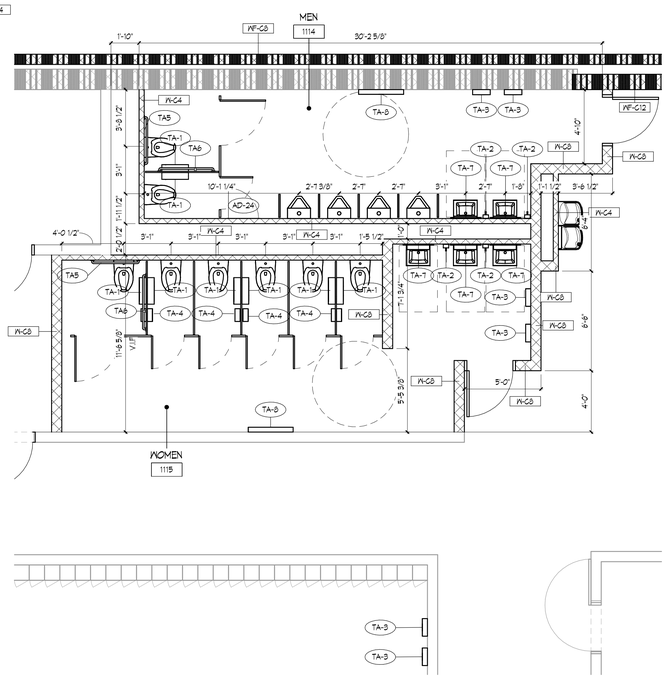
8 ENLARGED FLOOR PLANS - 1419, 1420, 1421 & 1422
1/4" = 1'-0"



4 ENLARGED FLOOR PLANS - 2304 & 2305
1/4" = 1'-0"



7 ENLARGED FLOOR PLANS - 1125 & 1126
1/4" = 1'-0"



6 ENLARGED FLOOR PLANS - 1114 & 1115
1/4" = 1'-0"

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PUBLIC SCHOOLS

ISSUANCES	DATE
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JOB NO. 2600.41F0

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SHEET TITLE
ENLARGED FLOOR PLANS

SHEET NO.
A760

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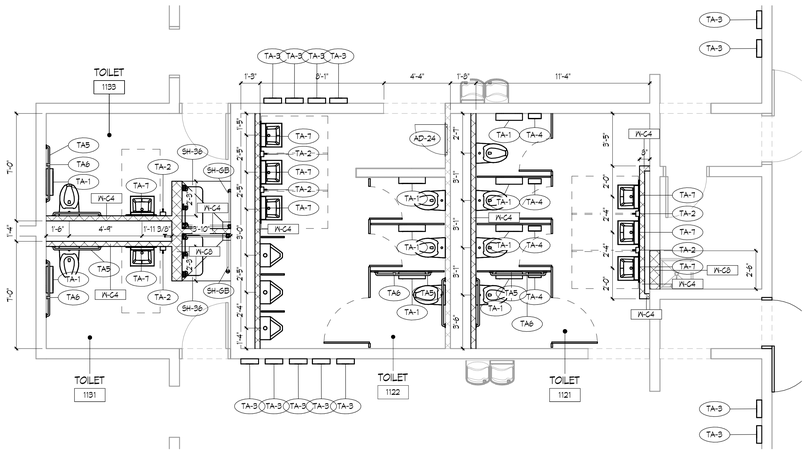
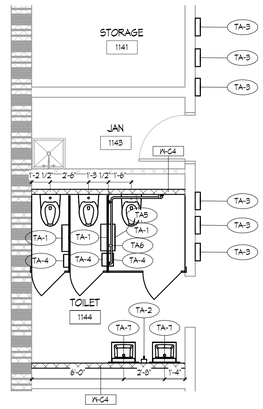
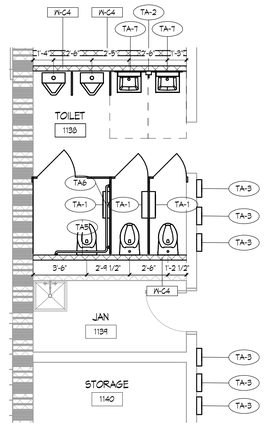


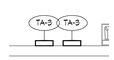
3 ENLARGED FLOOR PLANS - 1121, 1122, 1131, 1133
1/4" = 1'-0"



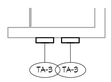
2 ENLARGED FLOOR PLAN - 1144
1/4" = 1'-0"



1 ENLARGED FLOOR PLAN - 1138
1/4" = 1'-0"



5 ENLARGED PLAN - 1008
1/4" = 1'-0"



4 ENLARGED PLAN - 1013
1/4" = 1'-0"

TOILET ACCESSORIES

MARK	DESCRIPTION
TA-1	TOILET PAPER DISPENSER - PROVIDED BY OWNER
TA-2	LIQUID SOAP DISPENSER - PROVIDED BY OWNER
TA-3	WARM AIR DRYER
TA-4	SANITARY NAPKIN DISPOSAL UNIT
TA-5	GRAB BAR - 42" x 54"
TA-6	VERTICAL GRAB BAR - 18"
TA-7	MIRROR - 2'-0"W x 3'-0"H
TA-9	BABY CHANGING STATION
TA-9	WARDROBE HOOK
TA-10	MOP & BROOM RACK
AD-12	12X12 ACCESS DOOR @4'-0" AFF
AD-24	24X36 ACCESS DOOR @3'-6" AFF
AD-30	30X36 ACCESS DOOR @3'-6" AFF
AD-46	24X36 ACCESS DOOR @4'-0" AFF
SH-36	SHOWER SEAT
SH-GB	SHOWER GRAB BAR WITH VERTICAL

NOTES:

1. INSTALL UNDERLAVATORY GUARDS AT EACH LAVATORY PLUMBING CONNECTION PER SPECIFICATION SECTION 102800.
2. SEE EQUIPMENT PLANS FOR ADDITIONAL ACCESSORIES NOT LOCATED IN TOILET ROOMS.
3. TOILET ACCESSORIES NOTED 'PROVIDED BY OWNER' SHALL BE CONTRACTOR INSTALLED.
4. SLOPE FLOOR MIN. 1/8" PER FOOT TO DRAIN, U.N.O.
5. PROVIDE WARDROBE HOOK AT TOILET STALLS & SINGLE USE RESTROOMS, JG, TYP. SEE SPECIFICATION.
6. PROVIDE METAL COVER PLATE TO PATCH WALL AT REMOVED & REPLACED HAND/HAIR DRYER LOCATIONS AT UNIT 1000 & 1100. COORDINATE WITH ELECTRICAL.

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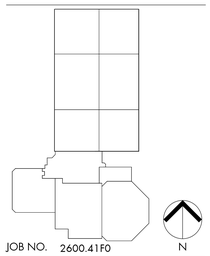
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



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ENLARGED FLOOR PLANS

SHEET NO.

A761

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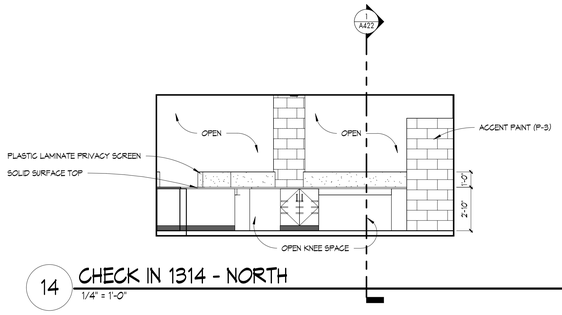
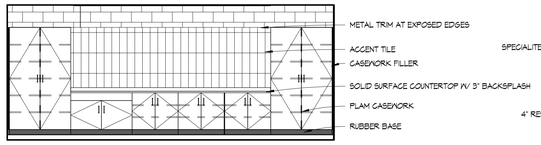
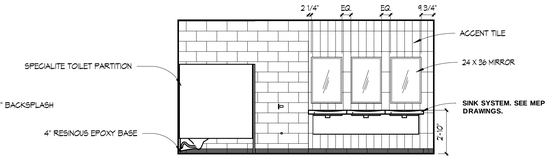


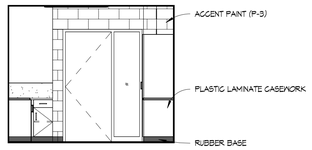
14 CHECK IN 1314 - NORTH
1/4" = 1'-0"



10 CONFERENCE 1308 - WEST
1/4" = 1'-0"



5 WOMEN'S 1307 - SOUTH
1/4" = 1'-0"



13 CHECK IN 1314 - EAST
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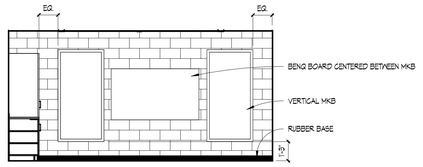
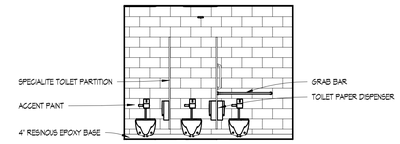
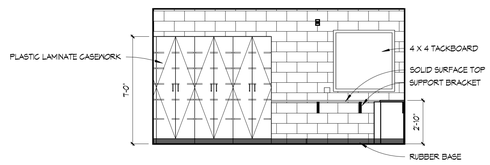


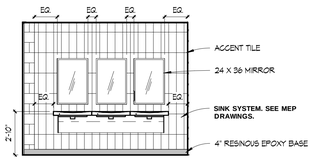
9 CONFERENCE 1308 - NORTH
1/4" = 1'-0"



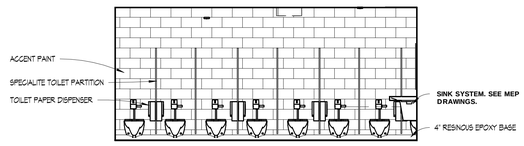
4 WOMEN'S 1307 - WEST
1/4" = 1'-0"



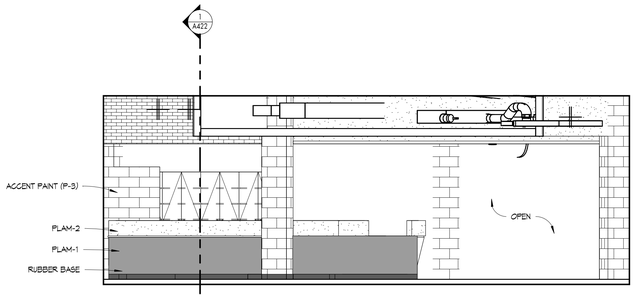
12 CHECK IN 1314 - SOUTH
1/4" = 1'-0"



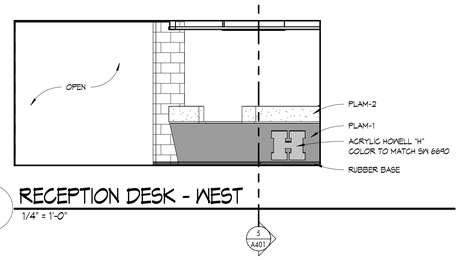
8 MEN'S 1106 - SOUTH
1/4" = 1'-0"



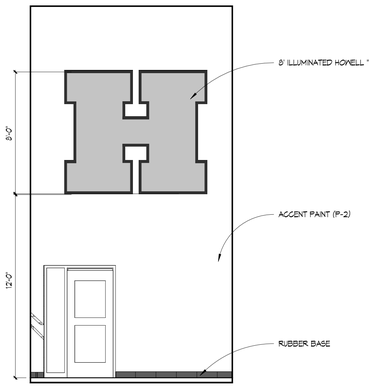
3 WOMEN'S 1307 - EAST
1/4" = 1'-0"



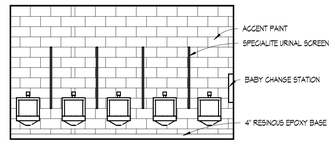
16 RECEPTION DESK - SOUTH
1/4" = 1'-0"



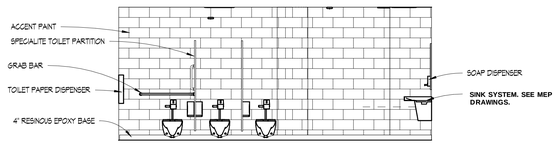
15 RECEPTION DESK - WEST
1/4" = 1'-0"



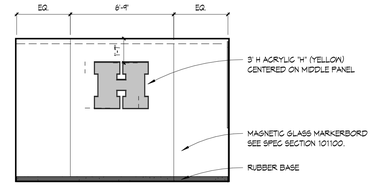
11 LOBBY 1303 - NORTH WEST
1/4" = 1'-0"



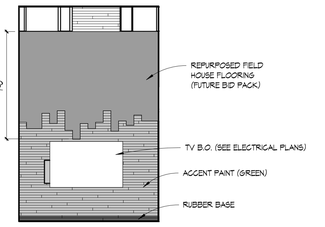
7 9
1/4" = 1'-0"



6 MEN'S 1306 - EAST
1/4" = 1'-0"



2 RECEPTION 1311 - NORTH
1/4" = 1'-0"



1 VESTIBULE 1302 - NORTH
1/4" = 1'-0"

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HOWELL PUBLIC SCHOOLS

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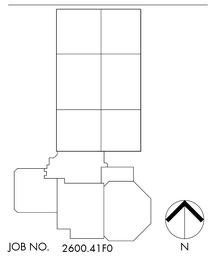
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



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INTERIOR ELEVATIONS

SHEET NO.
A811

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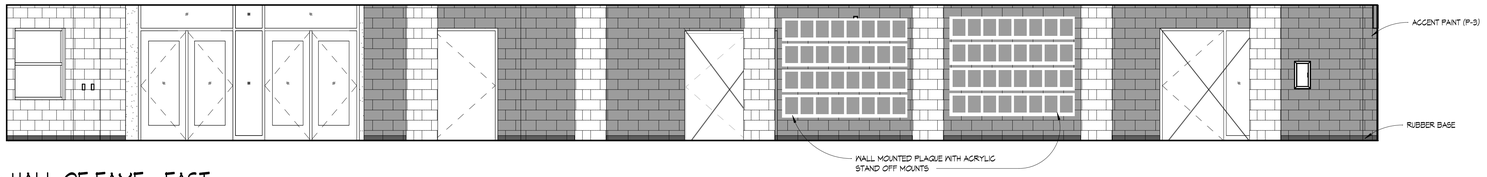
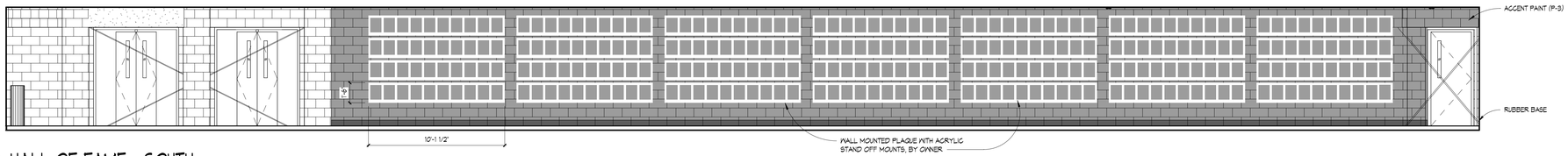
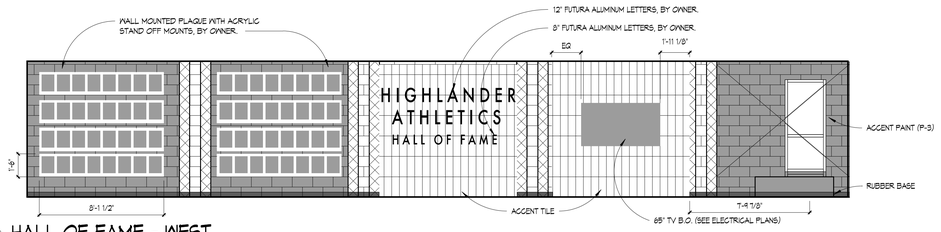


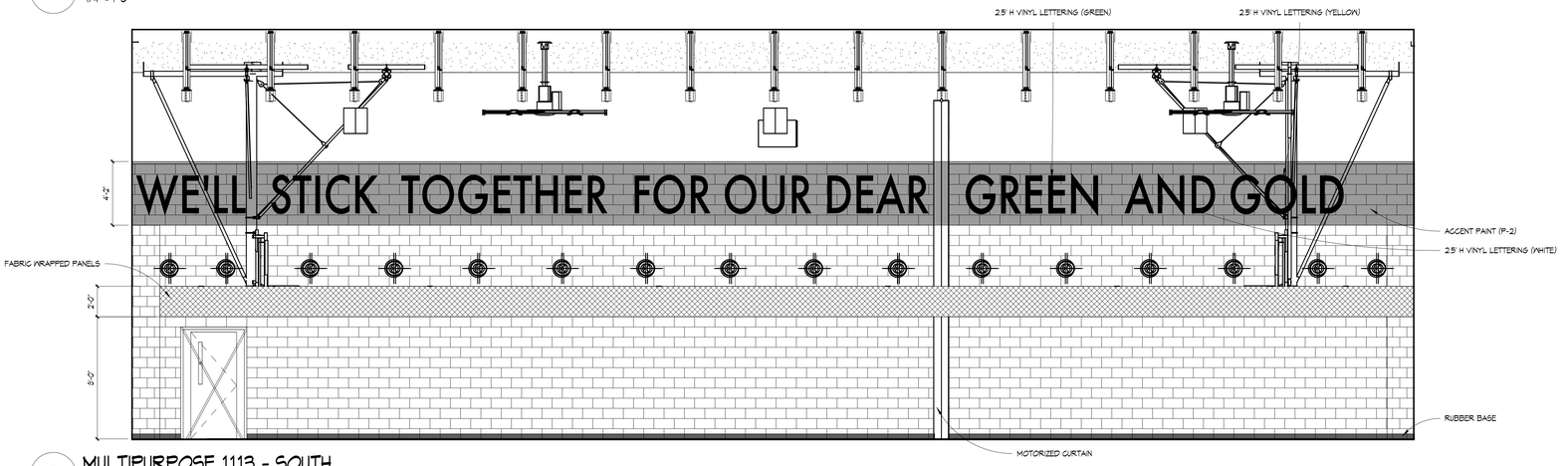
6 HALL OF FAME - EAST
1/4" = 1'-0"



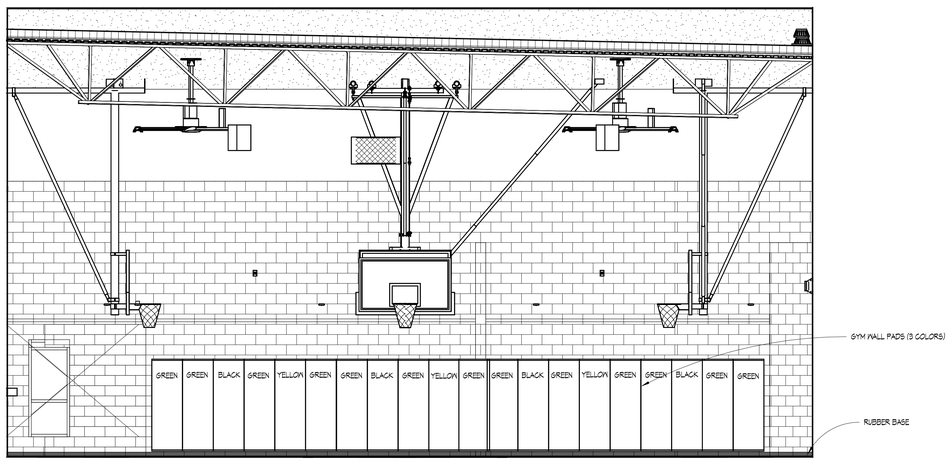
5 HALL OF FAME - SOUTH
1/4" = 1'-0"



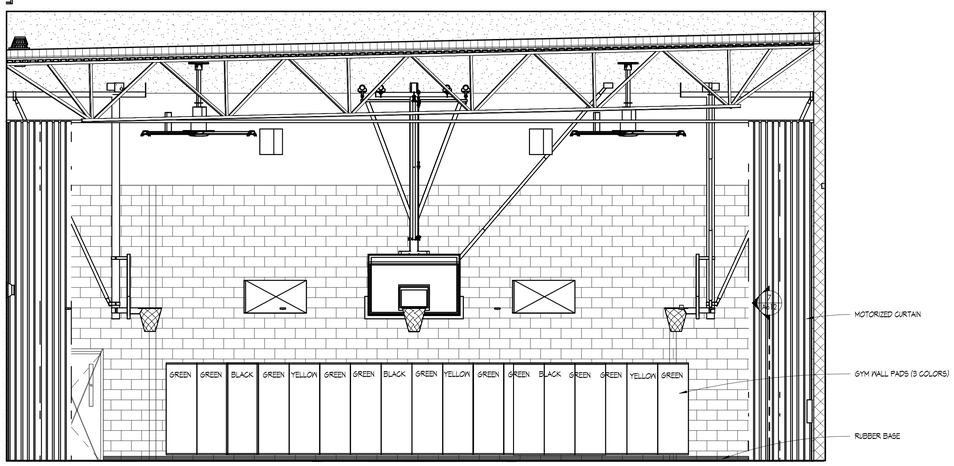
4 HALL OF FAME - WEST
1/4" = 1'-0"



3 MULTIPURPOSE 1113 - SOUTH
1/4" = 1'-0"



2 MULTIPURPOSE 1113 - WEST
1/4" = 1'-0"



1 MULTIPURPOSE 1113 - EAST
1/4" = 1'-0"

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
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HOWELL PUBLIC SCHOOLS

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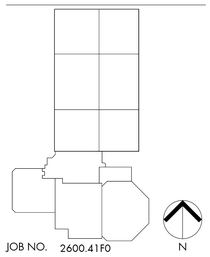
CONSTRUCTION DOCUMENTS	07.30.2026



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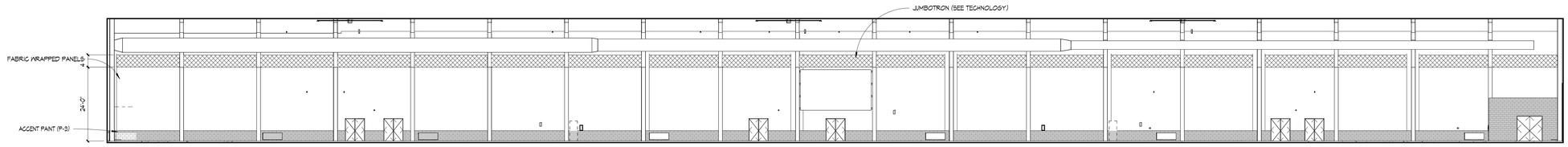
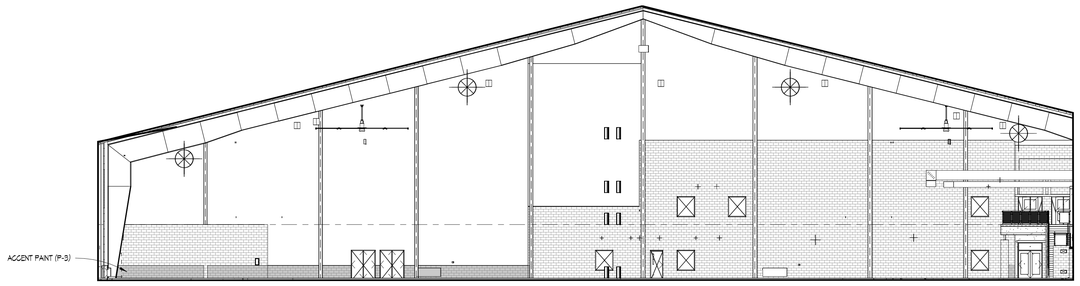
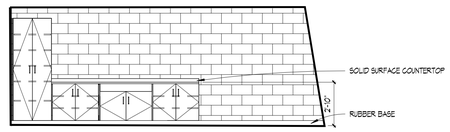


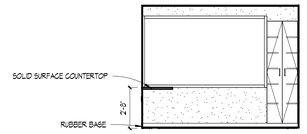
10 FIELD 1401 - WEST
1/16" = 1'-0"



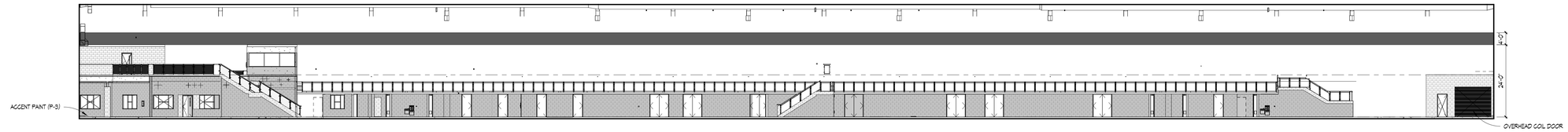
9 FIELD 1401 - SOUTH
1/16" = 1'-0"



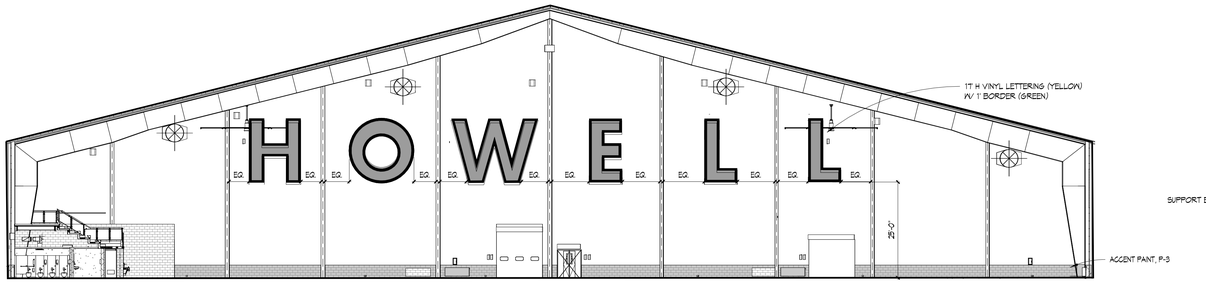
8 TRAINER 1407 - SOUTH
1/4" = 1'-0"



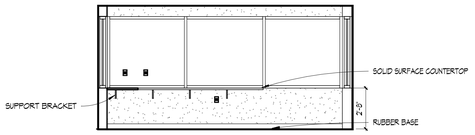
7 TIMING 2404 - SOUTH
1/4" = 1'-0"



6 FIELD 1401 - EAST
1/16" = 1'-0"



5 FIELD 1401 - NORTH
1/16" = 1'-0"



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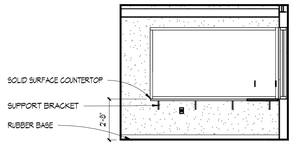

3 TIMING 2404 - NORTH
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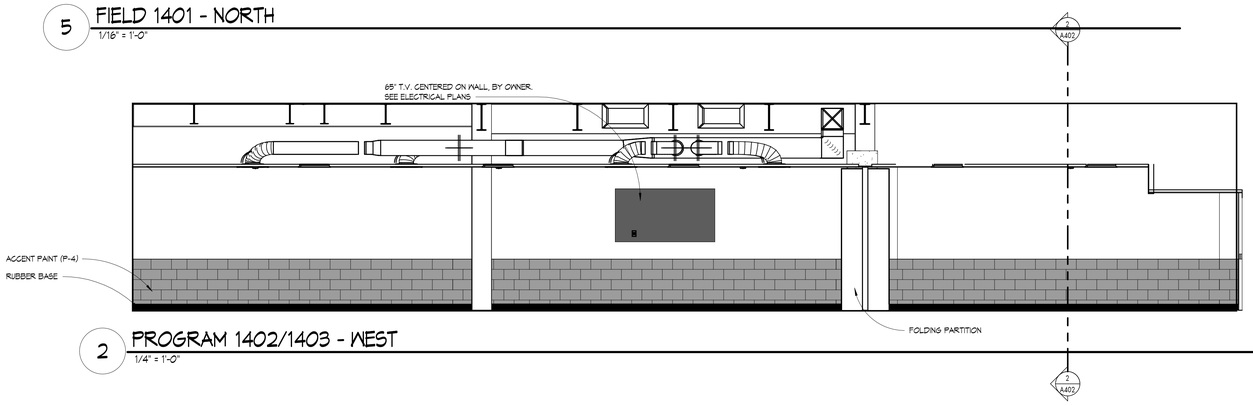
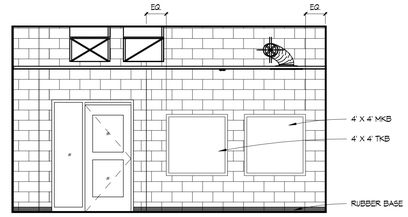


2 PROGRAM 1402/1403 - WEST
1/4" = 1'-0"



1 PROGRAM 1402 - SOUTH
1/4" = 1'-0"

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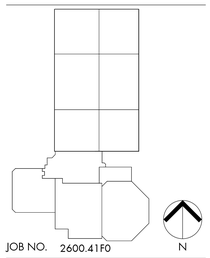

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SHEET TITLE
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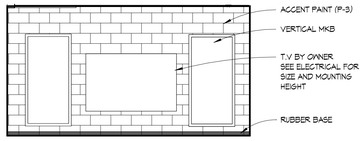
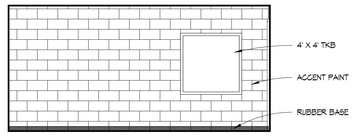
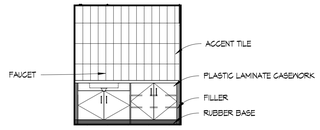


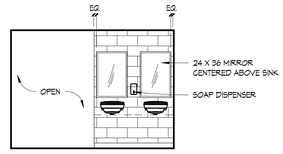
11 LOUNGE 2307 - EAST
1/4" = 1'-0"



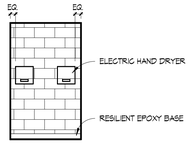
10 LOUNGE 2307 - SOUTH
1/4" = 1'-0"



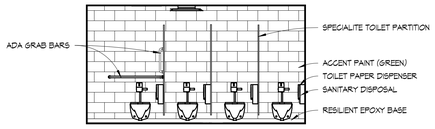
9 LOUNGE 2307 - WEST
1/4" = 1'-0"



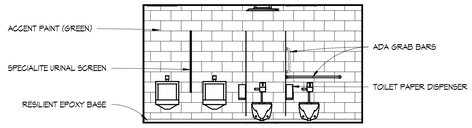
8 WOMEN'S 1405 - WEST
1/4" = 1'-0"



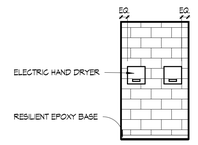
7 WOMEN'S 1405 - EAST
1/4" = 1'-0"



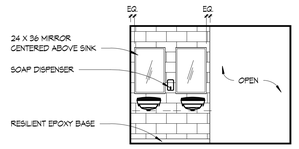
6 WOMEN'S 1405 - NORTH
1/4" = 1'-0"



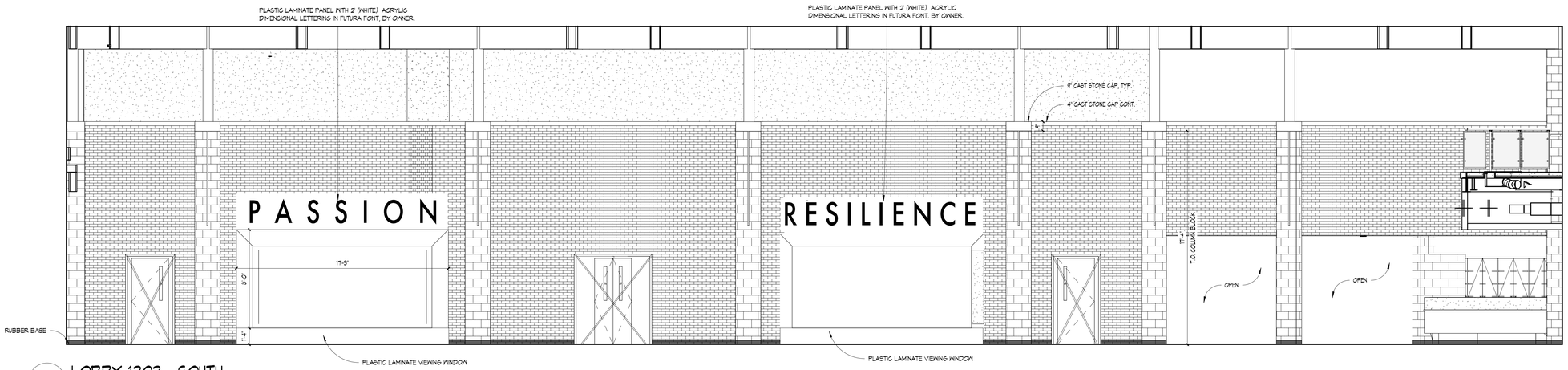
5 MEN'S 1406 - SOUTH
1/4" = 1'-0"



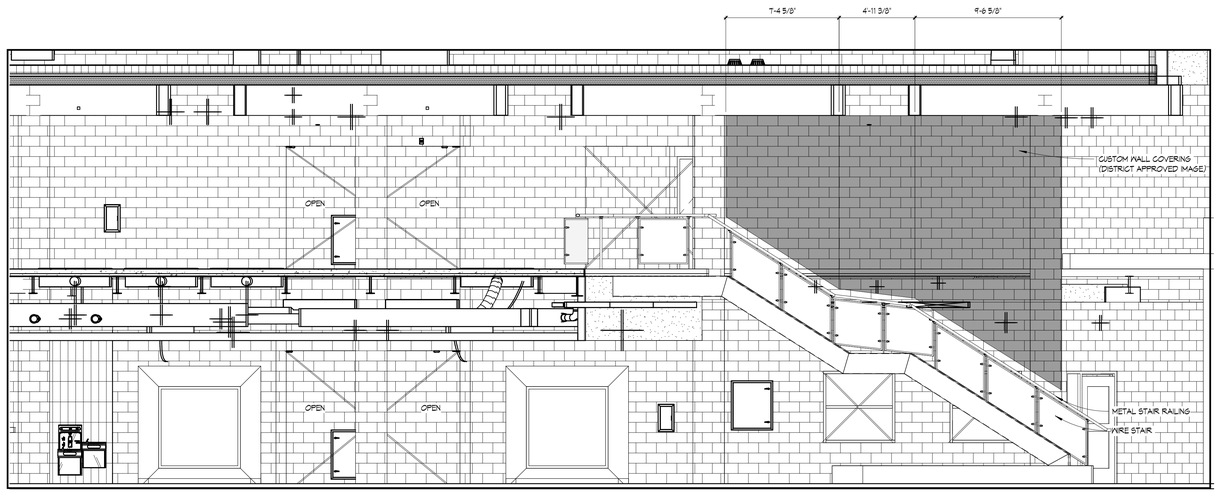
4 MEN'S 1406 - EAST
1/4" = 1'-0"



3 MEN'S 1406 - WEST
1/4" = 1'-0"



2 LOBBY 1303 - SOUTH
1/4" = 1'-0"



1 LOBBY 1303 - NORTH
1/4" = 1'-0"

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

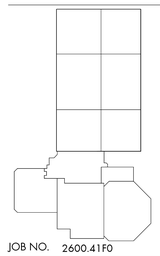
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE
INTERIOR ELEVATIONS

SHEET NO.
A814

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STRUCTURAL NOTES

GENERAL

1. THESE NOTES ARE TO BE READ IN CONJUNCTION WITH THE DRAWINGS AND THE WRITTEN SPECIFICATIONS. IN THE EVENT OF CONFLICT BETWEEN THE INFORMATION ON THE WRITTEN SPECIFICATIONS, THE DRAWINGS, AND THESE NOTES, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.
2. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE COMPLETED STRUCTURE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADEQUATE SHORING AND BRACING DURING CONSTRUCTION TO ACCOUNT FOR ALL FORCES, INCLUDING BUT NOT LIMITED TO: GRAVITY, WIND, EARTH PRESSURE, AND UNBALANCED FORCES DUE TO CONSTRUCTION SEQUENCE. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SEQUENCES, AND JOB SAFETY.
3. THE CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION METHODS WILL NOT CAUSE DAMAGE TO ADJACENT BUILDINGS, UTILITIES, OR OTHER PROPERTIES.
4. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE STRUCTURAL WORK WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING WORK, AS WELL AS ANY OTHER APPLICABLE TRADES. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES AND/OR INTERFERENCES IMMEDIATELY.
5. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE BEGINNING WORK. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS AND BE RESPONSIBLE FOR SAME.
6. IN CASES OF CONFLICT BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND OTHER DISCIPLINES OR EXISTING CONDITIONS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER AND OBTAIN CLARIFICATION PRIOR TO BIDDING AND/OR PROCEEDING WITH THE WORK.
7. THE CONTRACTOR SHALL VERIFY ALL OPENING SIZES AND LOCATIONS WITH OTHER DISCIPLINES. THE DRAWINGS DO NOT SHOW ALL OPENINGS REQUIRED. ADDITIONAL OPENINGS, BLOCKOUTS, AND SLEEVES MAY BE REQUIRED BY OTHER DISCIPLINES. OPENINGS REQUIRED BUT NOT SHOWN ON STRUCTURAL DRAWINGS MUST BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.
8. APPLY DETAILS, SECTIONS, AND NOTES ON THE DRAWINGS WHERE CONDITIONS ARE SIMILAR TO THOSE INDICATED BY DETAIL, DETAIL TITLE, OR NOTE.
9. DO NOT SCALE DRAWINGS. ONLY USE DIMENSIONS INDICATED ON THE DRAWINGS.
10. ISOMETRIC VIEWS, IF INCLUDED, ARE TO GIVE A GENERAL SENSE OF THE STRUCTURE AND MASSING. THEY DO NOT SUPERSEDE THE STRUCTURAL DRAWINGS AND ARE PROVIDED AS SUPPLEMENTAL INFORMATION ONLY. THE STRUCTURE SHALL BE PROVIDED PER THE STRUCTURAL DRAWINGS, DETAILS, NOTES, AND SPECIFICATIONS.
11. CENTERLINES OF FRAMING MEMBERS COINCIDE WITH COLUMN CENTERLINES, UNLESS NOTED OTHERWISE.
12. CENTERLINES OF FOUNDATIONS COINCIDE WITH COLUMN LOCATIONS, UNLESS NOTED OTHERWISE.
13. THE CONTRACTOR SHALL OBTAIN COPIES OF THE LATEST CONTRACT DOCUMENTS INCLUDING ALL BULLETINS AND ADDENDA, AND SHALL PROVIDE THE RELEVANT PORTIONS TO ALL SUBCONTRACTORS AND SUPPLIERS PRIOR TO SUBMITTAL OF SHOP DRAWINGS, FABRICATION, AND ERECTION OF STRUCTURAL MEMBERS.
14. STRUCTURAL ENGINEER OF RECORD'S ACCEPTANCE MUST BE SECURED FOR ALL STRUCTURAL SUBSTITUTIONS.
15. NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED, OR OTHERWISE REDUCED IN STRENGTH UNLESS SPECIFICALLY SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD.
16. THE GENERAL CONTRACTOR IS TO PROVIDE AN APPROPRIATE NUMBER OF COPIES OF ONE COMPLETE COORDINATED DRAWING SET SHOWING ALL SLEEVES, CONDUITS, BOXOUTS, DUCT OPENINGS, ETC. AS REQUIRED FOR ALL TRADES FOR THE STRUCTURAL ENGINEER OF RECORDS APPROVAL. THIS SHALL BE DONE A MINIMUM OF TWO WEEKS PRIOR TO CONSTRUCTING AFFECTED SLABS, BEAMS, WALLS, COLUMNS, OR FOOTINGS.
17. SUPPORT DETAILS FOR ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING EQUIPMENT IS BASED UPON AVAILABLE INFORMATION OF MANUFACTURER. CONTRACTOR SHALL COORDINATE REQUIREMENTS OF ACTUAL EQUIPMENT SUPPLIED WITH DETAILS AND SHALL PROVIDE ANY ADDITIONAL FRAMING REQUIRED.
18. PERIODIC SITE OBSERVATION VISITS MAY BE PROVIDED BY THE ARCHITECT/ENGINEER. THE SOLE PURPOSE OF THESE OBSERVATIONS IS TO REVIEW THE GENERAL CONFORMANCE OF THE CONSTRUCTION WITH THE CONTRACT DOCUMENTS. THESE LIMITED OBSERVATIONS SHOULD NOT BE CONSIDERED AS CONTINUOUS OR EXHAUSTIVE INVESTIGATIONS TO VERIFY THAT ALL CONSTRUCTION IS IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

REFERENCED CODES AND STANDARDS

1. PERFORM ALL CONSTRUCTION IN CONFORMANCE WITH THE LATEST EDITIONS OF THE BUILDING AND DESIGN CODES REFERENCED WITHIN THESE DOCUMENTS. THE CONTRACT DOCUMENTS REFER TO THE FOLLOWING CODES AND STANDARDS. LATEST EDITIONS AS REFERENCED IN THE CURRENT BUILDING CODE IN THE STATE OF THE PROJECT, UNLESS NOTED OTHERWISE:
   - 2021 MICHIGAN BUILDING CODE
   - ASCE 7, MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
   - ACI 301, SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS
   - ACI 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - TMS 402/602, BUILDING CODE REQUIREMENTS AND SPECIFICATION FOR MASONRY STRUCTURES
   - HOT AND COLD WEATHER MASONRY CONSTRUCTION BY THE MASONRY INDUSTRY COUNCIL
   - AISC 303, CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES
   - AISC 360, SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
   - ANSI/SDI C, STANDARD FOR COMPOSITE STEEL FLOOR DECK
   - ANSI/SDI RD, STANDARD FOR STEEL ROOF DECK
   - SJI, STANDARD SPECIFICATION FOR OPEN WEB STEEL JOISTS AND JOIST GIRDERS
   - AISI S100, NORTH AMERICAN SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL MEMBERS
   - NDS, NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION

DESIGN CRITERIA

1. GENERAL

• CONCRETE DESIGN	LRFD
• STEEL DESIGN	LRFD
• MASONRY DESIGN	ASD
• WOOD DESIGN	ASD
• RISK CATEGORY	III

2. DEAD LOADS (SUPERIMPOSED)

• UNIT 1300 SECOND FLOOR	15.0 PSF
• UNIT 1300 ROOF (COLLATERAL)	10.0 PSF
• UNIT 1300 ROOF (SOLAR ALLOWANCE)	5.0 PSF
• UNIT 1400 SECOND FLOOR & SEATING	15.0 PSF
• UNIT 1400 ROOF (COLLATERAL)	15.0 PSF
• UNIT 1400 ROOF (SOLAR ALLOWANCE)	5.0 PSF

3. LIVE LOADS

• UNIT 1300 SECOND FLOOR	100.0 PSF
• UNIT 1300 ROOF	20.0 PSF
• UNIT 1400 SECOND FLOOR	100.0 PSF
• UNIT 1400 ROOF	20.0 PSF

4. SNOW LOADS

• GROUND SNOW LOAD (P_G)	25.0 PSF
• SNOW EXPOSURE FACTOR (C_E)	0.90
• SNOW IMPORTANCE FACTOR (I_S)	1.10
• THERMAL FACTOR (C_T)	1.00
• FLAT ROOF SNOW LOAD (P_F)	17.3 PSF
• 3:12 SLOPED ROOF SNOW LOAD (P_S)	15.6 PSF
• MINIMUM FLAT ROOF SNOW LOAD (P_{MIN})	22.0 PSF
• (SEE SNOW LOAD DIAGRAMS ON S120)	

5. WIND LOADS

• BASIC WIND SPEED (V)	115 MPH
• EXPOSURE CATEGORY	B
• (SEE WIND LOAD DIAGRAMS ON S002)	

6. EARTHQUAKE LOADS

• SEISMIC SITE CLASS	D
• DESIGN SPECTRAL ACCELERATION (S_{DS})	0.097
• DESIGN SPECTRAL ACCELERATION (S_{D1})	0.073
• SEISMIC DESIGN CATEGORY	B
• SEISMIC IMPORTANCE FACTOR (I_E)	1.25
• UNIT 1300 ORDINARY REINF. MASONRY SHEAR WALLS (R)	2.00
• UNIT 1300 SEISMIC RESPONSE COEFFICIENT (C_S)	0.061
• UNIT 1400 ORDINARY STEEL CONC. BRACED FRAMES (R)	3.25
• UNIT 1400 SEISMIC RESPONSE COEFFICIENT (C_S)	0.037

SUBMITTALS

1. THE CONTRACTOR SHALL SUBMIT FOR ARCHITECT/ENGINEER REVIEW A SCHEDULE WHICH DETAILS THE ESTIMATED QUANTITY OF SUBMITTALS, AND THE DATE THEY WILL BE RECEIVED, AT LEAST TWENTY (20) WORKING DAYS PRIOR TO THE FIRST SUBMITTAL. THE SCHEDULE SHOULD ACCOUNT FOR AT LEAST TEN (10) WORKING DAYS OF REVIEW TIME BY THE ARCHITECT/ENGINEER FOR EACH SUBMITTAL.
2. SHOP DRAWINGS AND/OR DETAILS THAT ARE PREPARED FROM REPRODUCTIONS OF THE STRUCTURAL ENGINEER OF RECORD'S DESIGN DOCUMENTS, IN WHOLE OR IN PART, SHALL NOT BE USED AND WILL BE REJECTED.
3. THE ARCHITECT/ENGINEER MAY RETURN, WITHOUT COMMENT, SUBMITTALS WHICH THE CONTRACTOR HAS NOT STAMPED OR WHICH DO NOT MEET THE PROJECT REQUIREMENTS.
4. THE CONSTRUCTION, MANUFACTURE, AND/OR FABRICATION OF ANY ITEMS PRIOR TO THE ARCHITECT/ENGINEER REVIEW WILL BE ENTIRELY AT THE RISK OF THE CONTRACTOR.
5. ARCHITECT'S/ENGINEER'S REVIEW IS FOR GENERAL CONFORMANCE AND COMPLIANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. ANY ACTION NOTED DOES NOT WAIVE ANY REQUIREMENT OF CONTRACT DOCUMENTS, COORDINATION OF TRADES, AND SATISFACTORY PERFORMANCE OF THEIR WORK WHICH ARE THE CONTRACTOR'S COMPLETE RESPONSIBILITY.
6. FOR COMPONENTS THAT REQUIRE A SPECIALTY ENGINEER, THE SUBMITTAL SHALL BE SEALED BY THE ENGINEER RESPONSIBLE FOR THE DESIGN. 'SPECIALTY ENGINEER' IS DEFINED AS THE STRUCTURAL ENGINEER EMPLOYED BY THE SUPPLIER TO DESIGN PRODUCTS TO MEET THE SPECIFIC CRITERIA OUTLINED IN THE CONTRACT DOCUMENTS. SEALING OF THE SUBMITTAL IMPLIES THAT THE SPECIALTY ENGINEER HAS REVIEWED THE CONTRACT DOCUMENTS AND HAS, TO THE BEST OF THEIR KNOWLEDGE, INCORPORATED ALL OF THE SPECIAL DESIGN CRITERIA CONTAINED THEREIN.
7. ITEMS THAT REQUIRE SUBMITTAL FOR STRUCTURAL REVIEW ARE:
   - DEEP FOUNDATIONS (GEOPIERS AND DRILLED PIERS)
   - CONCRETE MIX DESIGNS
   - CONCRETE REINFORCING LAYOUT
   - PRECAST CONCRETE
   - MASONRY UNIT STRENGTHS
   - MORTAR/GROUT MIX DESIGNS
   - MASONRY REINFORCING ELEVATIONS
   - METAL DECK
   - METAL JOISTS AND GIRDERS
   - ANCHOR RODS
   - STRUCTURAL STEEL
   - COLD-FORMED METAL FRAMING
   - MASS TIMBER FRAMING, DECKING, AND CONNECTIONS
   - MASS TIMBER CURTAIN WALL AND CONNECTIONS
   - PRE-ENGINEERED METAL BUILDING

FOUNDATIONS

1. FOUNDATION CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE SOIL REPORT BY SOIL AND MATERIALS ENGINEER, 2663 EATON RAPIDS ROAD, LANSING, MICHIGAN DATED NOVEMBER 12, 2025, AMENDED WITH ADDITIONAL INFORMATION ON JANUARY 13, 2026. (SME PROJ. NO. 09953-09). THE CONTRACTOR SHALL OBTAIN A COPY OF THE SOIL REPORT AND BECOME FAMILIAR WITH THE REQUIREMENTS AND RECOMMENDATIONS THEREIN.
2. A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHALL BE RETAINED BY THE CONTRACTOR TO VERIFY FOUNDATION INSTALLATION AND CONSTRUCTION IS IN CONFORMANCE WITH THE RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL INVESTIGATION REPORT.
3. SOIL STABILIZATION IS REQUIRED PER THE GEOTECHNICAL REPORT, WHICH INCLUDES A GRID OF GEOPIERS WITH A LOAD TRANSFER PODIUM. UPON COMPLETION, ALL FOOTINGS SHALL ACHIEVE A MINIMUM SAFE BEARING CAPACITY OF 3,000 PSF.
4. CONTRACTOR SHALL NOTIFY THE GEOTECHNICAL ENGINEER WHEN EXCAVATIONS ARE COMPLETED SO THAT CONDITIONS MAY BE INSPECTED PRIOR TO PLACEMENT OF ANY FILL, REINFORCING, OR CONCRETE. NOTIFY ARCHITECT/ENGINEER OF ANY VARIATION FROM THE ANTICIPATED BEARING CAPACITY FOR APPROPRIATE REDESIGN OR LOWERING OF FOOTING.
5. THE BOTTOMS OF ALL EXTERIOR FOOTINGS SHALL BE MINIMUM 3'-6" BELOW FINISHED GRADE. IF THE BUILDING WILL BE UNDER CONSTRUCTION DURING FREEZING WEATHER, THE BOTTOMS OF ALL INTERIOR FOUNDATIONS SHALL BE DEPRESSED 3'-6" BELOW CONSTRUCTION GRADE FOR FROST PROTECTION. IF SUCH ADDITIONAL FOOTING DEPTH WILL CAUSE UNDERMINING OF ADJACENT EXISTING FOOTINGS OR STRUCTURES, PROVIDE SHORING, BRACING, OR UNDERPINNING AS REQUIRED, OR LEAVE FOOTING ELEVATION AS DESIGNED AND PROVIDE CONTINUED PROTECTION AND HEAT TO PREVENT FORMATION OF FROST BELOW FOOTING AND ADJACENT TO FOOTING.
6. EDGES OF FOOTINGS SHALL NOT BE PLACED AT A GREATER THAN 1 VERTICAL TO 2 HORIZONTAL SLOPE WITH RESPECT TO ANY ADJACENT FOOTING OR EXCAVATION, UNLESS UNDERPINNING OR SHORING AND BRACING OF EXISTING FOOTING OR EXCAVATION IS PROVIDED. UNDERPINNING SHALL BE DONE SO AS NOT TO CAUSE SETTLEMENTS OF EXISTING STRUCTURE AND SHALL BE SUCH THAT COMPLETE CONTACT IS ACHIEVED BETWEEN NEW UNDERPINNING AND EXISTING CONCRETE.
7. BACKFILL FOUNDATION WALLS WITH EARTH ON BOTH SIDES OF THE WALL BY ALTERNATELY PLACING BACKFILL ON EACH SIDE SUCH THAT HEIGHT OF BACKFILL DOES NOT DIFFER BY MORE THAN 1'-0" FROM EITHER SIDE.
8. NO FOUNDATIONS OR SLABS SHALL BE PLACED ON OR AGAINST SUB-GRADE CONTAINING WATER, FROST, OR ICE. CONTRACTOR SHALL FURNISH ALL REQUIRED DE-WATERING EQUIPMENT TO MAINTAIN A DRY EXCAVATION UNTIL BACKFILL IS COMPLETE.
9. CONTRACTOR SHALL BE RESPONSIBLE TO ADEQUATELY PROTECT EXCAVATIONS AND SUB-GRADES OF COMPLETED NON-FROST PROTECTED FOUNDATIONS AND SLABS FROM DAMAGE DUE TO FREEZING CONDITIONS UNTIL THE FULL BUILDING ENCLOSURE IS COMPLETED AND HEATED.
10. SLABS ON GRADE SHALL REST ON GRANULAR FILL AS PRESCRIBED BY THE GEOTECHNICAL REPORT. ALL BACKFILL WITHIN BUILDING LINES SHALL BE ENGINEERED GRANULAR FILL PLACED UNDER THE FULL-TIME SUPERVISION OF A SOIL ENGINEER AND SHALL BE COMPACTED TO ACHIEVE 95% MODIFIED PROCTOR DENSITY (AS DEFINED BY ASTM D1557 MODIFIED PROCTOR TEST). FILL SHALL BE PLACED IN 9" MAXIMUM LIFTS.
11. THE CONTRACTOR SHALL SAFEGUARD AND PROTECT ALL EXCAVATIONS, ADJACENT STRUCTURES, PAVEMENTS, AND UTILITIES. DO NOT REMOVE SHORING, SUCH AS SHEET PILING, IF IT WILL CAUSE SETTLEMENT OR DAMAGE TO EXISTING OR NEW STRUCTURES, PAVEMENT, AND/OR UTILITIES.
12. MAXIMUM LENGTH OF FOUNDATION WALL PLACED IN ONE OPERATION SHALL NOT EXCEED 60 FEET.
13. THE FOUNDATION CONTRACTOR SHALL REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL LOCATIONS OF TRENCHES, PITS, CONDUITS, ETC. NOT SHOWN ON THE STRUCTURAL DRAWINGS.

CONCRETE

1. ALL CONCRETE SHALL BE MADE WITH PORTLAND CEMENT AND STONE AGGREGATE, WITH MIXES DESIGNED TO MEET 28-DAY MINIMUM COMPRESSIVE STRENGTHS IN VARIOUS ELEMENTS OF THE STRUCTURE AS FOLLOWS, UNLESS NOTED OTHERWISE:

ELEMENT	F'C	TYPE	MAX. AGG.	MAX. W/C	MAX. SLUMP
• FTGS AND CAISSONS	3,000	I/II	1 1/2"	0.49	4" (+/- 1")
• PIERS/GRADE BEAMS	4,500	I/II	3/4"	0.46	4" (+/- 1")
• INT. SLAB ON GRADE	4,000	I/II	3/4"	0.46	4" (+/- 1")
• SUSPENDED SLABS	4,500	I/II	3/4"	0.46	4" (+/- 1")

2. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICAN CONCRETE INSTITUTE ACI 301, 318, AND SP-66 (315 INCLUDED AS A CHAPTER), LATEST EDITIONS.
3. PROVIDE NORMAL WEIGHT CONCRETE WITH CURED DENSITY OF 145 PCF AND AGGREGATE CONFORMING TO ASTM C33, UNLESS NOTED OTHERWISE.
4. CONCRETE EXPOSED TO MOISTURE AND FREEZING-AND-THAWING CYCLES (WITH OR WITHOUT EXPOSURE TO DE-ICING CHEMICALS) SHALL BE AIR-ENTRAINED. FOUNDATIONS SHALL MEET ACI EXPOSURE CLASSIFICATION F2.
5. THE USE OF CALCIUM CHLORIDE AND/OR OTHER CHLORIDE CONTAINING AGENTS IS PROHIBITED. THE USE OF RECYCLED CONCRETE IS PROHIBITED. PLACEMENT WITHIN AND CONTACT BETWEEN ALUMINUM ITEMS AND CONCRETE IS PROHIBITED.
6. NO CONCRETE SHALL BE PLACED UNTIL CONCRETE DESIGN MIXES AND PREVIOUS TESTS HAVE BEEN SUBMITTED FOR EACH CLASS OF CONCRETE NOTED ABOVE AND HAVE BEEN APPROVED BY THE STRUCTURAL ENGINEER OF RECORD. CONCRETE PROPORTIONS SHALL BE BASED UPON FIELD EXPERIENCE AND/OR TRIAL BATCHES PER ACI 301 AND ACI 318. THE CONTROLLED CONCRETE TO BE USED SHALL CONFORM TO THE APPROVED DESIGN MIX. THE USE OF ANY ADDITIVES NOT PRESENT IN THE DESIGN MIX IS PROHIBITED. REPRESENTATIVE TEST CYLINDERS WILL BE TAKEN FROM THE CONCRETE PLACED EACH DAY IN ACCORDANCE WITH THE CONCRETE SPECIFICATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING DRAWINGS FOR REVIEW OF ALL JOINTS IN THE CONCRETE WORK INCLUDING CONSTRUCTION, EXPANSION, CONTRACTION, AND MOVEMENT JOINTS. DRAWINGS SHALL BE SUBMITTED AT LEAST TWO WEEKS PRIOR TO EXPECTED START OF WORK. JOINT LOCATIONS SHALL COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS DESCRIBED IN ACI 224, LATEST EDITION.
8. ALL CONCRETE STRUCTURAL MEMBERS SHALL BE PLACED FOR THEIR FULL DEPTHS IN ONE OPERATION. CONSTRUCTION JOINTS, SUCH AS DAY'S END PLACEMENT JOINTS, SHALL BE LOCATED IN THE MIDDLE THIRD OF THE SPAN AND BE ROUGHENED. REINFORCING TO RUN THROUGH THE JOINT, BULKHEAD, AND/OR KEY JOINTS. REMOVE LAITANCE PRIOR TO NEXT POUR.
9. UNLESS NOTED OTHERWISE, ALL CONDUITS AND/OR PIPING SHALL BE HUNG FROM BEAMS AND JOISTS ON CONDUIT SUPPORTS AND TRAPEZES. DO NOT LOCATE HORIZONTAL RUNS OF CONDUIT AND/OR PIPING WITHIN CONCRETE SLABS ON METAL DECK.
10. CONTRACTOR SHALL CALCULATE AND INCLUDE ALL ADDITIONAL CONCRETE THAT MAY BE REQUIRED DURING PLACING DUE TO DEFLECTION OF STRUCTURE AND PROVIDE A LEVEL CONCRETE SURFACE. THICKNESS OF SLAB CALLED OUT ON DRAWINGS IS THE MINIMUM THICKNESS AND SHALL BE MEASURED AT COLUMNS.
11. CONTRACTOR SHALL DEPOSIT ALL CONCRETE DURING PLACING IN SUCH A MANNER AS TO NOT OVERLOAD THE STRUCTURE.
12. ALL CONCRETE SHALL INCLUDE REINFORCEMENT. IF REINFORCEMENT IS NOT SPECIFICALLY INDICATED ON THE DRAWINGS, VERIFY WITH THE STRUCTURAL ENGINEER OF RECORD.
13. CONCRETE SHALL NOT BE PLACED UNTIL PREPARATIONS HAVE BEEN APPROVED BY THE TESTING AND INSPECTION AGENCY INCLUDING FORMWORK, REINFORCEMENT, EMBEDMENTS, AND ACCESSORIES.

CONCRETE REINFORCEMENT

1. REINFORCEMENT SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES.

• DEFORMED BARS	ASTM A615, GRADE 60
• EPOXY COATED DEFORMED BARS	ASTM A775, GRADE 60
• WELDED WIRE REINFORCEMENT	ASTM A1064

2. UNLESS NOTED OTHERWISE, THE CONCRETE COVER FOR REINFORCEMENT IN CAST-IN-PLACE CONCRETE SHALL NOT BE LESS THAN THE FOLLOWING:

• CAST AGAINST EARTH	3"
• EXPOSED TO EARTH/WEATHER	2"
• SLABS AND WALLS	3/4"
• BEAMS AND COLUMNS	
◦ TIES, STIRRUPS, SPIRALS	1 1/2"

3. DETAIL REINFORCEMENT BASED ON THE PROJECT REQUIREMENTS, ACI 318, ACI 315R, AND THE ACI DETAILING MANUAL SP-066, LATEST EDITIONS.
4. WHERE A 90-DEGREE, 135-DEGREE, OR 180-DEGREE HOOK IS GRAPHICALLY INDICATED, PROVIDE CORRESPONDING ACI STANDARD HOOKS, UNLESS NOTED OTHERWISE.
5. DOWELS SHALL MATCH SIZE AND SPACING OF MAIN REINFORCEMENT, UNLESS NOTED OTHERWISE.
6. UNLESS NOTED OTHERWISE, ALL LAP SPLICES ARE TO BE CLASS B TENSION LAP SPLICES EXCEPT THE MINIMUM LAP LENGTH SHALL BE 24".
7. LAP WELDED WIRE REINFORCEMENT TWO PANEL SPACES. WIRE MESH SHALL BE SUPPORTED ON CHAIRS SO THAT PROPER COVER IS MAINTAINED. DO NOT USE THE METHOD OF PULLING UP WITH A HOOK DURING CONCRETE POURING TO POSITION THE REINFORCING.
8. UNLESS NOTED OTHERWISE, TERMINATE BARS AT DISCONTINUOUS ENDS WITH STANDARD HOOKS.

PRECAST CONCRETE

1. THE PRECAST CONCRETE SHALL BE DESIGNED, FABRICATED, AND ERECTED BY ONE APPROVED MANUFACTURER.
2. THE PRECAST CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 5,000 PSI.
3. STADIA PLANKS SHALL BE PRECAST PRESTRESSED CONCRETE PLANK AND SHALL HAVE APPROPRIATE COVER TO ACHIEVE THE PROJECT REQUIRED FIRE RATINGS.
4. PRECAST CONCRETE PLANKS AND THEIR CONNECTIONS SHALL BE DESIGNED TO RESIST GRAVITY LOADS, STRIPPING, AND HANDLING LOADS, AND APPLICABLE FORCES DUE TO VOLUME CHANGES AND DIFFERENTIAL MOVEMENTS IN ACCORDANCE THE WITH "PCI DESIGN HANDBOOK" AND THE BUILDING CODE OF THE STATE OF THE PROJECT.
5. DESIGN CALCULATIONS FOR THE PRECAST CONCRETE MEMBERS AND THEIR CONNECTIONS PREPARED BY A REGISTERED ENGINEER EXPERIENCED IN PRECAST AND PRESTRESSED CONCRETE DESIGN SHALL BE SUBMITTED FOR REVIEW.
6. CONTRACTOR SHALL VERIFY OR ESTABLISH ACTUAL DIMENSIONS AND CONDITIONS SHOWN FOR THE STRUCTURAL STEEL, CAST-IN-PLACE CONCRETE, OR MASONRY TO RECEIVE THE PRECAST CONCRETE.
7. FLOOR LIVE LOADS: 100 PSF UNIFORM + 2,000 LB. CONCENTRATED LOAD. STADIA PLANKS SHALL MEET L/800 LIVE LOAD DEFLECTION.
8. OPENINGS THROUGH THE PRECAST PLANK SHOWN ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS SHALL BE PROVIDED BY THE PRECAST FLOOR CONTRACTOR. ALL OTHER OPENINGS ARE TO BE CUT BY THE CONTRACTOR REQUIRING THEM. LOCATION OF ALL OPENINGS OR HOLES IN PRECAST PLANK MUST BE SUBMITTED TO THE GENERAL CONTRACTOR AND THE ARCHITECT FOR APPROVAL.

SAW CUTTING EXISTING CONCRETE AND/OR MASONRY

1. SAW CUTTING OF NEW OPENINGS IN EXISTING CONCRETE AND/OR MASONRY WALLS SHALL BE DONE WITHOUT OVERCUTTING BEYOND THE BOUNDARIES OF THE INTENDED OPENING. ANY STRUCTURAL REPAIRS REQUIRED BY THE STRUCTURAL ENGINEER OF RECORD AS A RESULT OF OVERCUTTING BEYOND THE BOUNDARIES OF AN OPENING SHALL BE PAID FOR BY THE SAW CUTTING CONTRACTOR. SEE DRAWINGS FOR ADDITIONAL INFORMATION.

CURTAIN WALL

1. THE CURTAIN WALL MANUFACTURER SHALL DESIGN THE CURTAIN WALL SYSTEM FOR THE APPROPRIATE WIND LOADS AS SPECIFIED IN THE APPLICABLE BUILDING CODE. THE CURTAIN WALL MANUFACTURER SHALL ALSO SUPPLY NON-CONDUCTING ISOLATION BARRIERS AT ANY CONNECTION BETWEEN ALL ALUMINUM OR NON-FERROUS MEMBERS AND STEEL ELEMENTS TO PREVENT GALVANIC CORROSION. THIS INSULATION MATERIAL SHALL ALSO BE SUBMITTED TO THE ARCHITECT FOR APPROVAL. CURTAIN WALL SUPPLIER TO COORDINATE THE ANCHORAGE DEVICES REQUIRED WITH THE LOCATION OF ALL STRUCTURAL STEEL.

CONCRETE MASONRY

1. LOAD BEARING AND BACKUP WALL CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO THE FOLLOWING MATERIAL STANDARDS:

• CONCRETE BLOCK	ASTM C90, NORMAL WEIGHT, (3,250 PSI MIN.)
• MORTAR	ASTM C270, TYPE S MASONRY/MORTAR CEMENT
• GROUT	ASTM C476 (2,500 PSI AT 28-DAYS)
• REINFORCEMENT	ASTM A615, GRADE 60, LAP PER TMS 402 (MIN. 24")
• JOINT REINFORCEMENT	ASTM A951, LADDER TYPE, (MIN 9-GAGE), GALV.

2. UNLESS NOTED OTHERWISE, THE MASONRY COVER FOR REINFORCEMENT SHALL NOT BE LESS THAN THE FOLLOWING:

• MASONRY FACE EXPOSED TO WEATHER	
◦ NO.5 BAR AND SMALLER	1 1/2"
• MASONRY FACE NOT EXPOSED TO WEATHER	1 1/2"
• GALVANIZED WIRE JOINT REINFORCING	3/4"

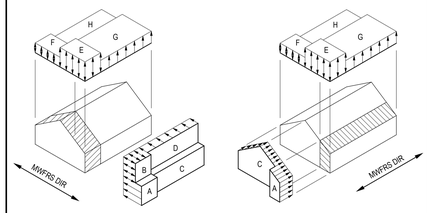
3. CONCRETE MASONRY ASSEMBLAGE SHALL DEVELOP 2,500 PSI COMPRESSIVE STRENGTH IN 28-DAYS, UNLESS NOTED OTHERWISE.
4. MORTAR FOR CONCRETE MASONRY SHALL BE TYPE S FOR ALL UNITS (ABOVE AND BELOW GRADE).
5. CALCIUM CHLORIDE SHALL NOT BE USED IN MORTAR OR GROUT.
6. LAY MASONRY IN RUNNING BOND, UNLESS NOTED OTHERWISE.
7. HOLLOW-UNIT MASONRY SHALL HAVE FACE SHELL BEDDING EXCEPT AT PIERS, COLUMNS, PILASTERS, THE COURSE IMMEDIATELY ABOVE FOUNDATIONS, AND WHERE CONTAINMENT OF GROUT OR LOOSE FILL INSULATION REQUIRES THAT WEB AND FACE SHELLS BE MORTARED. IN FULLY GROUTED OR UN-GROUTED MASONRY, ONLY THE FACE SHELLS NEED TO BE MORTARED.
8. PLACE LADDER TYPE HORIZONTAL JOINT REINFORCING WITH PREFORMED LAPPED CORNER REINFORCING AT 16" OC VERTICALLY IN ALL MASONRY WALLS U.O.N.
9. WALL SHALL BE REINFORCED VERTICALLY AS SHOWN ON STRUCTURAL DRAWINGS. REINFORCING SHALL BE FULLY GROUTED. DOWELS SHALL MATCH SIZE AND SPACING OF MAIN REINFORCEMENT, UNLESS NOTED OTHERWISE
10. WALLS SHALL BE REINFORCED VERTICALLY AT WALL ENDS, CORNERS, AND ALL AROUND DOOR AND WINDOW OPENINGS WITH (2) #5 BARS, UNLESS NOTED OTHERWISE.
11. PROVIDE A CONTINUOUS BOND BEAM WITH (2) #5 BARS CONTINUOUS IN THE TOP COURSE OF ALL BLOCK WALLS, AT LOCATIONS WHERE FRAMING MEMBERS ARE BOLTED TO FACE OF CMU WALLS, BELOW BEAM BEARINGS, AND AT LOCATIONS INDICATED ON THE DRAWINGS. BOND BEAMS SHALL HAVE CORNER BARS AROUND CORNERS AND AT WALL INTERSECTIONS.
12. FILL ALL VOIDS AND BLOCK CELLS SOLIDLY WITH GROUT FOR A DISTANCE OF 24-INCHES BENEATH AND 16-INCHES EACH SIDE OF ALL BEAM REACTIONS OR OTHER CONCENTRATED LOADS, UNLESS NOTED OTHERWISE. GROUT SHALL BE VIBRATED AND RE-VIBRATED AFTER INITIAL WATER LOSS TO ENSURE COMPLETE FILLING OF CORES.
13. VERTICAL CONTROL JOINTS OF A KEY TYPE AS INDICATED ON THE PLANS ARE TO BE PLACED IN ALL MASONRY WALLS AT INTERVALS NOT TO EXCEED 24 FEET APART. THE CONTRACTOR SHALL FURNISH A CONTROL JOINT LOCATION PLAN FOR THE ARCHITECT'S APPROVAL IF THE PLANS DO NOT SUFFICIENTLY DESCRIBE THE LOCATION OF ALL REQUIRED CONTROL JOINTS.

BRICK MASONRY

1. BRICK MASONRY CONSTRUCTION SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING STANDARDS:
   - BUILDING CODE REQUIREMENTS AND SPECIFICATION FOR MASONRY STRUCTURES, TMS 402/602.
   - TECHNICAL NOTES ON BRICK CONSTRUCTION, TECHNICAL NOTES 1-4B, BIA.
   - GUIDE SPECIFICATION FOR BRICK MASONRY, TECHNICAL NOTES 11A-E, BIA.
   - HOT AND COLD WEATHER MASONRY CONSTRUCTION BY THE MASONRY INDUSTRY COUNCIL.
2. BRICK UNITS FOR EXTERIOR USE AS A VENEER SHALL CONFORM TO ASTM C216 GRADE SW, WITH THE FOLLOWING EXCEPTIONS:
   - THE SATURATION COEFFICIENT (C/B) REQUIREMENT SHALL NOT BE WAIVED AS ALLOWED I

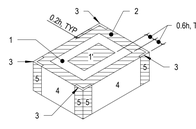
UNIT 1300: LINK STRUCTURE
MAIN WIND FORCE RESISTING SYSTEM (psf)

HORIZONTAL PRESSURES				VERTICAL PRESSURES				OVERHANG PRESSURES	
A	B	C	D	E	F	G	H	Eoh	Goh
± 21.0	± 10.9	± 16.0	± 8.0	± 25.2	± 14.3	± 17.5	± 11.1	± 35.3	± 27.6



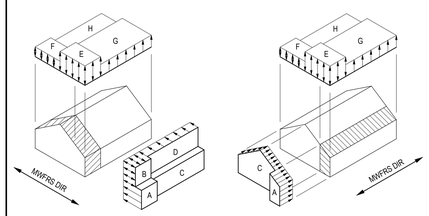
UNIT 1300: LINK STRUCTURE
COMPONENTS AND CLADDING

LOAD (psf)								
ZONE	10 SF		20 SF		50 SF		100 SF	
1	16.0	-37.9	16.0	-35.4	16.0	-32.1	16.0	-29.6
1'	16.0	-21.8	16.0	-21.8	16.0	-21.8	16.0	-21.8
2	16.0	-50.0	16.0	-46.8	16.0	-42.5	16.0	-39.9
3	16.0	-68.1	16.0	-61.7	16.0	-53.2	16.0	-46.8
4	23.8	-25.8	22.7	-24.7	21.3	-23.3	20.2	-22.2
5	23.8	-31.9	22.7	-29.7	21.3	-26.9	20.2	-24.7
1/1' ROH	-	-34.3	-	-33.7	-	-32.9	-	-32.3
2 ROH	-	-46.4	-	-42.1	-	-36.4	-	-32.1
3 ROH	-	-64.5	-	-57.0	-	-47.1	-	-39.6



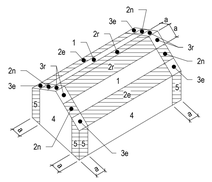
UNIT 1400: PEMB STRUCTURE
MAIN WIND FORCE RESISTING SYSTEM (psf)

HORIZONTAL PRESSURES				VERTICAL PRESSURES				OVERHANG PRESSURES	
A	B	C	D	E	F	G	H	Eoh	Goh
± 31.3	± 10.4	± 20.8	± 8.0	± 30.0	± 19.6	± 20.8	± 15.0	± 42.0	± 32.8



UNIT 1400: PEMB STRUCTURE
COMPONENTS AND CLADDING

LOAD (psf)								
ZONE	10 SF		20 SF		50 SF		100 SF	
1	17.1	-52.4	16.0	-52.4	16.0	-31.8	16.0	-16.3
2e	17.1	-52.4	16.0	-52.4	16.0	-31.8	16.0	-16.3
2n	17.1	-76.3	16.0	-65.9	16.0	-52.4	16.0	-42.2
2r	17.1	-76.3	16.0	-65.9	16.0	-52.4	16.0	-42.2
3e	17.1	-76.3	16.0	-65.9	16.0	-52.4	16.0	-42.2
3r	17.1	-90.7	16.0	-77.7	16.0	-60.5	16.0	-47.5
4	28.3	-30.7	27.0	-29.4	25.3	-27.7	24.0	-26.4
5	28.3	-38.0	27.0	-35.3	25.3	-32.0	24.0	-29.4
1/1' ROH	-	-60.0	-	-60.0	-	-51.9	-	-45.7
2e ROH	-	-60.0	-	-60.0	-	-51.9	-	-45.7
2n ROH	-	-84.0	-	-73.2	-	-58.8	-	-48.0
2r ROH	-	-84.0	-	-73.2	-	-58.8	-	-48.0
3e ROH	-	-98.4	-	-85.0	-	-67.2	-	-53.8
3r ROH	-	-115.2	-	-97.1	-	-73.2	-	-55.2



STRUCTURAL STEEL REQUIREMENTS PER:
STEEL DECK INSTITUTE QUALITY CONTROL AND QUALITY ASSURANCE

TABLE 1.1 - INSPECTION OR EXECUTION TASKS PRIOR TO DECK PLACEMENT

TASK	QC	QA
Verify compliance of materials (deck and all accessories) with construction documents, including profiles, material properties, and base metal thickness	Perform	Perform
Document acceptance or rejection of deck and deck accessories	Perform	Perform

TABLE 1.2 - INSPECTION OR EXECUTION TASKS AFTER DECK PLACEMENT

TASK	QC	QA
Verify compliance of deck and all accessories installation with const. docs	Perform	Perform
Verify deck materials are represented by the mill certifications that comply with the construction documents	N/A	Perform
Document acceptance or rejection of installation of deck and accessories	Perform	Perform

TABLE 1.3 - INSPECTION OR EXECUTION TASKS PRIOR TO DECK WELDING

TASK	QC	QA
Welding procedure specifications (WSP) available	Observe	Observe
Manufacturer certifications for welding consumables available	Observe	Observe
Material identification (type/grade)	Observe	Observe
Check welding equipment	Observe	Observe

TABLE 1.4 - INSPECTION OR EXECUTION TASKS DURING DECK WELDING

TASK	QC	QA
Use of qualified welders	Observe	Observe
Control and handling of welding consumables	Observe	Observe
Environmental conditions (wind speed, moisture, temperature)	Observe	Observe
WSP followed	Observe	Observe

TABLE 1.5 - INSPECTION OR EXECUTION TASKS AFTER DECK WELDING

TASK	QC	QA
Verify size and location of welds, including support, sidelap, perimeter welds	Perform	Perform
Welds meet visual appearance criteria	Perform	Perform
Verify repair activities	Perform	Perform
Document acceptance or rejection of welds	Perform	Perform

TABLE 1.6 - INSPECTION OR EXECUTION TASKS PRIOR TO MECHANICAL FASTENING

TASK	QC	QA
Manufacturer installation instructions available for mechanical fasteners	Observe	Observe
Proper tools available for fastener installation	Observe	Observe
Proper storage for mechanical fasteners	Observe	Observe

TABLE 1.7 - INSPECTION OR EXECUTION TASKS DURING MECHANICAL FASTENING

TASK	QC	QA
Fasteners are positioned as required	Observe	Observe
Fasteners are installed in accordance with manufacturer's instructions	Observe	Observe

TABLE 1.8 - INSPECTION OR EXECUTION TASKS AFTER MECHANICAL FASTENING

TASK	QC	QA
Check spacing, type, and installation of support fasteners	Perform	Perform
Check spacing, type, and installation of sidelap fasteners	Perform	Perform
Check spacing, type, and installation of perimeter fasteners	Perform	Perform
Verify repair activities	Perform	Perform
Document acceptance or rejection of mechanical fasteners	Perform	Perform

TABLE 1705.3 - REQUIRED SPECIAL INSPECTION AND TESTS OF CONCRETE CONSTRUCTION

TYPE	CONTINUOUS	PERIODIC
Inspect reinforcement, including prestressing tendons, and verify placement.	--	X
Reinforcing bar welding:		
Verify weldability of reinforcing bars other than ASTM A706	--	X
Inspect single-pass fillet welds, maximum 5/16"		X
Inspect all other welds	X	
Inspect anchors cast in concrete	--	X
Inspect anchors post-installed in hardened concrete members		
Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	X	
Mechanical anchors and adhesive anchors not defined above		X
Verify use of required design mix	--	X
Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete	X	--
Inspect concrete and shotcrete placement for proper application techniques	X	--
Verify maintenance of specified curing temperature and techniques	--	X
Inspect prestressed concrete for:		
Application of prestressing forces	X	--
Grouting of bonded prestressing tendons	X	--
Inspect erection of precast concrete members	--	X
Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structure slabs	--	X
Inspect formwork for shape, location, and dimensions of the concrete member being formed	--	X

TABLE 1705.6 - REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS

TYPE	CONTINUOUS	PERIODIC
Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	--	X
Verify excavations are extended to proper depth and have reached proper material.	--	X
Perform classification and testing of compacted fill materials	--	X
Verify use of proper materials, densities, and lift thicknesses during placement and compaction of compacted fill.	X	--
Prior to placement of compacted fill, observe subgrade and verify that the site has been prepared properly.	--	X

TABLE 1705.8 - REQUIRED SPECIAL INSPECTIONS AND TESTS OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS

TYPE	CONTINUOUS	PERIODIC
Observe drilling operations and maintain complete and accurate records for each element.	X	--
Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, confirm embedment into bedrock (if applicable), and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	--
For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3.	--	--

STRUCTURAL STEEL REQUIREMENTS PER:
AISC 360 - CHAPTER N - QUALITY CONTROL AND QUALITY ASSURANCE

MINIMUM REQUIREMENTS

PER IBC 2021 1705.2.1 STRUCTURAL STEEL:
SPECIAL INSPECTIONS AND NONDESTRUCTIVE TESTING OF STEEL ELEMENTS IN BUILDINGS, STRUCTURES, AND PORTIONS THEREOF SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF AISC 360

QC	QUALITY CONTROL	O	THE INSPECTOR SHALL OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTIONS.
QA	QUALITY ASSURANCE	P	THESE TASKS SHALL BE PERFORMED FOR EACH WELDED JOINT (OR BOLTED CONNECTION)

TABLE N5.4-1 - INSPECTION TASKS PRIOR TO WELDING

TASK	QC	QA
Welding qualification records and continuity records	P	O
Welding procedure specifications (WPS) available	P	P
Manufacturer certifications for welding consumables available	P	P
Material identification (type/grade)	O	O
Material identification system	O	O
Fit-up of groove welds (including joint geometry): • Joint penetrations • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location) • Backing type and fit (if applicable)	O	O
Configuration and finish of access holes	O	O
Fit-up of fillet welds: • Dimensions (alignment, gaps at root) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location)	O	O
Check welding equipment	O	--

TABLE N5.4-2 - INSPECTION TASKS DURING WELDING

Control and handling of welding consumables: • Packaging • Exposure Control	O	O
No welding over cracked tack welds	O	O
Environmental conditions • Wind speed within limits • Precipitation and temperature	O	O
WPS followed: • Settings on welding equipment • Travel speed • Selected welding materials • Shielding gas type/flow rate • Preheat applied • Interpass temperature maintained (min/max) • Proper position (F, V, H, OH)	O	O
Welding techniques: • Interpass and final cleaning • Each pass within profile limitation • Each pass meets quality requirements	O	O
Placement and installation of steel headed stud anchors	P	P

TABLE N5.4-3 - INSPECTION TASKS AFTER WELDING

Welds cleaned	O	O
Size, length, and location of welds	P	P
Welds meet visual acceptance criteria: • Crack prohibition, weld/base-metal fusion, crater cross section • Weld profiles, weld size, undercut	P	P
Arc strikes	P	P
k-area	P	P
Weld access holes in rolled heavy shapes and built-up heavy shapes	P	P
Backing removed and weld tabs removed (if required)	P	P
Repair activities	P	P
Document acceptance or rejection of welded joint or member	P	P
No prohibited welds have been added without the approval of the EOR	O	O

TABLE N5.6-1 - INSPECTION TASKS PRIOR TO BOLTING

TASK	QC	QA
Manufacturer's certifications available for fastener materials	O	P
Fasteners marked in accordance with ASTM requirements	O	O
Correct fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	O	O
Correct bolting procedure selected for joint detail	O	O
Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	O	O
Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	P	O
Proper storage provided for bolts, nuts, washers, and other fastener components	O	O

TABLE N5.6-2 - INSPECTION TASKS DURING BOLTING

Fastener assemblies placed in all holes and washers and nuts are positioned as required	O	O
Joint brought to the snug-tight condition prior to pretensioning operation	O	O
Fastener component not turned by the wrench prevented from rotating	O	O
Fasteners are pretensioned in accordance with RSCS Specification, progressing systematically from the rigid point toward the free edges	O	O

TABLE N5.6-3 - INSPECTION TASKS AFTER BOLTING

Document acceptance or rejection of bolted connections	P	P

MICHIGAN BUILDING CODE 2021

TABLE 1705.2.3 - SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS

TYPE	CONTINUOUS	PERIODIC
Installation of open-web steel joists and joist girders		
a. End connections - welding or bolted	--	X
b. Bridging - horizontal or diagonal	--	
1. Standard bridging	--	X
2. Bridging that differs from the SJI specifications listed in Section 2207.1		X

TABLE 1705.7 - SPECIAL INSPECTIONS AND TESTS OF DRIVEN DEEP FOUNDATION ELEMENTS

TYPE	CONTINUOUS	PERIODIC
Verify element materials, sizes, and lengths comply with the requirements.	X	--
Determine capacities of test elements and conduct additional load tests, as required.	X	--
Inspect driving operations and maintain complete and accurate records of each element.	X	--
Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations, and document any damage to foundation element.	X	--
For steel elements, perform additional special inspections in accordance with Section 1705.2.	--	--
For concrete elements and concrete-filled elements, perform additional special inspections in accordance with Section 1705.3.	--	--
For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge.	--	--

FIELD DRILLED ADHESIVE ANCHORS

1. BASIS OF DESIGN FOR FIELD DRILLED ADHESIVE ANCHORS AND REBAR IN CONCRETE SHALL BE HILTI HIT-HY 200 V3 AS MANUFACTURED BY HILTI, OR EQUIVALENT PRODUCT. BASIS OF DESIGN FOR FIELD DRILLED ADHESIVE ANCHORS AND REBAR IN MASONRY SHALL BE HILTI HIT-HY 270 AS MANUFACTURED BY HILTI, OR EQUIVALENT PRODUCT. FOR HOLLOW OR MULTI-WYTHE MASONRY, PROVIDE APPROPRIATELY SIZED SCREEN TUBE PER INSTALLATION INSTRUCTIONS. FOR SUBSTITUTION PURPOSES, SIGNED AND SEALED CALCULATIONS SHALL BE PROVIDED FOR REVIEW, INDICATING THE SUBSTITUTED ANCHOR MEETS THE CAPACITY REQUIREMENTS OF THE DETAILED ANCHOR.
2. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE OR MASONRY. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.
3. USE ONLY CODE-APPROVED ANCHORS WITH VALID EVALUATION REPORT FOR USE IN THE BASE MATERIAL SHOWN ON THE CONSTRUCTION DOCUMENTS. SUBMIT EVALUATION REPORT TO STRUCTURAL ENGINEER OF RECORD AND SPECIAL INSPECTION AGENT FOR APPROVAL. DO NOT INSTALL ANCHORS UNTIL SUBMITTAL IS RETURNED "REVIEWED WITHOUT COMMENT."
4. ONLY ONE LENGTH ANCHOR SHALL BE PRESENT ON THE JOB SITE FOR A GIVEN ANCHOR DIAMETER, UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS.
5. ALL FIELD INSTALLED ADHESIVE ANCHORS SHALL CONFORM TO AC-308. INSTALLER OF FIELD INSTALLED ADHESIVE ANCHORS SHALL BE TRAINED BY ANCHOR MANUFACTURER TO ENSURE PROPER INSTALLATION REQUIREMENTS SUCH AS HOLE CLEANING, HORIZONTAL AND OVERHEAD APPLICATIONS, EMBEDMENT DEPTHS GREATER THAN 10 INCHES, AND WATER FILLED HOLES.
6. ADHESIVE ANCHORS OF THE DIAMETER AND EMBEDMENT SHOWN ON THE DRAWINGS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNDER THE CONTINUOUS SUPERVISION OF AN INDEPENDENT TESTING AGENCY. WHERE THE PROVISIONS OF THE ABOVE REFERENCED DOCUMENTS ARE IN CONFLICT, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. AT LOCATIONS WHERE ANCHORAGE IS NOT SPECIFIED, CONSULT STRUCTURAL ENGINEER OF RECORD.
7. CLEAN EXISTING CONCRETE SURFACE TO SOLID STRUCTURAL CONCRETE. GRIND SMOOTH FOR FULL STEEL CONTACT AND TO PREVENT GAPS BETWEEN STEEL AND CONCRETE. ALTERNATIVELY, PROVIDE NON-SHRINK GROUT IN ALL VOIDS BETWEEN STEEL AND BASE MATERIAL. FOREIGN MATERIAL SHALL NOT BE PLACED IN THE HOLES THAT RECEIVE ADHESIVE ANCHORS. ALL ABANDONED HOLES DRILLED IN CONCRETE SHALL BE COMPLETELY FILLED WITH STRUCTURAL GRADE EPOXY.
8. THE CONTRACTOR SHALL CREATE A TEMPLATE AT EACH ADHESIVE ANCHOR CONNECTION LOCATION **PRIOR** TO FABRICATING HOLES IN CONNECTING PLATES OR ROLLED SHAPES. TEMPLATES SHALL BE MADE BY FIRST LOCATING EXISTING REINFORCING STEEL USING NON-DESTRUCTIVE TESTING EQUIPMENT, AND THEN DRILLING ANCHOR HOLES SUCH THAT NO CONFLICT EXISTS WITH THE EXISTING REINFORCING. ANCHOR LOCATIONS IN THE FIELD MAY BE RELOCATED A MAXIMUM OF 1 1/2 INCHES FROM THE DIMENSIONS SHOWN ON THE DRAWINGS TO AVOID CONFLICTS WITH THE EXISTING REINFORCING STEEL. HOWEVER, DO NOT EXCEED MINIMUM ANCHOR SPACINGS OR EDGE DISTANCES PER MANUFACTURER'S REQUIREMENTS.
9. ADHESIVE ANCHORS SHALL BE INSTALLED PERPENDICULAR TO THE FACE OF THE SURFACE BEING DRILLED. THE MAXIMUM TOLERANCE FOR DEVIATION FROM PERPENDICULAR SHALL BE 6 DEGREES. ALL ADHESIVE ANCHORS INSTALLED OUTSIDE OF THE SPECIFIED TOLERANCE SHALL BE CONSIDERED UNACCEPTABLE. USE OF DIAMOND CORE BIT WITH ROUGHENING TOOL FOR ANCHOR HOLES REQUIRES APPROVAL FROM STRUCTURAL ENGINEER OF RECORD PRIOR TO DRILLING.
10. HOLES IN CONNECTION PLATES SHALL BE NO MORE THAN 3/16 INCH LARGER THAN THE ADHESIVE ANCHOR ROD DIAMETER. IF LARGER DIAMETER HOLES ARE USED FOR ERECTION PURPOSES, THE CONTRACTOR MUST PROVIDE PLATE WASHERS WITH HOLES NO MORE THAN 1/16 INCH LARGER THAN THE ANCHOR. PLATE WASHERS MUST BE WELDED TO THE CONNECTION PLATE TO TRANSFER THE LOAD. WELDING MUST TAKE PLACE AFTER HOLES ARE DRILLED, BUT PRIOR TO ADHESIVE INSTALLATION TO AVOID BURNING OR MELTING THE ADHESIVE.

FIELD DRILLED MECHANICAL ANCHORS

1. BASIS OF DESIGN FOR FIELD DRILLED MECHANICAL ANCHORS IN CONCRETE AND SOLID GROUTED MASONRY SHALL BE HILTI KWIK BOLT TZ2 ANCHORS AS MANUFACTURED BY HILTI, OR EQUIVALENT PRODUCT. FOR SUBSTITUTION PURPOSES, SIGNED AND SEALED CALCULATIONS SHALL BE PROVIDED FOR REVIEW, INDICATING THE SUBSTITUTED ANCHOR MEETS THE CAPACITY REQUIREMENTS OF THE DETAILED ANCHOR.
2. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE OR MASONRY. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.
3. USE ONLY CODE-APPROVED ANCHORS WITH VALID EVALUATION REPORT FOR USE IN THE BASE MATERIAL SHOWN ON THE CONSTRUCTION DOCUMENTS. SUBMIT EVALUATION REPORT TO STRUCTURAL ENGINEER OF RECORD AND SPECIAL INSPECTION AGENT FOR APPROVAL. DO NOT INSTALL ANCHORS UNTIL SUBMITTAL IS RETURNED "REVIEWED WITHOUT COMMENT."
4. ONLY ONE LENGTH ANCHOR SHALL BE PRESENT ON THE JOB SITE FOR A GIVEN ANCHOR DIAMETER, UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS.
5. ALL FIELD INSTALLED MECHANICAL ANCHORS SHALL CONFORM TO AC-193. INSTALLER OF FIELD INSTALLED MECHANICAL ANCHORS SHALL BE TRAINED BY ANCHOR MANUFACTURER TO ENSURE PROPER INSTALLATION REQUIREMENTS SUCH AS DRILLING METHODS, HOLE CLEANING, AND INSTALLATION TORQUE.
6. MECHANICAL ANCHORS OF THE DIAMETER AND EMBEDMENT SHOWN ON THE DRAWINGS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNDER THE CONTINUOUS SUPERVISION OF AN INDEPENDENT TESTING AGENCY. WHERE THE PROVISIONS OF THE ABOVE REFERENCED DOCUMENTS ARE IN CONFLICT, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. AT LOCATIONS WHERE ANCHORAGE IS NOT SPECIFIED, CONSULT STRUCTURAL ENGINEER OF RECORD.
7. CLEAN EXISTING CONCRETE SURFACE TO SOLID STRUCTURAL CONCRETE. GRIND SMOOTH FOR FULL STEEL CONTACT AND TO PREVENT GAPS BETWEEN STEEL AND CONCRETE. ALTERNATIVELY, PROVIDE NON-SHRINK GROUT IN ALL VOIDS BETWEEN STEEL AND BASE MATERIAL. FOREIGN MATERIAL SHALL NOT BE PLACED IN THE HOLES THAT RECEIVE MECHANICAL ANCHORS. ALL ABANDONED HOLES DRILLED IN CONCRETE SHALL BE COMPLETELY FILLED WITH STRUCTURAL GRADE EPOXY.
8. THE CONTRACTOR SHALL CREATE A TEMPLATE AT EACH MECHANICAL ANCHOR CONNECTION LOCATION **PRIOR** TO FABRICATING HOLES IN CONNECTING PLATES OR ROLLED SHAPES. TEMPLATES SHALL BE MADE BY FIRST LOCATING EXISTING REINFORCING STEEL USING NON-DESTRUCTIVE TESTING EQUIPMENT, AND THEN DRILLING ANCHOR HOLES SUCH THAT NO CONFLICT EXISTS WITH THE EXISTING REINFORCING. ANCHOR LOCATIONS IN THE FIELD MAY BE RELOCATED A MAXIMUM OF 1 1/2 INCHES FROM THE DIMENSIONS SHOWN ON THE DRAWINGS TO AVOID CONFLICTS WITH THE EXISTING REINFORCING STEEL. HOWEVER, DO NOT EXCEED MINIMUM ANCHOR SPACINGS OR EDGE DISTANCES MANUFACTURER'S REQUIREMENTS.
9. MECHANICAL ANCHORS SHALL BE INSTALLED PERPENDICULAR TO THE FACE OF THE SURFACE BEING DRILLED. THE MAXIMUM TOLERANCE FOR DEVIATION FROM PERPENDICULAR SHALL BE 6 DEGREES. ALL MECHANICAL ANCHORS INSTALLED OUTSIDE OF THE SPECIFIED TOLERANCE SHALL BE CONSIDERED UNACCEPTABLE. USE OF DIAMOND CORE BIT WITH ROUGHENING TOOL FOR ANCHOR HOLES REQUIRES APPROVAL FROM STRUCTURAL ENGINEER OF RECORD PRIOR TO DRILLING.
10. HOLES IN CONNECTION PLATES SHALL BE NO MORE THAN 3/16 INCH LARGER THAN THE MECHANICAL ANCHOR ROD DIAMETER. IF LARGER DIAMETER HOLES ARE USED FOR ERECTION PURPOSES, THE CONTRACTOR MUST PROVIDE PLATE WASHERS WITH HOLES NO MORE THAN 1/16 INCH LARGER THAN THE ANCHOR. PLATE WASHERS MUST BE WELDED TO THE CONNECTION PLATE TO TRANSFER THE LOAD.

THIS PROJECT REQUIRED LEVEL 2 INSPECTION REQUIREMENTS

MASONRY CONSTRUCTION REQUIREMENTS PER TMS 602/ACI 530.1/ASCE 6

TMS 602 - TABLE 3 - MINIMUM VERIFICATION REQUIREMENTS

Minimum Verification	LVL 1	LVL 2	LVL 3
Prior to construction, verification of compliance of submittals	R	R	R
Prior to construction, verification of f'm and f'AAC, except where specifically exempted by the Code	NR	R	R
During construction, verification of Slump flow and Visual Stability Index (VSI) when self-consolidating grout is delivered to the project site	NR	R	R
During construction, verification of f'm and f'AAC for every 5,000 sq. ft.	NR	NR	R
During construction, verification of proportions of materials as delivered to the project site for premixed or preblended mortar, prestressing grout, and grout other than self-consolidating grout.	NR	NR	R

TMS 602 - TABLE 4 - MINIMUM SPECIAL INSPECTION REQUIREMENTS

Minimum Verification	LVL 1	LVL 2	LVL 3
As masonry construction begins, verify that the following are in compliance:			
Proportions of site-prepared mortar	NR	P	P
Grade, type, and size of reinforcement, connectors, anchor bolts	NR	P	P
Properties of thin-bed mortar for AAC masonry	NR	P	C
Prior to grouting, verify that the following are in compliance:			
Grout space	NR	P	C
Placement of reinforcement, connectors, and anchor bolts	NR	P	C
Proportions of site-prepared grout	NR	P	P
Verify compliance of the following during construction:			
Materials and procedures with the approved submittals	NR	P	P
Placement of masonry units and mortar joint construction	NR	P	P
Size and location of structural members	NR	P	P
Type, size, and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction	NR	P	C
Welding of reinforcement	NR	C	C
Preparation, construction, and protection of masonry during cold weather (temperature below 40F) or hot weather (temperature above 90F)	NR	P	P
Placement of AAC masonry units and construction of thin-bed mortar joints	NR	C/P	C
Observe preparation of grout specimens, mortar specimens, and/or prisms	NR	P	C

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HOWELL PUBLIC SCHOOLS

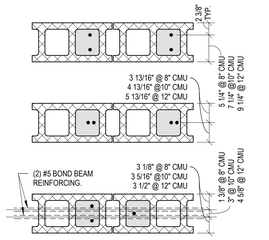
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
SPECIAL INSPECTIONS AND DESIGN LOADS

SHEET NO.
S002

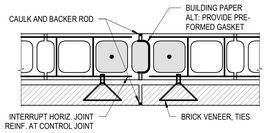
STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



LAP SPLICES WILL BE REQUIRED FOR CONSTRUCTABILITY BUT ARE NOT SHOWN FOR CLARITY. LAPS IN VERTICAL BARS CENTERED IN WALL AT #5 BARS SHALL BE 30" IN LENGTH. LAPS IN VERTICAL BARS AT #4 BARS SHALL BE IN 24" IN LENGTH. LAP SPLICES IN VERTICAL BARS ARE TO BE MADE BY PLACING BARS SIDE BY SIDE WITHIN CORES SO DISTANCE FROM FACE OF CMU TO CENTER OF BAR IS MAINTAINED.

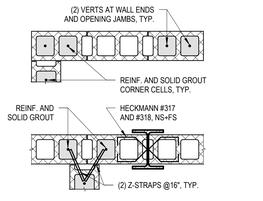
BOND BEAM BARS ARE TO BE CONTINUOUS WITH CORNER BARS LAPPED 24" MINIMUM.

24 S003 TYPICAL CMU WALL REINFORCING Not to Scale

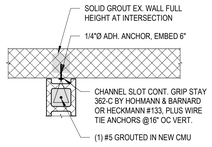


LOCATE JOINTS 24'-0" OC MAX SPACING UON. BRICK CONTROL JOINTS MAY BE OFFSET FROM CMU CONTROL JOINTS IF BRICK TIES PERMIT HORIZ. MOVEMENT PARALLEL TO THE PLANE OF THE WALL. LOCATE WHERE STRESS CONCENTRATIONS OCCUR, SUCH AS CHANGES IN WALL HEIGHT AND ADJACENT TO LARGE WALL OPENINGS, ETC.

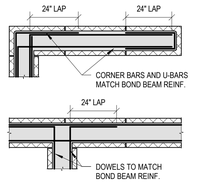
25 S003 MASONRY WALL CONTROL JOINT Not to Scale



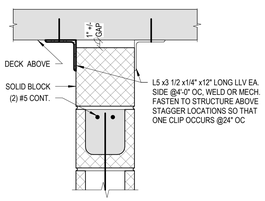
26 S003 TYPICAL CMU WALL AND CORNER REINFORCING Not to Scale



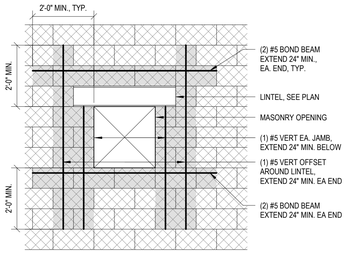
27 S003 EXISTING CMU WALL INTERSECTION Not to Scale



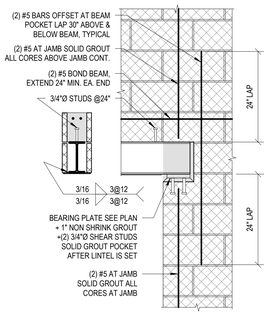
28 S003 TYPICAL BOND BEAM REINFORCING Not to Scale



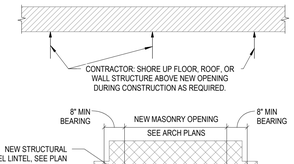
29 S003 INTERIOR CMU PARTITION Not to Scale

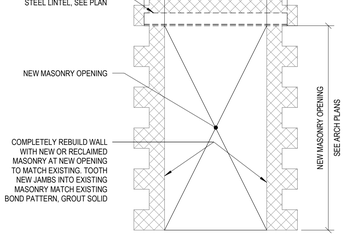


20 S003 REINFORCING AROUND CMU OPENING Not to Scale

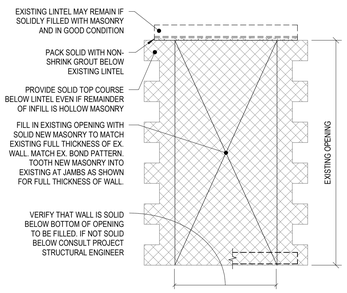


21 S003 TYPICAL STEEL LINTEL BEARING Not to Scale

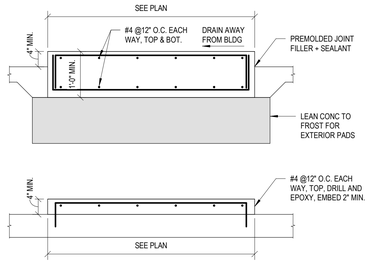




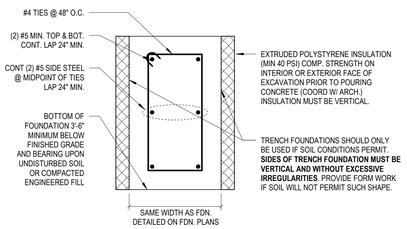
22 S003 NEW MASONRY OPENING Not to Scale



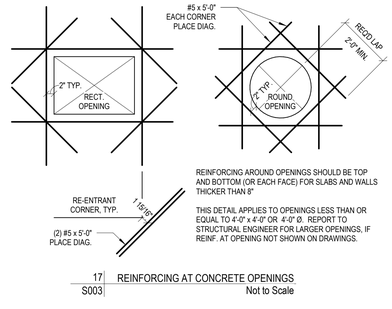
23 S003 MASONRY OPENING INFILL Not to Scale



15 S003 CONCRETE MECHANICAL PAD Not to Scale



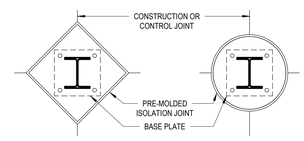
16 S003 TRENCH FOUNDATION Not to Scale



REINFORCING AROUND OPENINGS SHOULD BE TOP AND BOTTOM (OR EACH FACE) FOR SLABS AND WALLS THICKER THAN 8"

THIS DETAIL APPLIES TO OPENINGS LESS THAN OR EQUAL TO 4'-0" x 4'-0" OR 4'-0" Ø. REPORT TO STRUCTURAL ENGINEER FOR LARGER OPENINGS, IF REINF. AT OPENING NOT SHOWN ON DRAWINGS.

17 S003 REINFORCING AT CONCRETE OPENINGS Not to Scale

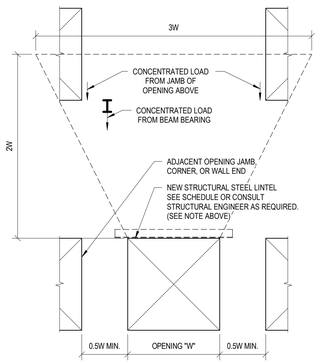


18 S003 COLUMN ISOLATION JOINTS Not to Scale

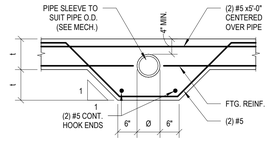
OPENING WIDTH "W"	SIZE OF LINTEL TO BE USED FOR EA. 4" OF WALL THICKNESS	MIN. BRG.
< 8"	NO LINTEL REQUIRED	--
8" TO 3'-0"	L3 1/2" x 3 1/2" x 1/4"	8"
3'-0" TO 3'-6"	L5" x 3 1/2" x 1/4" LLV	8"
3'-6" TO 5'-0"	L6" x 3 1/2" x 5/16" LLV	8"
5'-0" TO 6'-0"	L6" x 3 1/2" x 3/8" LLV	12"
> 6'-0"	CONSULT STRUCTURAL	

SELECT LINTEL FROM SCHEDULE ABOVE IF **BOTH** CONDITIONS BELOW ARE MET. IF EITHER CONDITION IS NOT MET, CONSULT THE PROJECT STRUCTURAL ENGINEER FOR LINTEL SIZE, BEARING, AND DETAIL UON

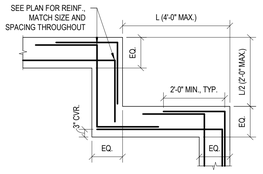
CONDITION A: NO CONCENTRATED LOADS FROM BEAM BEARING OR MASONRY JAMBS FALL WITHIN AN AREA 3W HORIZONTAL BY 2W VERTICAL.
CONDITION B: THE DISTANCE TO THE CLOSEST ADJACENT OPENING, JAMB, CORNER, OR WALL END IS GREATER THAN 0.5W



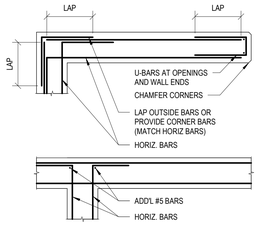
19 S003 TYPICAL STEEL LINTEL SCHEDULE Not to Scale



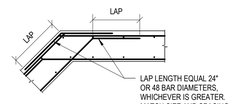
7 S003 PIPE THROUGH FOUNDATION Not to Scale



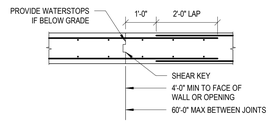
8 S003 STEPPED FOUNDATION DETAIL Not to Scale



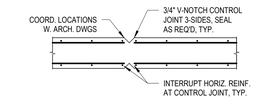
9 S003 TYPICAL WALL AND CORNER REINFORCING Not to Scale



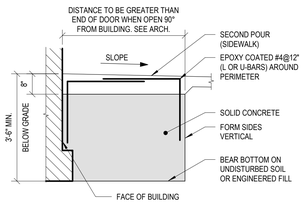
10 S003 ANGLED WALL CORNER Not to Scale



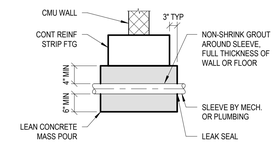
11 S003 WALL CONSTRUCTION JOINT Not to Scale



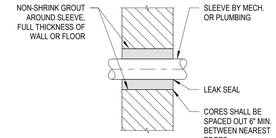
12 S003 WALL CONTROL JOINT Not to Scale



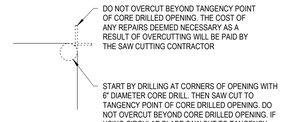
13 S003 FROST-PROOF ENTRY SLAB Not to Scale



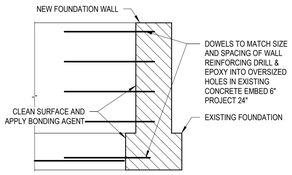
14 S003 PIPE THROUGH MASS POUR Not to Scale



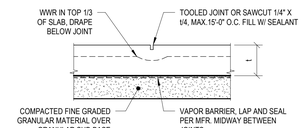
1 S003 CORING AND SLEEVING IN EXISTING CONCRETE Not to Scale



2 S003 NEW OPENINGS IN EXISTING CONCRETE Not to Scale

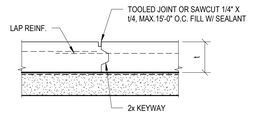


3 S003 NEW TO EXISTING FOUNDATION REINFORCEMENT Not to Scale



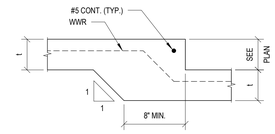
CONTROL JOINT

- PURPOSE OF SLAB ON GRADE JOINTING IS TO BREAK THE SLAB POURS INTO SIZES THAT ARE MANAGEABLE FOR FINISHING AND TO LIMIT TOTAL SHRINKAGE.
- PLACE CONSTRUCTION JOINTS SUCH THAT THE MAXIMUM SLAB POUR SIZE IS LIMITED TO 60'-0" x 60'-0". THIS POUR LIMITATION MAY BE EXPANDED BASED ON CONTRACTOR'S METHOD OF PLACEMENT, CURING TECHNIQUE, AND EXPERIENCE IN CONTROLLING CRACKING IN SIMILAR POUR SIZES. A POUR PLAN SHALL BE SUBMITTED AND REVIEWED BY RDA. ANY COMMENTS MADE BY RDA ARE ONLY RECOMMENDATIONS AS THE CONTRACTOR IS ULTIAMTELY RESPONSIBLE FOR CONCRETE PLACEMENT AND ASSOCIATED RESULTS.
- SLAB POURS SHALL BE SQUARE IF POSSIBLE, BUT IN NO CASE SHALL THEY BE GREATER THAN TWICE AS LONG AS THEY ARE WIDE.
- CONTROL JOINTS SHALL SUBDIVIDE A SLAB POUR INTO APPROX. 15'-0" x 15'-0" OR SMALLER AREAS.
- JOINTS SHALL BE PLACED WHERE POSSIBLE TO ALIGN WITH MAIN COLUMN LINES AND TO ELIMINATE RE-ENTRANT CORNERS IN THE SLAB.
- PROVIDE SLAB JOINT PATTERN AS SHOWN ON THE DRAWINGS, OR IF NOT SHOWN, CONTRACTOR SHALL SUPPLY A PROPOSED JOINT LAYOUT PATTER TO THE ARCHITECT FOR APPROVAL.

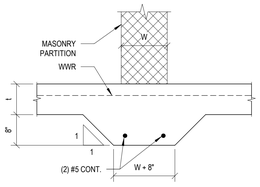


CONSTRUCTION JOINT

4 S003 TYPICAL SLAB ON GRADE JOINTS Not to Scale



5 S003 DEPRESSION IN SLAB ON GRADE Not to Scale



6 S003 THICKENED SLAB UNDER MASONRY PARTITION WALL Not to Scale

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1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

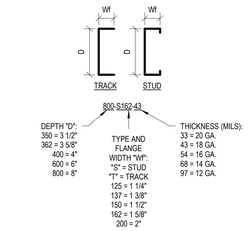
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

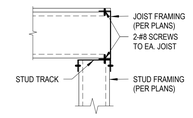
SHEET TITLE
TYPICAL DETAILS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

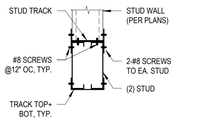
SHEET NO.
S003



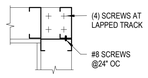
18 S004 CFMF DESIGNATIONS
Not to Scale



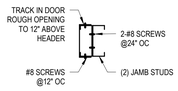
19 S004 TYPICAL CFMF JOIST BEARING
Not to Scale



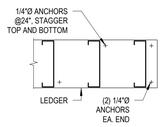
20 S004 TYPICAL CFMF BOX HEADERS
Not to Scale



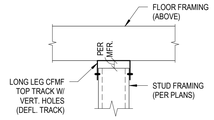
21 S004 TYPICAL CFMF CORNER FRAMING
Not to Scale



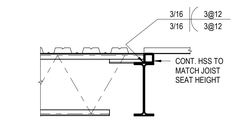
22 S004 TYPICAL CFMF JAMB STUD
Not to Scale



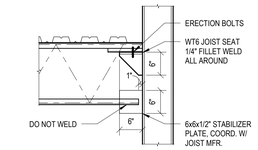
23 S004 TYPICAL CFMF LEDGER
Not to Scale



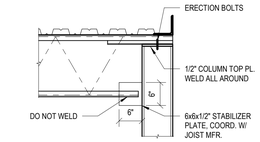
24 S004 DEFLECTION TRACK DETAIL
Not to Scale



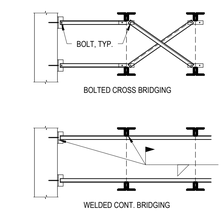
13 S004 CHANGE IN DECK DIRECTION
Not to Scale



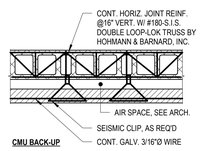
14 S004 JOIST BEARING INTO COLUMN
Not to Scale



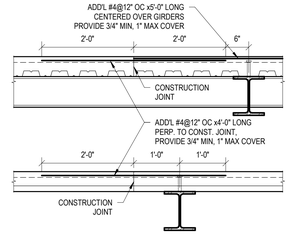
15 S004 JOIST BEARING ONTO COLUMN
Not to Scale



16 S004 JOIST BRIDING DETAILS
Not to Scale

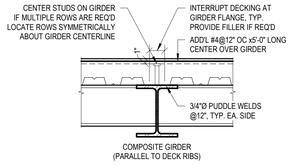


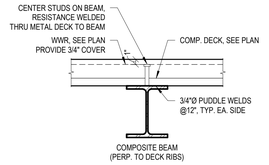
TYPICAL MASONRY VENEER REINFORCING
17 S004 Not to Scale



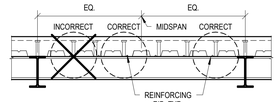
- THE CONTRACTOR SHALL SUBMIT A DRAWING TO THE STRUCTURAL ENGINEER SHOWING THE LOCATION OF ALL CONSTRUCTION JOINTS IN THE COMPOSITE SLAB FOR APPROVAL PRIOR TO CONSTRUCTION OF THE SLAB.
- **THE MAXIMUM POUR SIZE SHOULD NOT EXCEED 80'x80' IN ANY DIRECTION AND NO POUR SHALL BE MORE THAN TWICE AS LONG AS IT IS WIDE.**
- JOINTS SHALL BE VERTICALLY BULKHEADED JOINTS W/ REINFORCING RUNNING CONTINUOUS THROUGH THE JOINT.
- NO SAWCUT OR TOOLED CONTROL JOINTS SHALL BE USED IN COMP. FLOOR CONST.
- PROVIDE SHORING TO BEAMS, GIRDERS AND DECK IN THE VICINITY OF CONSTRUCTION JOINTS AS REQUIRED TO PREVENT SEPARATION OF PREVIOUSLY POURED CONCRETE FROM COMPOSITE DECK DUE TO SUBSEQUENT POUR.

8 S004 COMPOSITE FLOOR CONSTRUCTION JOINT
Not to Scale





9 S004 COMPOSITE FLOOR STUD DETAIL
Not to Scale



PLACE STUDS ON FAR SIDE OF REINFORCING RIB RELATIVE TO BEAM MIDSPAN, TYP.

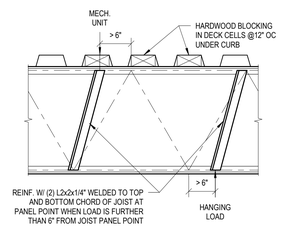
10 S004 SHEAR STUD PLACEMENT
Not to Scale

FLOOR DECK ATTACHMENT PATTERN:
FASTEN USING 36/4 PATTERN AT END LAPS & INT. SUPPORTS @ 12" OC
FASTEN AT EDGES, PERIMETER, AND OPENINGS @ 6" OC
USE 3/4"Ø PUDDLE WELD, HILTI X-ENP 19, OR HILTI X-HSN 24
FASTEN SIDE LAPS AT 24" OC WITH #10 SELF-DRILLING SCREWS
END LAPS OCCUR AT SUPPORTS ONLY
MINIMUM LAP = 0"

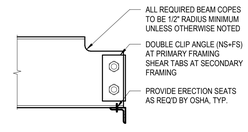
ROOF DECK ATTACHMENT PATTERN:
FASTEN USING 36/4 PATTERN AT END LAPS & INT. SUPPORTS @ 12" OC
FASTEN AT EDGES, PERIMETER, AND OPENINGS @ 6" OC
USE 3/4"Ø PUDDLE WELD, HILTI X-ENP 19, OR HILTI X-HSN 24
FASTEN SIDE LAPS AT 12" OC WITH #10 SELF-DRILLING SCREWS
END LAPS OCCUR AT SUPPORTS ONLY
MINIMUM LAP = 3"

NOTE:
HILTI X-ENP 19 FASTENERS FOR STEEL THICKNESSES 1/8" TO 3/8"
HILTI X-HSN 24 FASTENERS FOR STEEL THICKNESSES 1/4" & GREATER

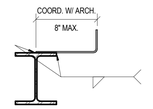
11 S004 STEEL DECK FASTENING
Not to Scale



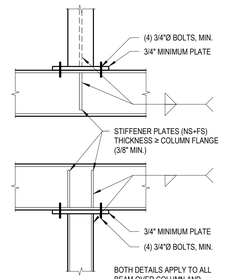
12 S004 TYPICAL JOIST REINFORCING
Not to Scale



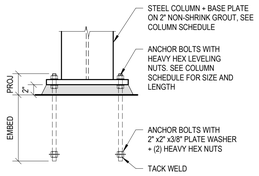
1 S004 TYPICAL BEAM COPES
Not to Scale



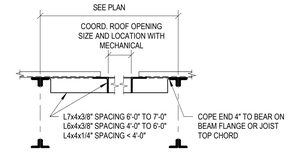
2 S004 TYPICAL BENT PLATE EDGE
Not to Scale



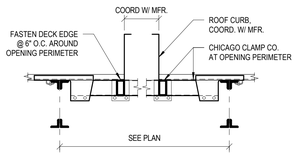
3 S004 BEAM OVER COLUMN DETAIL
Not to Scale



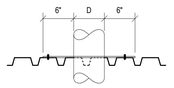
4 S004 TYPICAL ANCHOR ROD DETAIL
Not to Scale



5 S004 ANGLE FRAME FOR MECHANICAL ROOF OPENINGS
Not to Scale



6 S004 DECK EDGE AND RTU SUPPORT AT EXISTING ROOF
Not to Scale



D≤ 6"Ø (ONE RIB REMOVED) NO REINFORCING REQ'D
6"Ø< D≤ 8"Ø PROVIDE 0.045" MIN. PLATE, EXTEND 6" BEYOND OPENING ALL SIDES,SCREW @12" OC ALL AROUND
D> 8"Ø PROVIDE TYPICAL ANGLE FRAME

7 S004 REINFORCING OR STEEL ROOF DECKING
Not to Scale

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HOWELL PUBLIC SCHOOLS

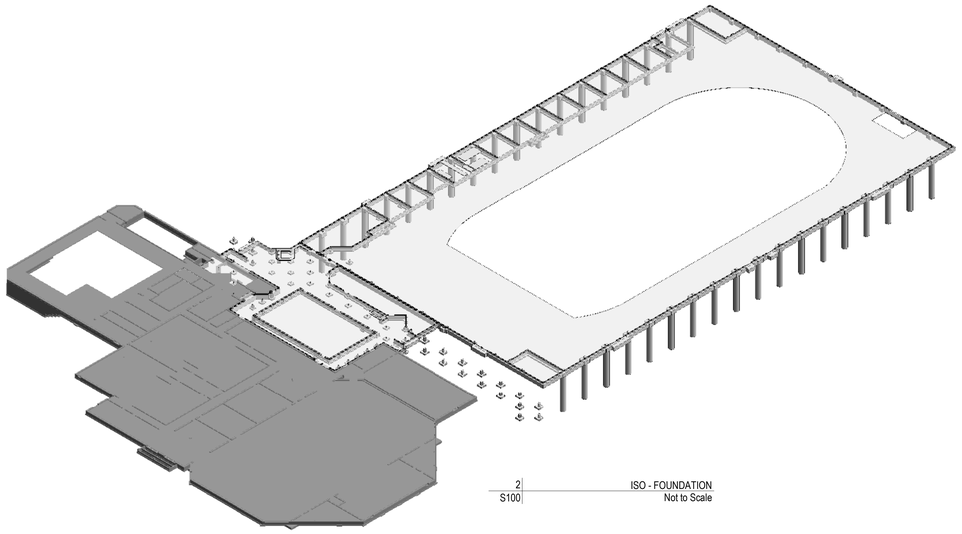
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

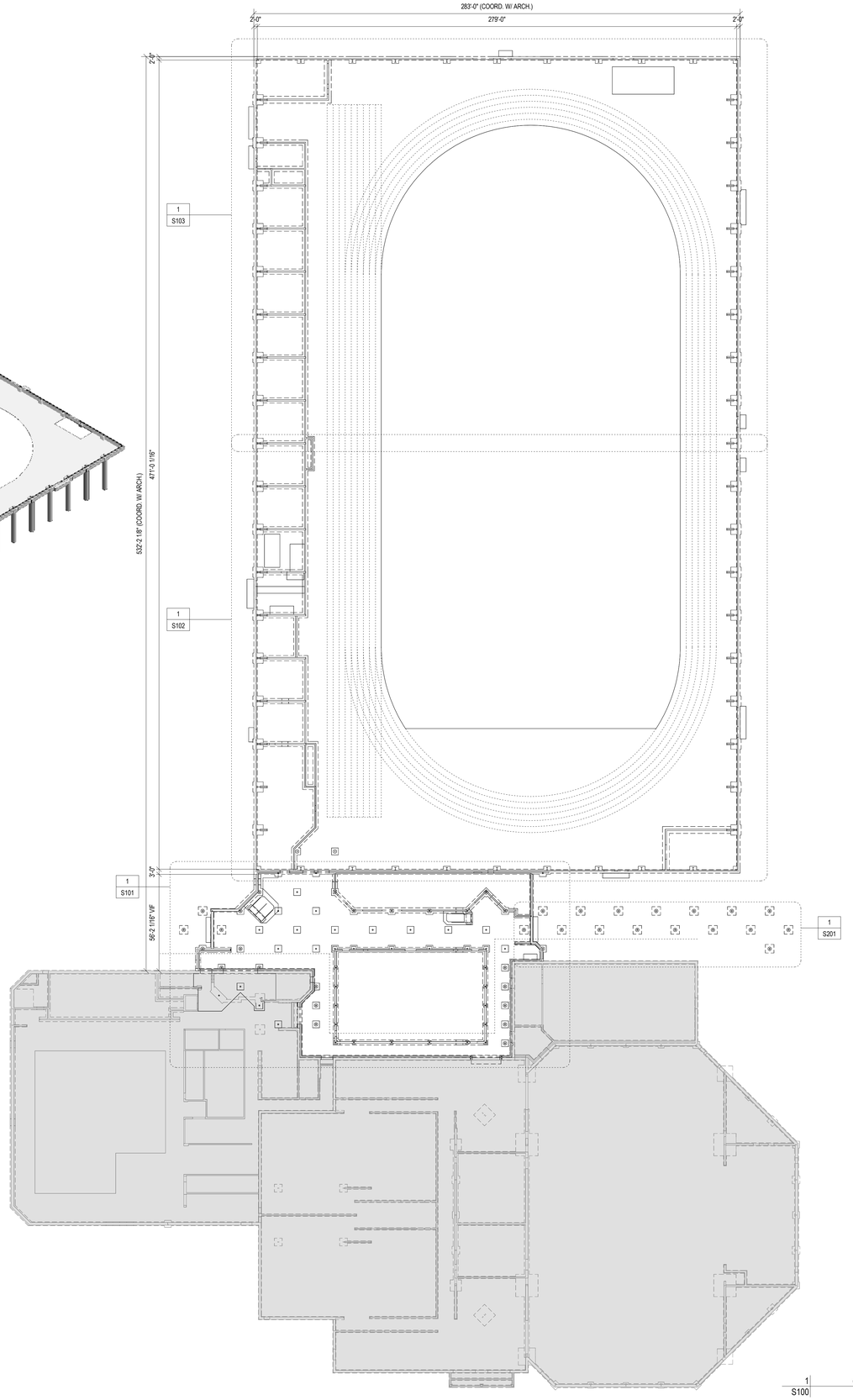
SHEET TITLE
TYPICAL DETAILS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

SHEET NO.
S004



2 S100 ISO - FOUNDATION
Not to Scale



1 S100 COMPOSITE FOUNDATION PLAN
Scale: 1" = 30'-0"

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HOWELL
PUBLIC SCHOOLS

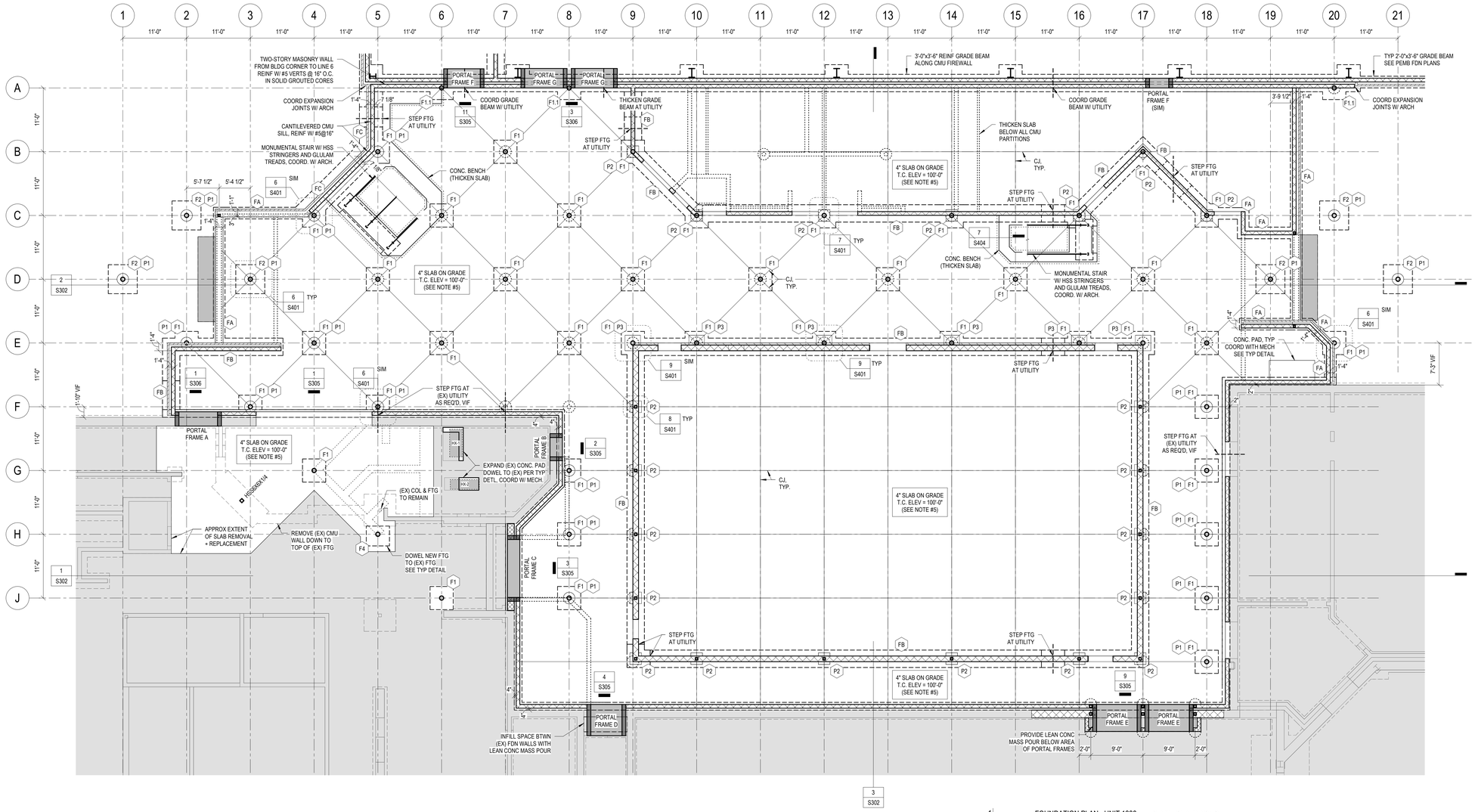
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
COMPOSITE FOUNDATION PLAN

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
REGISTERED PROFESSIONAL ENGINEER

SHEET NO.
S100



1 S101 FOUNDATION PLAN - UNIT 1300
Scale: 1/8" = 1'-0"

FOUNDATION SCHEDULE		
MARK	SIZE	REINFORCING
F1	48" x 48" x 12"	(5) #5 BOT EA WAY
F1.1	48" x 48" x 42"	(5) #5 TOP & BOT EA WAY, HOOK ALL ENDS
F2	60" x 60" x 15"	(6) #5 TOP & BOT EA WAY, HOOK ALL ENDS
F3	72" x 72" x 42"	SEE DETAILS 1 & 2/S401
F4	41" x 48" x 12"	(5) #5 BOT EA WAY
FA	Strip Footing - 2'-0" x 12"	CONT (3) #5 BOT
FB	Strip Footing - 3'-0" x 12"	<varies>
FC	Strip Footing - 4'-0" x 12"	CONT (5) #5 BOT W/ #5 TRANS T&B, HOOK ENDS

PIER SCHEDULE		
MARK	SIZE	REINFORCING
P1	24" Ø	SEE DETAIL 6/S401
P2	24 x 24	SEE DETAIL 7/S401 OR 8/S401
P3	32 x 32	SEE DETAIL 9/S401

NOTE:
- T.FTG ELEV AT COLS W/O PIERS: -8" BELOW T.C. SLAB ON GRADE
- T.FTG ELEV AT COLS W/ PIERS: -2'-8" BELOW T.C. SLAB ON GRADE EXCEPT WHEN MATCHING EXISTING BUILDING FOUNDATIONS

FOUNDATION PLAN NOTES:

1. SEE SHEETS S001, S002, S003, & S004 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. ALL FOUNDATION CONDITIONS ARE TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO REBAR AND CONCRETE PLACEMENT. MINIMUM ALLOWABLE BEARING PRESSURE = 3,000 PSF
5. SLAB ON GRADE TO BE 4" THICK (MIN, UON). REINFORCE WITH 6x6 W2.9xW2.9 WWR IN TOP 1/3 OF SLAB, U.O.N..
6. PROVIDE BOND BREAKER BETWEEN SLAB & CONCRETE FOUNDATION ELEMENTS, BETWEEN SLAB & CONCRETE WALLS, AND BETWEEN SLAB & CMU FOUNDATION ELEMENTS
7. COORDINATE SLAB ON GRADE CONTROL JOINT LOCATIONS WITH ARCHITECTURAL DRAWINGS
8. COORDINATE EXTENTS OF MASONRY WITH ARCHITECTURAL DRAWINGS
9. COORDINATE CMU CONTROL JOINTS WITH ARCHITECTURAL DRAWINGS
10. ALL CORES IN MASONRY WALL BELOW GRADE TO BE SOLID GROUTED. ANCHOR TO CONCRETE FOUNDATION WITH #5 DOWEL @ 32" O.C. LAP VERTICAL BARS W/ DOWELS FROM FOUNDATIONS
11. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
12. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
13. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C. VERTICAL SPACING.
14. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
15. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
16. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED

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HOWELL PUBLIC SCHOOLS

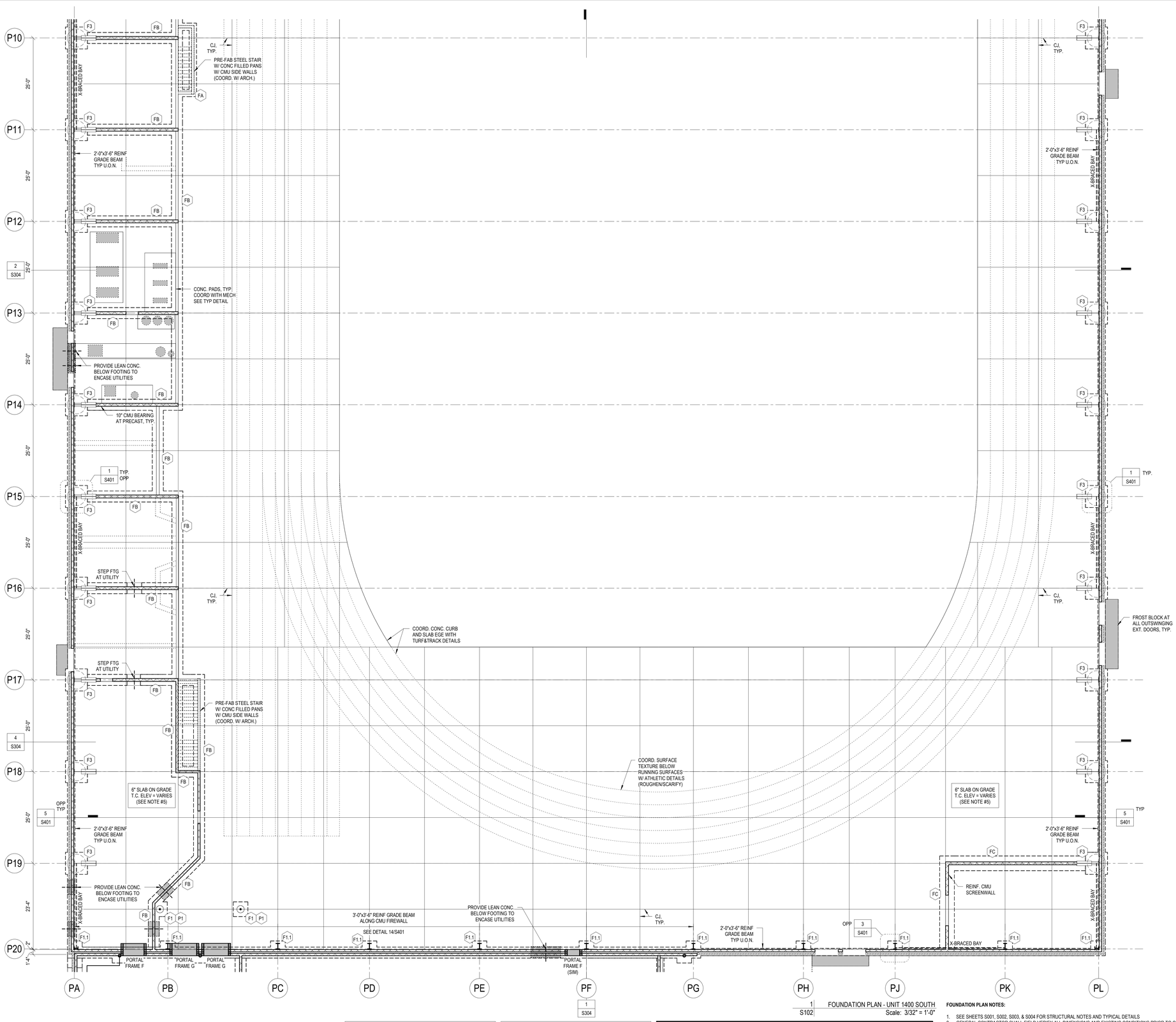
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
FOUNDATION PLAN - UNIT 1300

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

SHEET NO.
S101



1 S102 FOUNDATION PLAN - UNIT 1400 SOUTH
Scale: 3/32" = 1'-0"

PIER SCHEDULE		
MARK	SIZE	REINFORCING
P1	24" Ø	SEE DETAIL 6/S401
P2	24 x 24	SEE DETAIL 7/S401 OR 8/S401
P3	32 x 32	SEE DETAIL 9/S401

NOTE:
- T.FTG ELEV AT COLS W/O PIERS: -8" BELOW T.C. SLAB ON GRADE
- T.FTG ELEV AT COLS W/ PIERS: -2'-8" BELOW T.C. SLAB ON GRADE EXCEPT WHEN MATCHING EXISTING BUILDING FOUNDATIONS

FOUNDATION SCHEDULE		
MARK	SIZE	REINFORCING
F1	48" x 48" x 12"	(5) #5 BOT EA WAY
F1.1	48" x 48" x 42"	(5) #5 TOP & BOT EA WAY, HOOK ALL ENDS
F2	60" x 60" x 15"	(6) #5 TOP & BOT EA WAY, HOOK ALL ENDS
F3	72" x 72" x 42"	SEE DETAILS 1 & 2/S401
F4	41" x 48" x 12"	(5) #5 BOT EA WAY
FA	Strip Footing - 2'-0" x 12"	CONT (3) #5 BOT
FB	Strip Footing - 3'-0" x 12"	<varies>
FC	Strip Footing - 4'-0" x 12"	CONT (5) #5 BOT W/ #5 TRANS T&B, HOOK ENDS

NOTICE TO PEMB DESIGNER:
PRE-ENGINEERED METAL BUILDING (PEMB) IS INTENDED TO BE PRE-ENGINEERED AND PRE-MANUFACTURED BY A QUALIFIED SUPPLIER AS A DELEGATED DESIGN PACKAGE. PEMB SUPPLIER TO PROVIDE REACTIONS AT EACH COLUMN ITEMIZED FOR EACH LOAD CASE (DEAD, LIVE, SNOW, WIND (NS, EW, AND UPLIFT), AND SEISMIC (NS, EW, AND UPLIFT)). SUPPLIER HAS NOT YET FINALIZED REACTIONS, ALL FOUNDATIONS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COLUMN REACTIONS YET TO BE PROVIDED BY PEMB SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS, WITH CALCULATIONS, ALL SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN AS A DELEGATED DESIGN PACKAGE.

PEMB PRIMARY STRUCTURE (BENTS) ARE REQUIRED TO MEET 1-HOUR FIRE RATING UP TO 20-FEET ABOVE FLOOR LEVEL. INTENT IS TO UTILIZE INTUMESCENT PAINT (FIRETEX FX5090) WHICH REQUIRES THE COL. TO EXCEED A "SECTION FACTOR" OR "WEIGHT PER FT DIVIDED BY PERIMETER" OF W/D > 0.43, IN ORDER TO BE PROTECTED BY INTUMESCENT PAINT.

FOUNDATION PLAN NOTES:

1. SEE SHEETS S001, S002, S003, & S004 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. ALL FOUNDATION CONDITIONS ARE TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO REBAR AND CONCRETE PLACEMENT, MINIMUM ALLOWABLE BEARING PRESSURE = 3,000 PSF
5. SLAB ON GRADE TO BE 4" THICK (MIN. UON). REINFORCE WITH 6x6 W2.9xW2.9 WWR IN TOP 1/3 OF SLAB, U.O.N.
6. PROVIDE BOND BREAKER BETWEEN SLAB & CONCRETE FOUNDATION ELEMENTS, BETWEEN SLAB & CONCRETE WALLS, AND BETWEEN SLAB & CMU FOUNDATION ELEMENTS
7. COORDINATE SLAB ON GRADE CONTROL JOINT LOCATIONS WITH ARCHITECTURAL DRAWINGS
8. COORDINATE EXTENTS OF MASONRY WITH ARCHITECTURAL DRAWINGS
9. COORDINATE CMU CONTROL JOINTS WITH ARCHITECTURAL DRAWINGS
10. ALL CORES IN MASONRY WALL BELOW GRADE TO BE SOLID GROUTED. ANCHOR TO CONCRETE FOUNDATION WITH #5 DOWEL @ 32" O.C. LAP VERTICAL BARS W/ DOWELS FROM FOUNDATIONS
11. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
12. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
13. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C. VERTICAL SPACING.
14. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
15. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
16. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED

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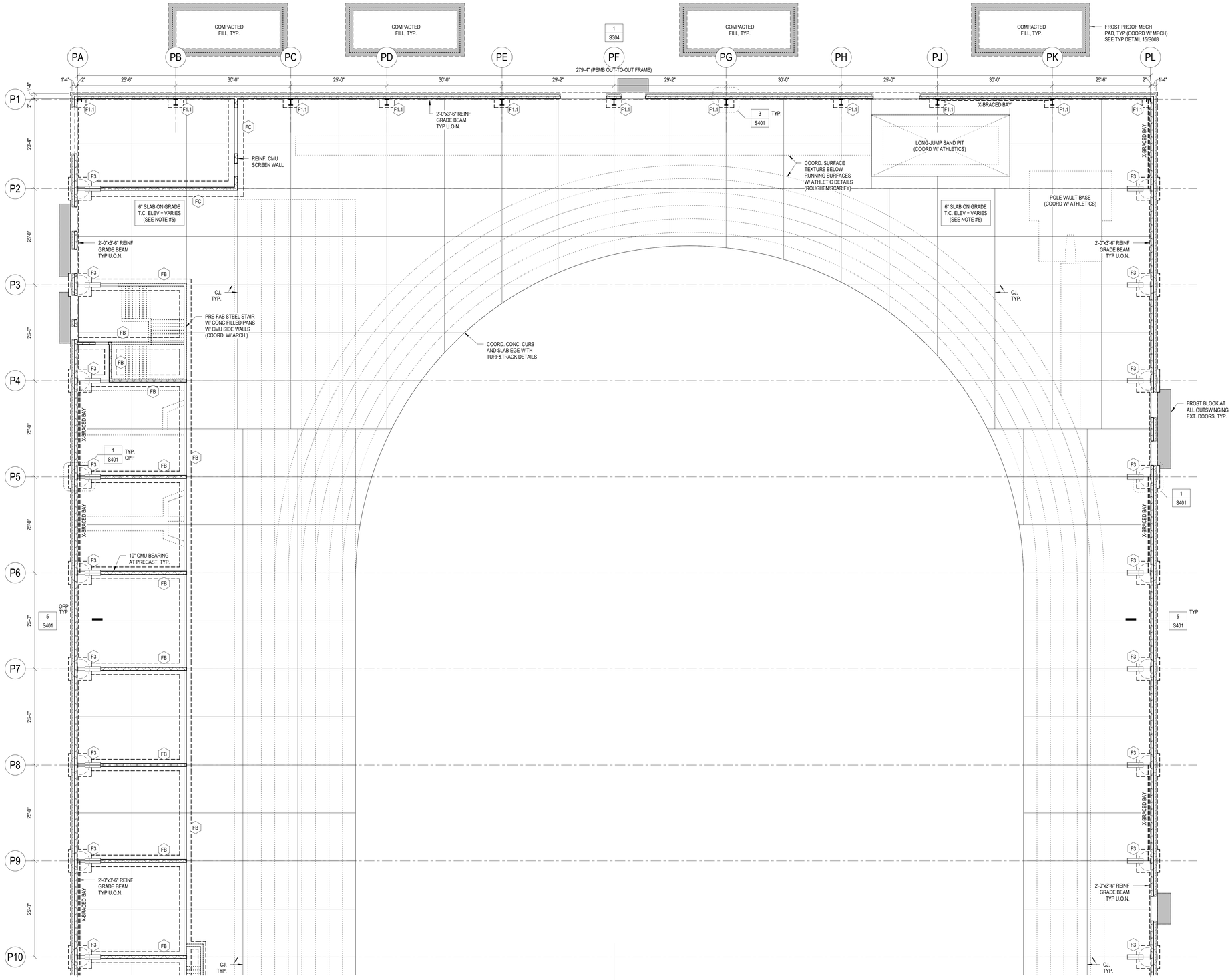
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
FOUNDATION PLAN - UNIT 1400 SOUTH

SHEET NO.
S102

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
REGISTERED PROFESSIONAL ENGINEER



1 S103 FOUNDATION PLAN - UNIT 1400 NORTH
Scale: 3/32" = 1'-0"

PIER SCHEDULE		
MARK	SIZE	REINFORCING
P1	24" Ø	SEE DETAIL 6/S401
P2	24 x 24	SEE DETAIL 7/S401 OR 8/S401
P3	32 x 32	SEE DETAIL 9/S401

NOTE:
- T.F.TG ELEV AT COLS W/O PIERS: -8" BELOW T.C. SLAB ON GRADE
- T.F.TG ELEV AT COLS W/ PIERS: -2'-8" BELOW T.C. SLAB ON GRADE EXCEPT WHEN MATCHING EXISTING BUILDING FOUNDATIONS

FOUNDATION SCHEDULE		
MARK	SIZE	REINFORCING
F1	48" x 48" x 12"	(5) #5 BOT EA WAY
F1.1	48" x 48" x 42"	(5) #5 TOP & BOT EA WAY, HOOK ALL ENDS
F2	60" x 60" x 15"	(6) #5 TOP & BOT EA WAY, HOOK ALL ENDS
F3	72" x 72" x 42"	SEE DETAILS 1 & 2/S401
F4	41" x 48" x 12"	(5) #5 BOT EA WAY
FA	Strip Footing - 2'-0" x 12"	CONT (3) #5 BOT
FB	Strip Footing - 3'-0" x 12"	<varies>
FC	Strip Footing - 4'-0" x 12"	CONT (5) #5 BOT W/ #5 TRANS T&B, HOOK ENDS

NOTICE TO PEMB DESIGNER:
PRE-ENGINEERED METAL BUILDING (PEMB) IS INTENDED TO BE PRE-ENGINEERED AND PRE-MANUFACTURED BY A QUALIFIED SUPPLIER AS A DELEGATED DESIGN PACKAGE. PEMB SUPPLIER TO PROVIDE REACTIONS AT EACH COLUMN ITEMIZED FOR EACH LOAD CASE [DEAD, LIVE, SNOW, WIND (NS, EW, AND UPLIFT), AND SEISMIC (NS, EW, AND UPLIFT)]. SUPPLIER HAS NOT YET FINALIZED REACTIONS, ALL FOUNDATIONS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COLUMN REACTIONS YET TO BE PROVIDED BY PEMB SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS, WITH CALCULATIONS, ALL SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN AS A DELEGATED DESIGN PACKAGE.

PEMB PRIMARY STRUCTURE (BENTS) ARE REQUIRED TO MEET 1-HOUR FIRE RATING UP TO 20-FEET ABOVE FLOOR LEVEL. INTENT IS TO UTILIZE INTUMESCENT PAINT (FIRETEX FX5090) WHICH REQUIRES THE COL. TO EXCEED A "SECTION FACTOR" OR "WEIGHT PER FT DIVIDED BY PERIMETER" OF W/D > 0.43, IN ORDER TO BE PROTECTED BY INTUMESCENT PAINT.

FOUNDATION PLAN NOTES:

1. SEE SHEETS S001, S002, S003, & S004 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. ALL FOUNDATION CONDITIONS ARE TO BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO REBAR AND CONCRETE PLACEMENT, MINIMUM ALLOWABLE BEARING PRESSURE = 3,000 PSF
5. SLAB ON GRADE TO BE 4" THICK (MIN. U/ON), REINFORCE WITH 6x6 W2.9xW2.9 WWR IN TOP 1/3 OF SLAB, U.O.N..
6. PROVIDE BOND BREAKER BETWEEN SLAB & CONCRETE FOUNDATION ELEMENTS, BETWEEN SLAB & CONCRETE WALLS, AND BETWEEN SLAB & CMU FOUNDATION ELEMENTS
7. COORDINATE SLAB ON GRADE CONTROL JOINT LOCATIONS WITH ARCHITECTURAL DRAWINGS
8. COORDINATE EXTENTS OF MASONRY WITH ARCHITECTURAL DRAWINGS
9. COORDINATE CMU CONTROL JOINTS WITH ARCHITECTURAL DRAWINGS
10. ALL CORES IN MASONRY WALL BELOW GRADE TO BE SOLID GROUTED. ANCHOR TO CONCRETE FOUNDATION WITH #5 DOWEL @ 32" O.C. LAP VERTICAL BARS W/ DOWELS FROM FOUNDATIONS
11. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
12. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
13. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C. VERTICAL SPACING.
14. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
15. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
16. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED

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HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

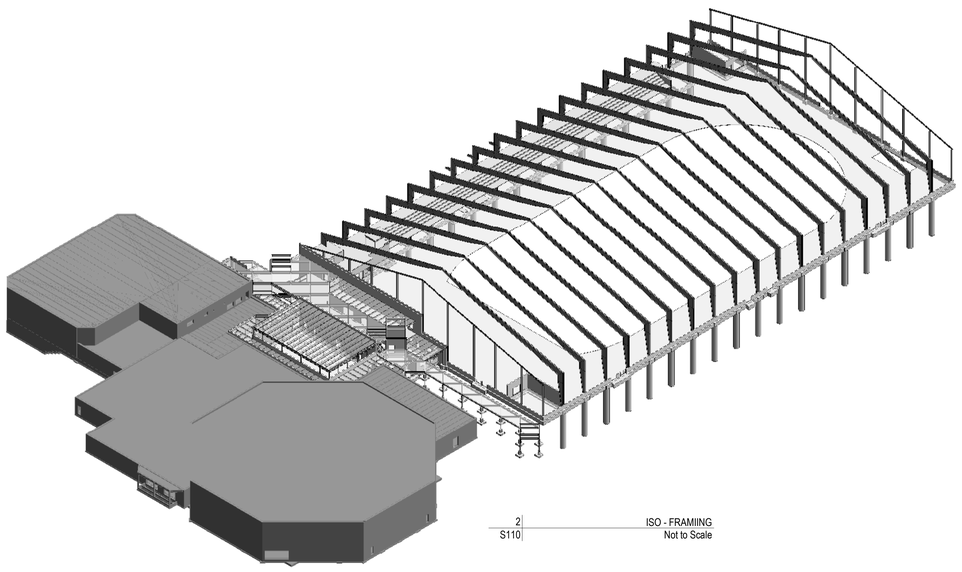
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

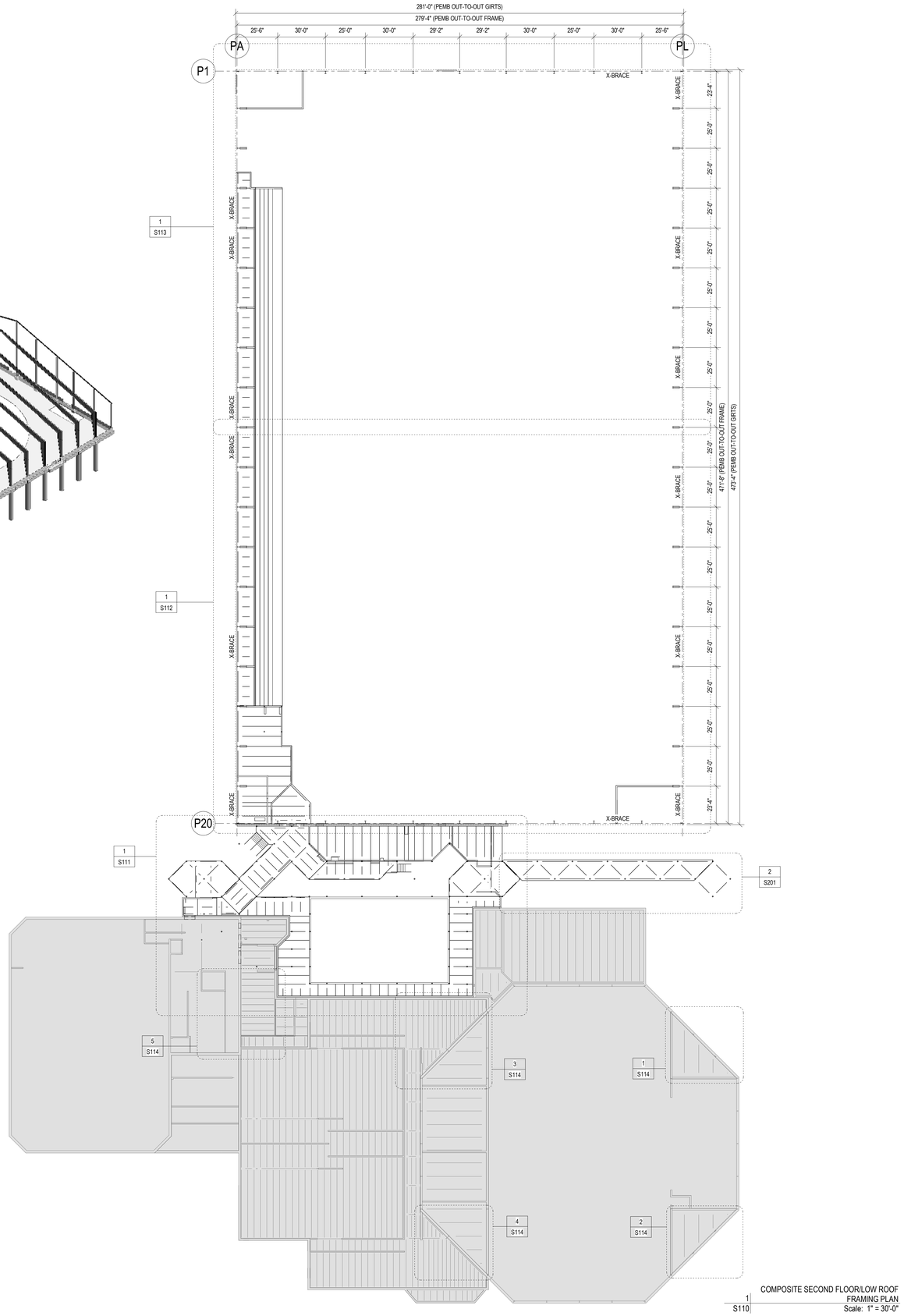
RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
FOUNDATION PLAN - UNIT 1400 NORTH

SHEET NO.
S103



2 S110 ISO - FRAMIING
Not to Scale



1 S110 COMPOSITE SECOND FLOOR/LOW ROOF FRAMING PLAN
Scale: 1" = 30'-0"

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ISSUANCES	DATE
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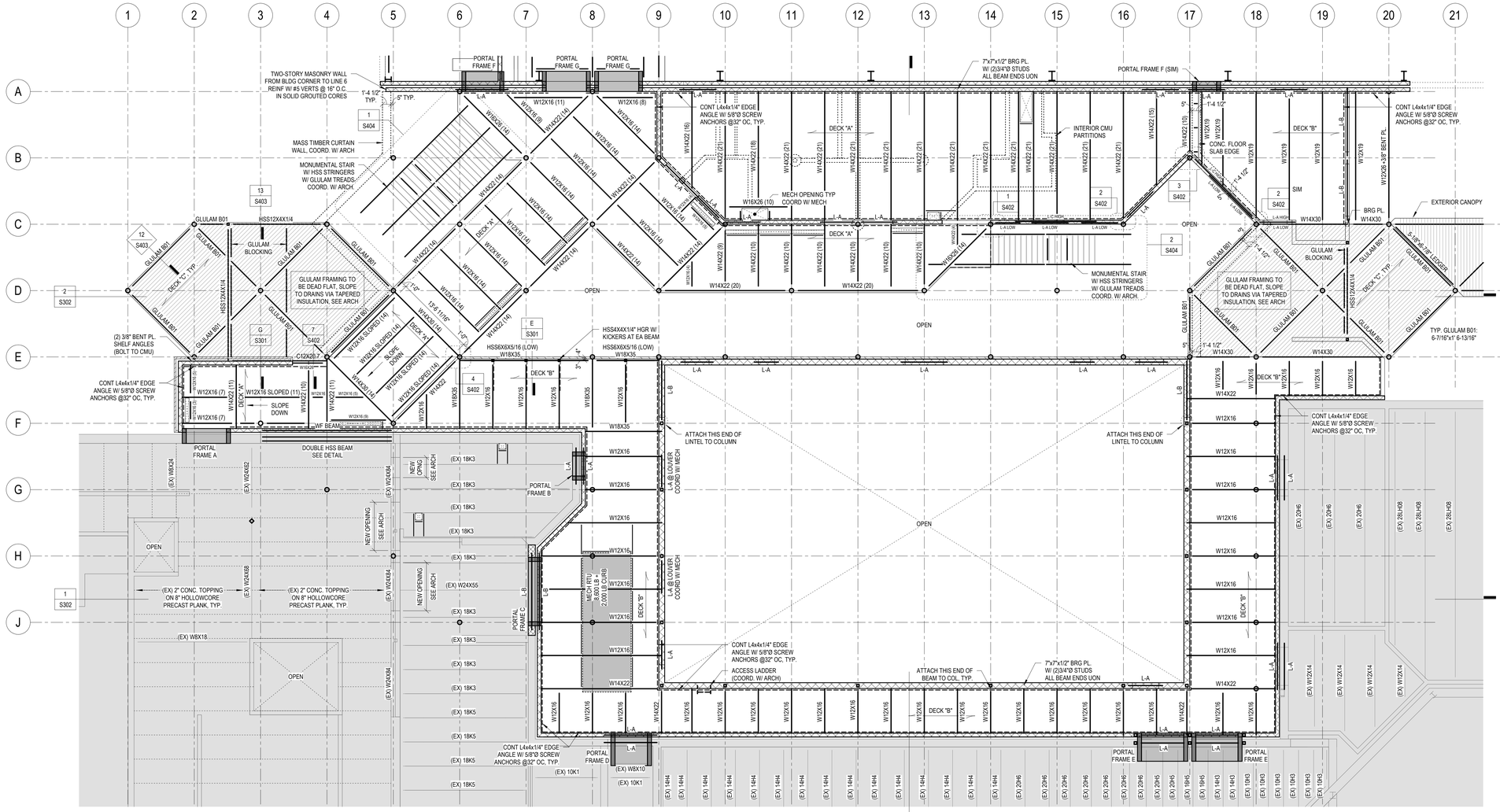
RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
COMPOSITE SECOND FLOOR & LOW ROOF PLAN

SHEET NO.
S110

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER



SECOND FLOOR & LOW ROOF FRAMING
PLAN - UNIT 1300
1 / S111
Scale: 1/8" = 1'-0"

NOTICE TO MASS TIMBER DESIGNER:
MASS TIMBER ELEMENTS (GLULAM AND CLT DECKING) ARE INTENDED TO BE PRE-MANUFACTURED BY A QUALIFIED SUPPLIER. ALL MASS TIMBER SIZES AND LENGTHS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COORDINATION YET TO BE CONDUCTED WITH THE MASS TIMBER SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS, WITH CALCULATIONS, ALL SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER AS A DELEGATED DESIGN PACKAGE.

FRAMING PLAN NOTES:

1. SEE SHEETS S001, S002, S003, & S004 FOR STRUCTURAL NOTES AND TYPICAL DETAILS.
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
5. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
6. ALL MASONRY WV WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C.
7. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
8. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
9. T.S. ELEVATION GIVEN AT UNDERSIDE OF DECK
10. [± x'-xx"] DENOTES ELEVATON FROM GIVEN DATUM
11. (xx) INDICATES NUMBER OF 3/4" Ø HEADED SHEAR STUDS EQUALLY SPACED ALONG THE LENGTH OF THE BEAM
12. xxk AT BEAM ENDS DENOTES FACTORED BEAM REACTIONS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM REACTION = 25 KIPS)
13. xxk-ft AT BEAM ENDS DENOTES FACTORED BEAM MOMENTS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
14. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED
15. COLD-FORMED METAL FRAMED WALLS, HEADERS, AND GIRDERS ARE TO BE DESIGNED BY CFMF DESIGNER
16. MASS TIMBER DRAWINGS TO BE PREPARED BY THE SUPPLIER AND SEALED BY A REGISTERED DESIGN PROFESSIONAL
17. SEE MASS TIMBER SHOP DRAWINGS FOR FINAL DESIGNS, LAYOUT, REQUIRED BLOCKING, AND BRIDGING
18. FOLLOW MASS TIMBER SUPPLIER DRAWINGS AND NOTES FOR CONSTRUCTION SEQUENCE, TEMPORARY BRACING, HANDLING, AND STORAGE REQUIREMENTS
19. ALL FRAMING CLIPS, STRAPS, AND HANGERS TO BE SIMPSON STRONG-TIE OR APPROVED EQUAL, U.O.N.

DECK TYPES:

A. 3-1/2" N.W. CONCRETE ON 2"x20GA COMPOSITE DECK (TOTAL THICKNESS 5-1/2"), REINF. W/ 6x6 W2.9xW2.9 WWR
4-1/2" N.W. CONCRETE ON 2"x20GA COMPOSITE DECK (TOTAL THICKNESS 6-1/2"), REINF. W/ 6x6 W2.9xW2.9 WWR
B. 1-1/2"x20GA (1.5lb) METAL ROOF DECK
C. 5-PLY CLT PLANK (TOTAL THICKNESS = 6-7/8")
D. 1-1/2" x20GA (1.5lbPA) ACOUSTICAL CELLULAR DECK

LINTEL SCHEDULE:

ALL LINTELS TO BEAR 8" MIN AT EACH END U.O.N. LENGTH O BOTTOM PLATE TO BE 1" LESS THAN OPENING; WIDTH TO BE 1" LESS THAN TOTAL WALL THICKNESS, STEEL WF TO BE CENTERED ON CMU WYTHE. BOTTOM PLATE TO BE OFFSET AS REQUIRED TO SUPPORT WALL EDGES AND VENEER ABOVE.
1. L-A: W8x18 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
2. L-B: W8x28 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
3. L-C: W16x26 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS

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ISSUANCES	DATE
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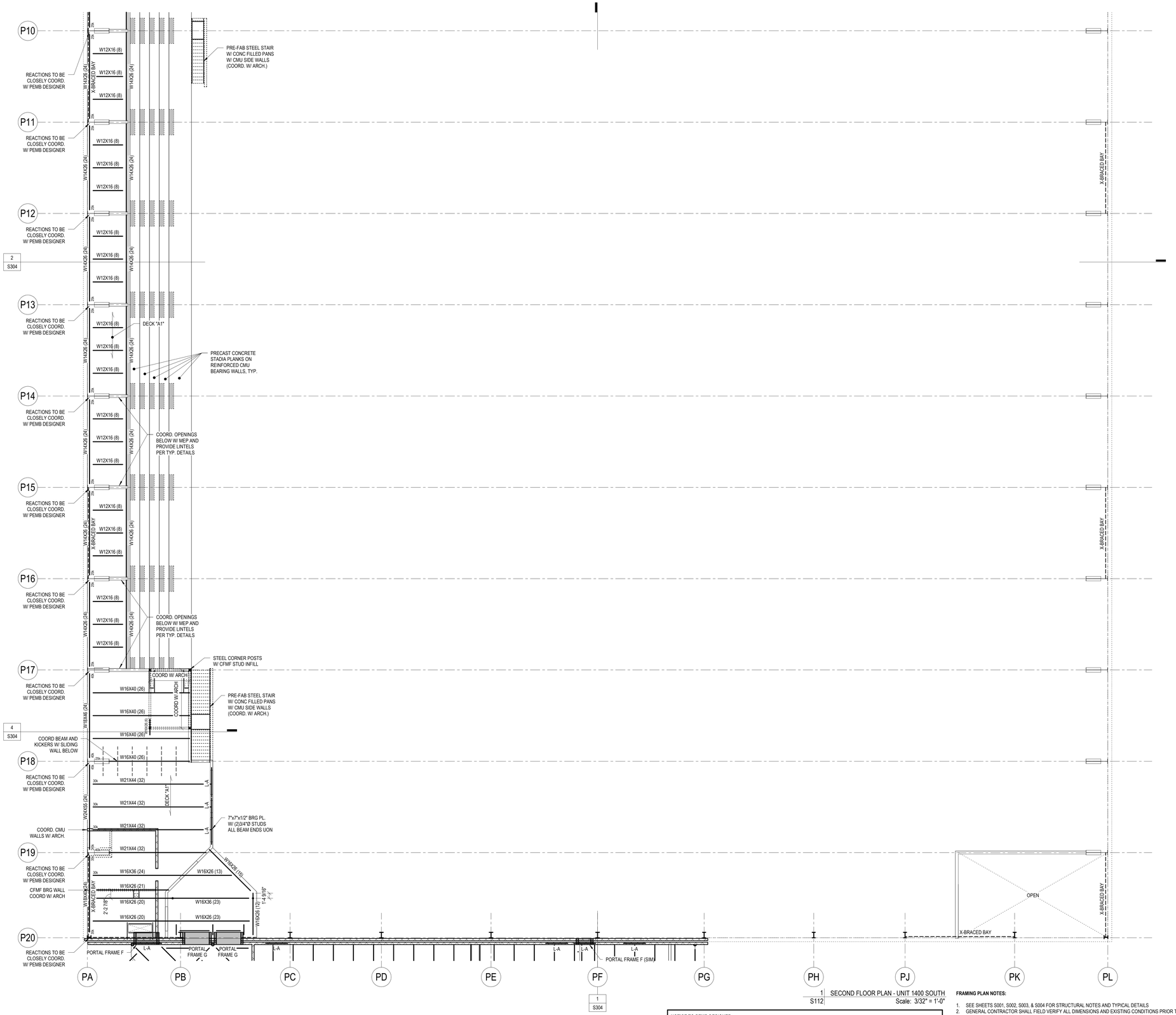
RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR & LOW ROOF FRAMING PLAN - UNIT 1300

SHEET NO.
S111

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER



1 SECOND FLOOR PLAN - UNIT 1400 SOUTH
S112 Scale: 3/32" = 1'-0"

NOTICE TO PEMB DESIGNER:
PRE-ENGINEERED METAL BUILDING (PEMB) IS INTENDED TO BE PRE-ENGINEERED AND PRE-MANUFACTURED BY A QUALIFIED SUPPLIER AS A DELEGATED DESIGN PACKAGE. PEMB SUPPLIER TO PROVIDE REACTIONS AT EACH COLUMN ITEMIZED FOR EACH LOAD CASE [DEAD, LIVE, SNOW, WIND (NS, EW, AND UPLIFT), AND SEISMIC (NS, EW, AND UPLIFT)]. SUPPLIER HAS NOT YET FINALIZED REACTIONS. ALL FOUNDATIONS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COLUMN REACTIONS YET TO BE PROVIDED BY PEMB SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS, WITH CALCULATIONS, ALL SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN AS A DELEGATED DESIGN PACKAGE.

PEMB PRIMARY STRUCTURE (BENTS) ARE REQUIRED TO MEET 1-HOUR FIRE RATING UP TO 20-FEET ABOVE FLOOR LEVEL. INTENT IS TO UTILIZE INTUMESCENT PAINT (FIRETEX FX5090) WHICH REQUIRES THE COL. TO EXCEED A "SECTION FACTOR" OR "WEIGHT PER FT DIVIDED BY PERIMETER" OF W/D > 0.43, IN ORDER TO BE PROTECTED BY INTUMESCENT PAINT.

LINTEL SCHEDULE:

ALL LINTELS TO BEAR 8" MIN AT EACH END U.O.N. LENGTH O BOTTOM PLATE TO BE 1" LESS THAN OPENING; WIDTH TO BE 1" LESS THAN TOTAL WALL THICKNESS, STEEL WF TO BE CENTERED ON CMU WYTHE. BOTTOM PLATE TO BE OFFSET AS REQUIRED TO SUPPORT WALL EDGES AND VENEER ABOVE.

1. L-A: W8x18 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
2. L-B: W8x28 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
3. L-C: W16x26 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS

DECK TYPES:

A. 3-1/2" N.W. CONCRETE ON 2"x20GA COMPOSITE DECK (TOTAL THICKNESS 5-1/2"). REINF. W/ 6x6 W2.9xW2.9 WWR
   4-1/2" N.W. CONCRETE ON 2"x20GA COMPOSITE DECK (TOTAL THICKNESS 6-1/2"). REINF. W/ 6x6 W2.9xW2.9 WWR
B. 1-1/2"x20GA (1.5B) METAL ROOF DECK
C. 5-PLY CLT PLANK (TOTAL THICKNESS = 6-7/8")
D. 1-1/2" x20GA (1.5BPA) ACOUSTICAL CELLULAR DECK

FRAMING PLAN NOTES:

1. SEE SHEETS S001, S002, S003, & S004 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
5. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
6. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C.
7. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
8. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
9. T.S. ELEVATION GIVEN AT UNDERSIDE OF DECK
10. [± x'-xx"] DENOTES ELEVATON FROM GIVEN DATUM
11. (xx) INDICATES NUMBER OF 3/4" Ø HEADED SHEAR STUDS EQUALLY SPACED ALONG THE LENGTH OF THE BEAM
12. xxk AT BEAM ENDS DENOTES FACTORED BEAM REACTIONS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
13. xxk-ft AT BEAM ENDS DENOTES FACTORED BEAM MOMENTS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
14. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED
15. COLD-FORMED METAL FRAMED WALLS, HEADERS, AND GIRDERS ARE TO BE DESIGNED BY CFMF DESIGNER
16. MASS TIMBER DRAWINGS TO BE PREPARED BY THE SUPPLIER AND SEALED BY A REGISTERED DESIGN PROFESSIONAL
17. SEE MASS TIMBER SHOP DRAWINGS FOR FINAL DESIGNS, LAYOUT, REQUIRED BLOCKING, AND BRIDGING
18. FOLLOW MASS TIMBER SUPPLIER DRAWINGS AND NOTES FOR CONSTRUCTION SEQUENCE, TEMPORARY BRACING, HANDLING, AND STORAGE REQUIREMENTS
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STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

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ISSUANCES	DATE
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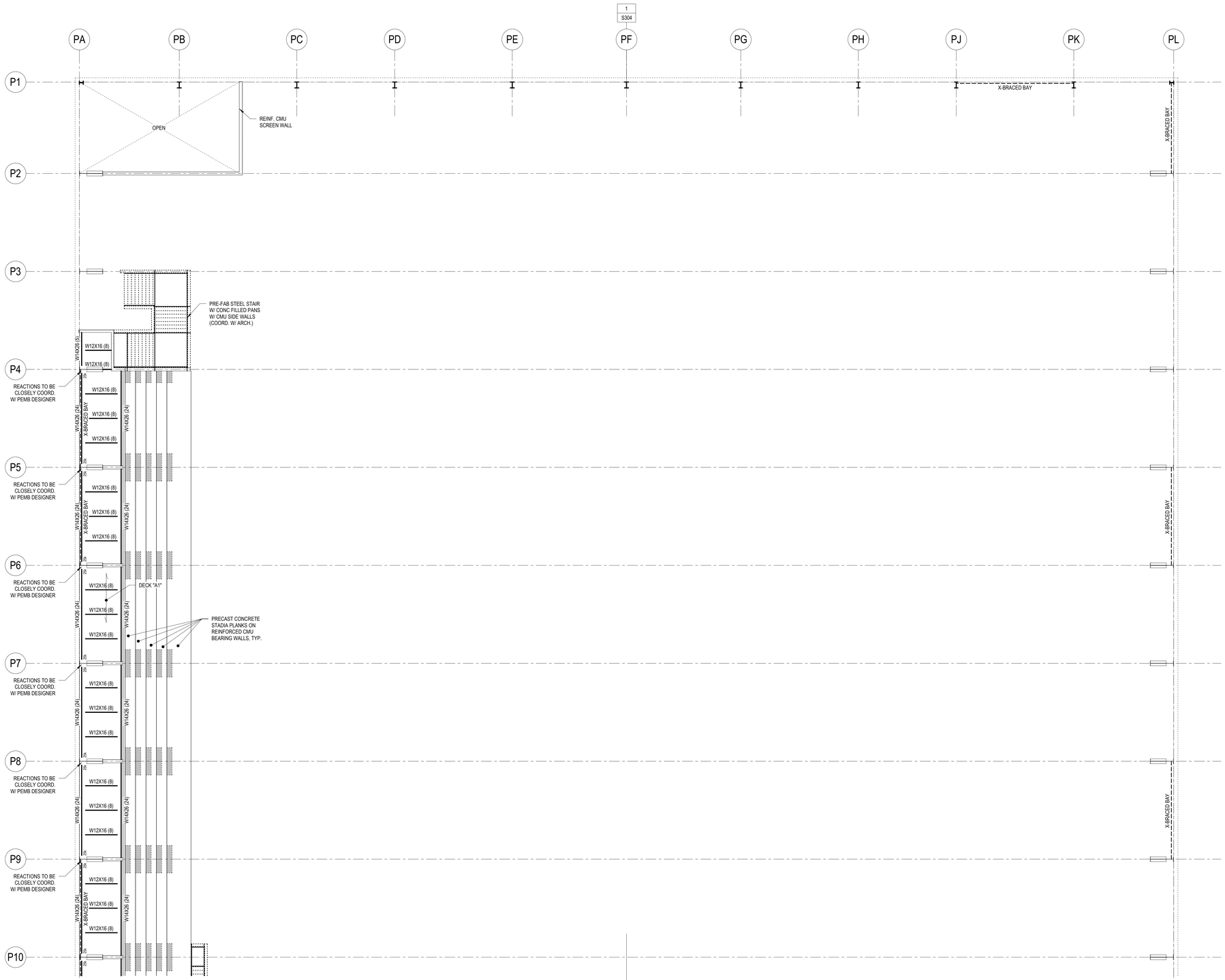
RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR FRAMING PLAN - UNIT 1400 SOUTH

SHEET NO.
S112



1 SECOND FLOOR PLAN - UNIT 1400 NORTH
S113 Scale: 3/32" = 1'-0"

NOTICE TO PEMB DESIGNER:
PRE-ENGINEERED METAL BUILDING (PEMB) IS INTENDED TO BE PRE-ENGINEERED AND PRE-MANUFACTURED BY A QUALIFIED SUPPLIER AS A DELEGATED DESIGN PACKAGE. PEMB SUPPLIER TO PROVIDE REACTIONS AT EACH COLUMN ITEMIZED FOR EACH LOAD CASE (DEAD, LIVE, SNOW, WIND (NS, EW, AND UPLIFT), AND SEISMIC (NS, EW, AND UPLIFT)). SUPPLIER HAS NOT YET FINALIZED REACTIONS, ALL FOUNDATIONS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COLUMN REACTIONS YET TO BE PROVIDED BY PEMB SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS, WITH CALCULATIONS, ALL SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN AS A DELEGATED DESIGN PACKAGE.

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LINTEL SCHEDULE:

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1. L-A: W8x18 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
2. L-B: W8x28 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
3. L-C: W16x26 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS

DECK TYPES:

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4-1/2" N.W. CONCRETE ON 2"x20GA COMPOSITE DECK (TOTAL THICKNESS 6-1/2"). REINF. W/ 6x6 W2.9xW2.9 WWR
B. 1-1/2"x20GA (1.5B) METAL ROOF DECK
C. 5-PLY CLT PLANK (TOTAL THICKNESS = 6-7/8")
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FRAMING PLAN NOTES:

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5. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
6. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C.
7. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
8. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
9. T.S. ELEVATION GIVEN AT UNDERSIDE OF DECK
10. [± x'-xx"] DENOTES ELEVATON FROM GIVEN DATUM
11. (xx) INDICATES NUMBER OF 3/4" Ø HEADED SHEAR STUDS EQUALLY SPACED ALONG THE LENGTH OF THE BEAM
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13. xxk-ft AT BEAM ENDS DENOTES FACTORED BEAM MOMENTS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
14. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED
15. COLD-FORMED METAL FRAMED WALLS, HEADERS, AND GIRDERS ARE TO BE DESIGNED BY CFMF DESIGNER
16. MASS TIMBER DRAWINGS TO BE PREPARED BY THE SUPPLIER AND SEALED BY A REGISTERED DESIGN PROFESSIONAL
17. SEE MASS TIMBER SHOP DRAWINGS FOR FINAL DESIGNS, LAYOUT, REQUIRED BLOCKING, AND BRIDGING
18. FOLLOW MASS TIMBER SUPPLIER DRAWINGS AND NOTES FOR CONSTRUCTION SEQUENCE, TEMPORARY BRACING, HANDLING, AND STORAGE REQUIREMENTS
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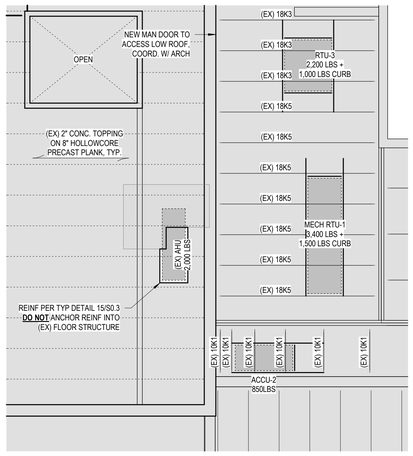
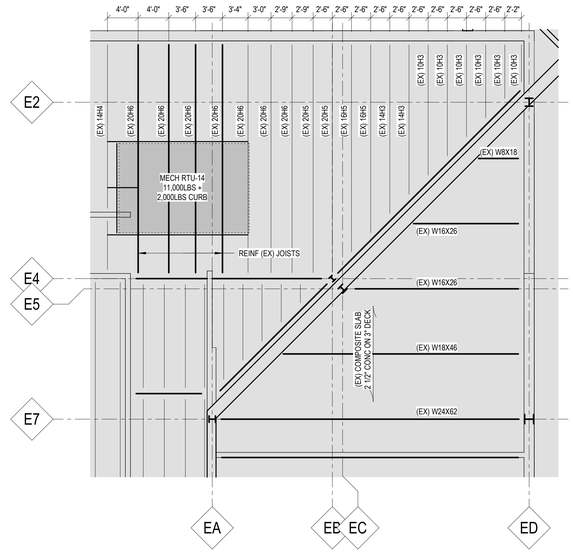
SHEET TITLE
SECOND FLOOR FRAMING PLAN - UNIT 1400 NORTH

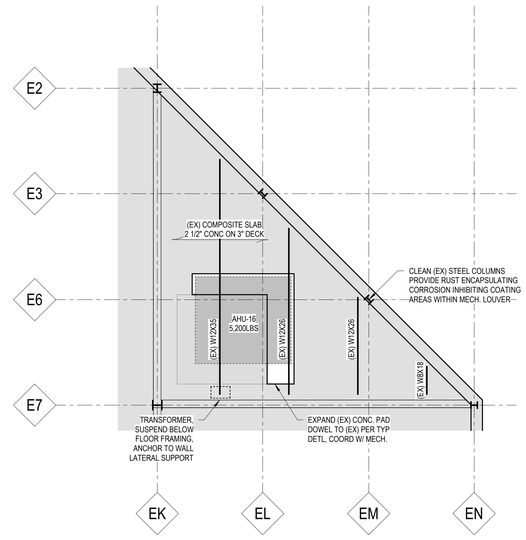
SHEET NO.
S113



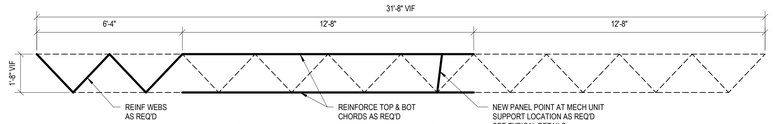
5 S114 POOL MECHANICAL ROOM
Scale: 1/8" = 1'-0"



3 S114 FIELDHOUSE NW MECHANICAL ROOM
Scale: 1/8" = 1'-0"

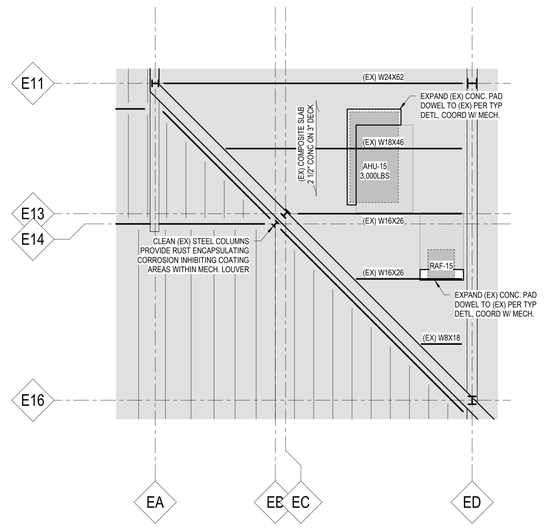


1 S114 FIELDHOUSE NE MECHANICAL ROOM
Scale: 1/8" = 1'-0"

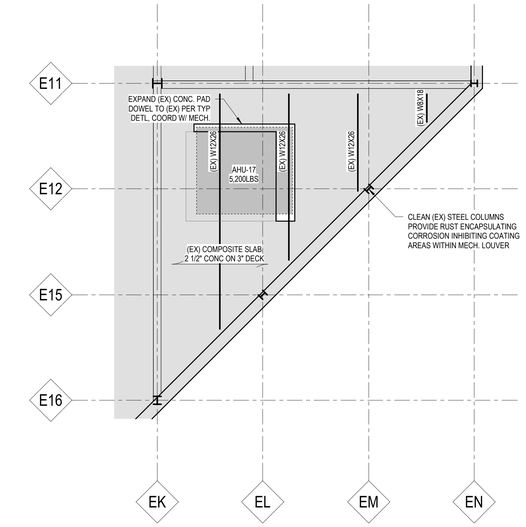


FOR PRICING, ASSUME (2)2x2x1/4" WEB REINFORCING EA. SIDE AND ASSUME TOP AND BOTTOM CHORD REINFORCED WITH 1/2"Ø ROD EA. SIDE
NOTIFY SEOR WHEN JOIST IS EXPOSED TO TAKE FIELD MEASUREMENTS AND FINALIZE REINF. REQUIREMENTS

6 S114 20H6 JOIST REINFORCEMENT DIAGRAM
Scale: 3/8" = 1'-0"



4 S114 FIELDHOUSE SW MECHANICAL ROOM
Scale: 1/8" = 1'-0"



2 S114 FIELDHOUSE SE MECHANICAL ROOM
Scale: 1/8" = 1'-0"

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1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

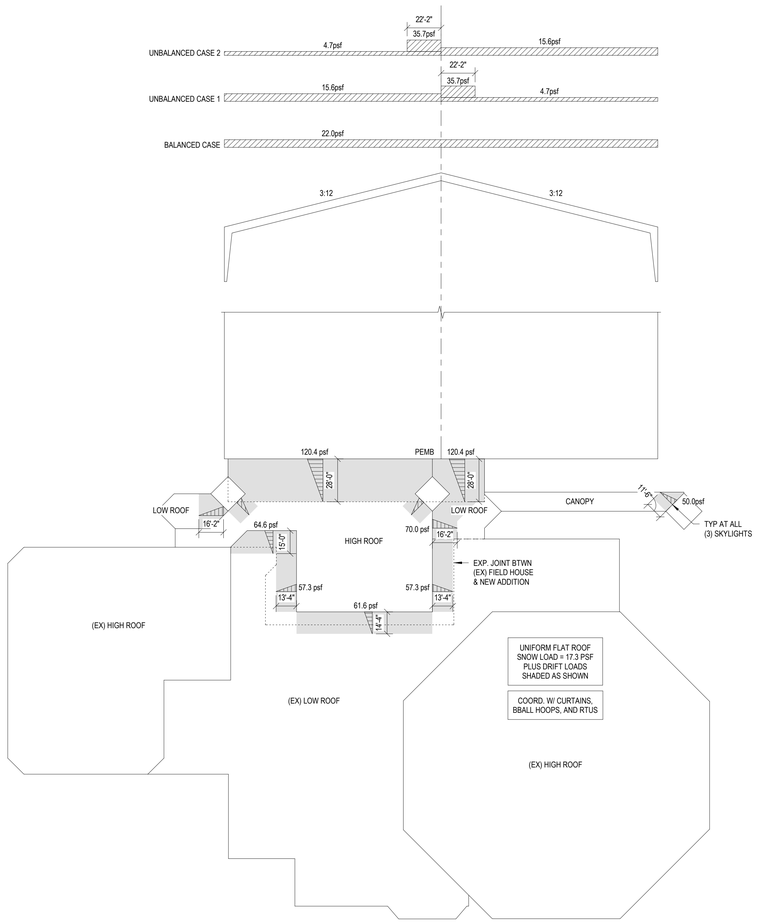
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

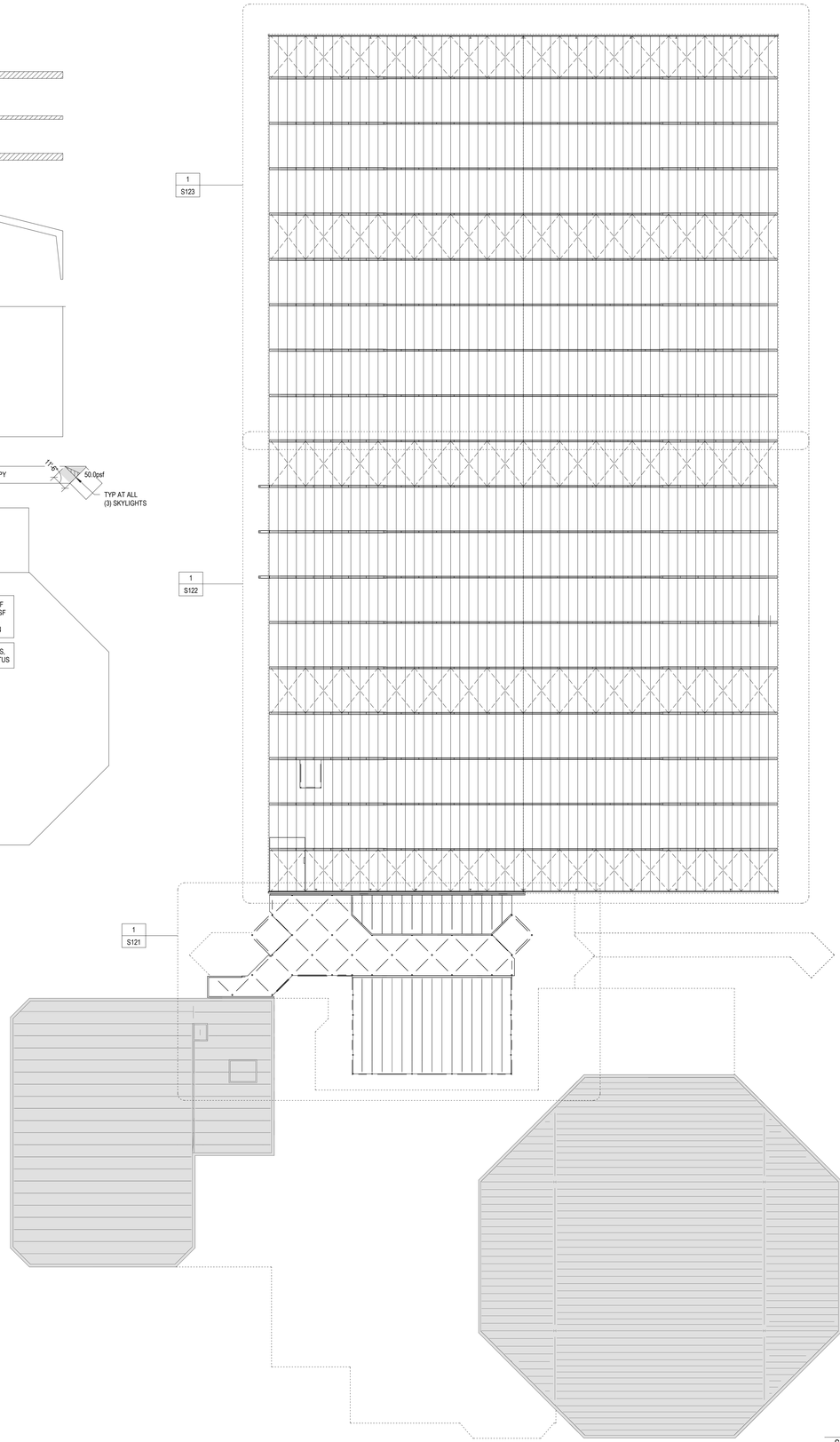
SHEET TITLE
PARTIAL EXISTING FRAMING PLANS

SHEET NO.
S114

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



2 S120 SNOW LOAD MAP
Scale: 1" = 40'-0"



1 S120 COMPOSITE ROOF FRAMING PLAN
Scale: 1" = 30'-0"

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HOWELL
PUBLIC SCHOOLS

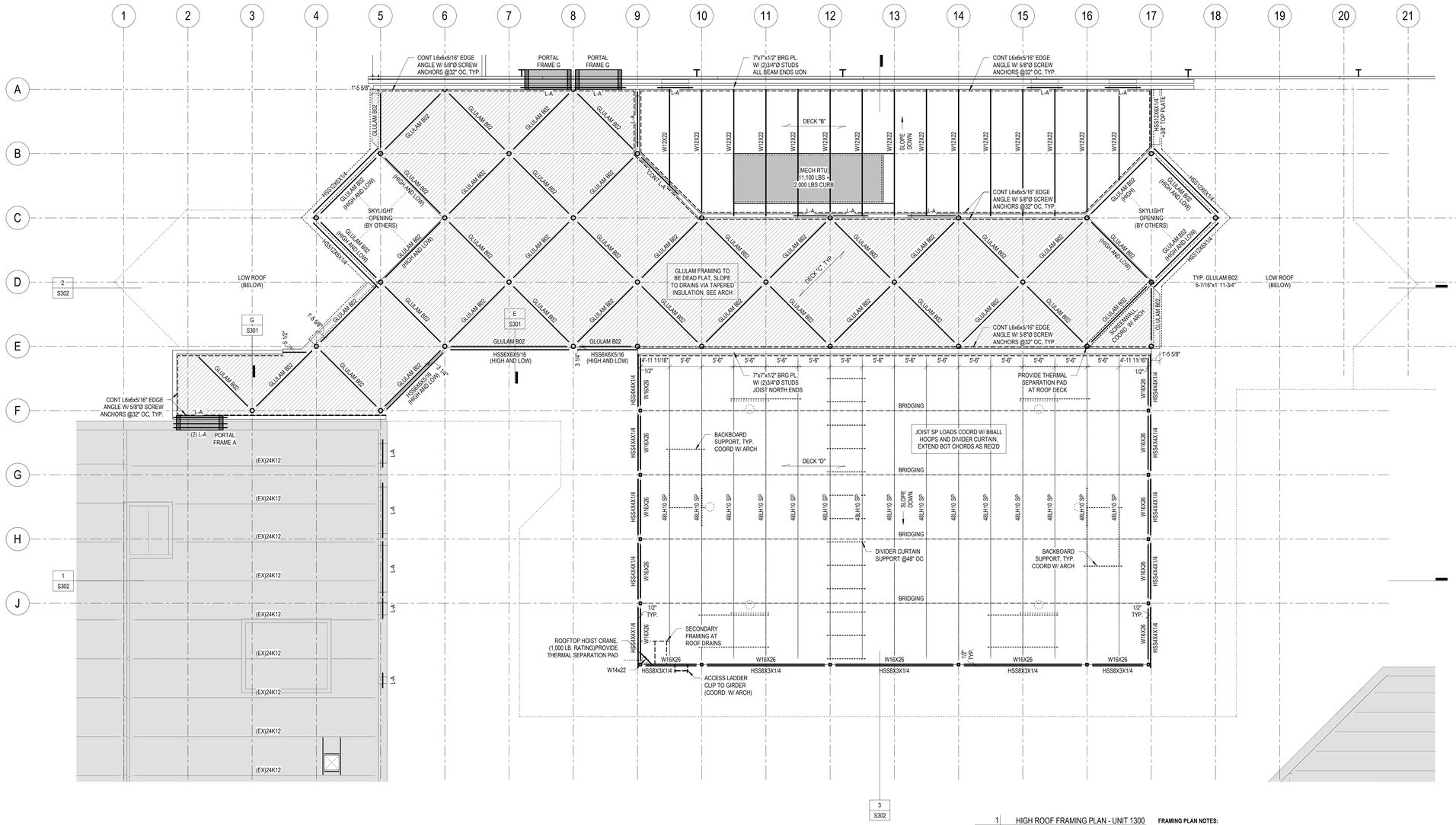
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
COMPOSITE ROOF FRAMING PLAN

SHEET NO.
S120

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



1 S121 HIGH ROOF FRAMING PLAN - UNIT 1300
Scale: 1/8" = 1'-0"

NOTICE TO MASS TIMBER DESIGNER:
MASS TIMBER ELEMENTS (GLULAM AND CLT DECKING) ARE INTENDED TO BE PRE-MANUFACTURED BY A QUALIFIED SUPPLIER. ALL MASS TIMBER SIZES AND LENGTHS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COORDINATION YET TO BE CONDUCTED WITH THE MASS TIMBER SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS, WITH CALCULATIONS, ALL SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER AS A DELEGATED DESIGN PACKAGE.

FRAMING PLAN NOTES:

1. SEE SHEETS S001, S002, S003, & S004 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
5. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
6. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C.
7. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
8. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
9. T.S. ELEVATION GIVEN AT UNDERSIDE OF DECK
10. (± x'-x") DENOTES ELEVATON FROM GIVEN DATUM
11. (xx) INDICATES NUMBER OF 3/4" Ø HEADED SHEAR STUDS EQUALLY SPACED ALONG THE LENGTH OF THE BEAM
12. xxk AT BEAM ENDS DENOTES FACTORED BEAM REACTIONS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM REACTION = 25 KIPS)
13. xxk-ft AT BEAM ENDS DENOTES FACTORED BEAM MOMENTS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
14. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED
15. COLD-FORMED METAL FRAMED WALLS, HEADERS, AND GIRDERS ARE TO BE DESIGNED BY CFMF DESIGNER
16. MASS TIMBER DRAWINGS TO BE PREPARED BY THE SUPPLIER AND SEALED BY A REGISTERED DESIGN PROFESSIONAL
17. SEE MASS TIMBER SHOP DRAWINGS FOR FINAL DESIGNS, LAYOUT, REQUIRED BLOCKING, AND BRIDGING
18. FOLLOW MASS TIMBER SUPPLIER DRAWINGS AND NOTES FOR CONSTRUCTION SEQUENCE, TEMPORARY BRACING, HANDLING, AND STORAGE REQUIREMENTS
19. ALL FRAMING CLIPS, STRAPS, AND HANGERS TO BE SIMPSON STRONG-TIE OR APPROVED EQUAL, U.O.N.

DECK TYPES:

A. 3-1/2" N.W. CONCRETE ON 2"x20GA COMPOSITE DECK (TOTAL THICKNESS 5-1/2"), REINF. W/ 6x6 W2.9xW2.9 WWR
4-1/2" N.W. CONCRETE ON 2"x20GA COMPOSITE DECK (TOTAL THICKNESS 6-1/2"), REINF. W/ 6x6 W2.9xW2.9 WWR
B. 1-1/2"x20GA (1.5B) METAL ROOF DECK
C. 5-PLY CLT PLANK (TOTAL THICKNESS = 6-7/8")
D. 1-1/2" x20GA (1.5BPA) ACOUSTICAL CELLULAR DECK

LINTEL SCHEDULE:

ALL LINTELS TO BEAR 8" MIN AT EACH END U.O.N. LENGTH O BOTTOM PLATE TO BE 1" LESS THAN OPENING; WIDTH TO BE 1" LESS THAN TOTAL WALL THICKNESS, STEEL WF TO BE CENTERED ON CMU WYTHE. BOTTOM PLATE TO BE OFFSET AS REQUIRED TO SUPPORT WALL EDGES AND VENEER ABOVE.
1. L-A: W8x18 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
2. L-B: W8x28 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
3. L-C: W16x26 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS

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HOWELL PUBLIC SCHOOLS

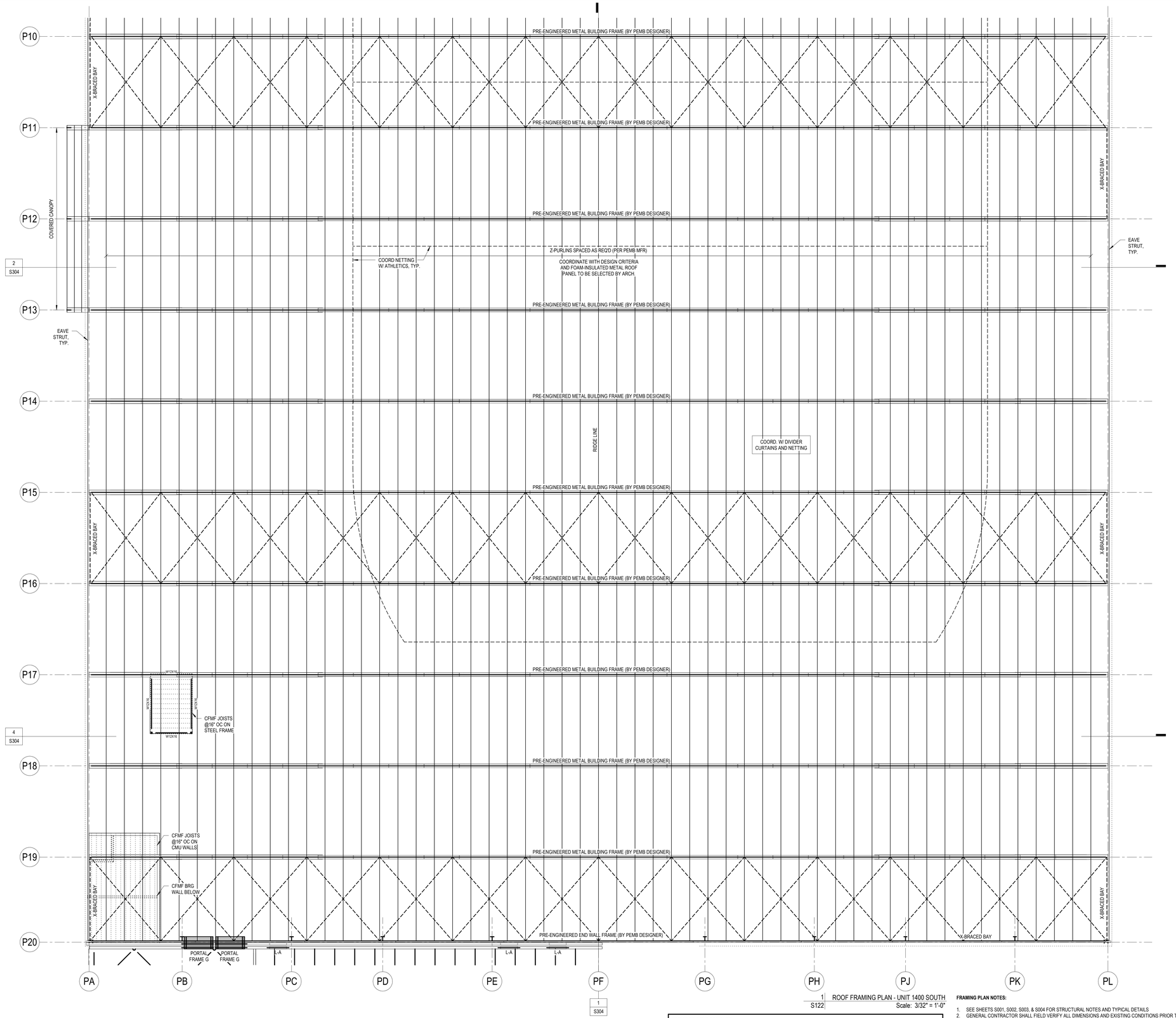
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
HIGH ROOF FRAMING PLAN - UNIT 1300

SHEET NO.
S121

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



1 ROOF FRAMING PLAN - UNIT 1400 SOUTH
S122 Scale: 3/32" = 1'-0"

NOTICE TO PEMB DESIGNER:
PRE-ENGINEERED METAL BUILDING (PEMB) IS INTENDED TO BE PRE-ENGINEERED AND PRE-MANUFACTURED BY A QUALIFIED SUPPLIER AS A DELEGATED DESIGN PACKAGE. PEMB SUPPLIER TO PROVIDE REACTIONS AT EACH COLUMN ITEMIZED FOR EACH LOAD CASE (DEAD, LIVE, SNOW, WIND (NS, EW, AND UPLIFT), AND SEISMIC (NS, EW, AND UPLIFT)). SUPPLIER HAS NOT YET FINALIZED REACTIONS, ALL FOUNDATIONS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COLUMN REACTIONS YET TO BE PROVIDED BY PEMB SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS. WITH CALCULATIONS, ALL SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN AS A DELEGATED DESIGN PACKAGE.

PEMB PRIMARY STRUCTURE (BENTS) ARE REQUIRED TO MEET 1-HOUR FIRE RATING UP TO 20-FEET ABOVE FLOOR LEVEL. INTENT IS TO UTILIZE INTUMESCENT PAINT (FIRETEX FX5090) WHICH REQUIRES THE COL. TO EXCEED A "SECTION FACTOR" OR "WEIGHT PER FT DIVIDED BY PERIMETER" OF W/D > 0.43, IN ORDER TO BE PROTECTED BY INTUMESCENT PAINT.

LINTEL SCHEDULE:

ALL LINTELS TO BEAR 8" MIN AT EACH END U.O.N. LENGTH O BOTTOM PLATE TO BE 1" LESS THAN OPENING; WIDTH TO BE 1" LESS THAN TOTAL WALL THICKNESS, STEEL WF TO BE CENTERED ON CMU WYTHE. BOTTOM PLATE TO BE OFFSET AS REQUIRED TO SUPPORT WALL EDGES AND VENEER ABOVE.

1. L-A: W8x18 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
2. L-B: W8x28 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
3. L-C: W16x26 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS

FRAMING PLAN NOTES:

1. SEE SHEETS S001, S002, S003, & S004 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
2. GENERAL CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION
3. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS
4. CMU WALLS TO BE REINFORCED WITH #5 VERTICAL @ 32" O.C. IN SOLID GROUTED CORES + (2) #5 CONT BOND BEAM AT EACH FLOOR LEVEL AND AT TOP OF WALL, TYP U.O.N.
5. ALL MASONRY WALL ENDS, WALL CORNERS, AND JAMBS OR OPENINGS TO HAVE (2) #5 VERTS IN SOLID GROUTED CORES, FULL HEIGHT U.O.N.
6. ALL MASONRY WALLS TO HAVE GALVANIZED HORIZONTAL JOINT REINFORCING @ 16" O.C.
7. ALL INTERIOR MASONRY PARTITIONS SHALL BE FULL HEIGHT, BRACED BY THE FLOOR OR ROOF DECK ABOVE
8. PROVIDE 2" NON-SHRINK GROUT BELOW ALL BEARING PLATES U.O.N.
9. T.S. ELEVATION GIVEN AT UNDERSIDE OF DECK
10. [± x'-xx"] DENOTES ELEVATON FROM GIVEN DATUM
11. (xx) INDICATES NUMBER OF 3/4" Ø HEADED SHEAR STUDS EQUALLY SPACED ALONG THE LENGTH OF THE BEAM
12. xxk AT BEAM ENDS DENOTES FACTORED BEAM REACTIONS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM REACTION = 25 KIPS)
13. xxk-ft AT BEAM ENDS DENOTES FACTORED BEAM MOMENTS. BEAM END AND CONNECTIONS SHALL BE DESIGNED FOR THAT FORCE. (MINIMUM END MOMENT = 50 K-FT)
14. ALL STEEL EXPOSED TO THE ELEMENTS OR LOCATED IN EXTERIOR WALLS TO BE HOT-DIP GALVANIZED
15. COLD-FORMED METAL FRAMED WALLS, HEADERS, AND GIRDERS ARE TO BE DESIGNED BY CFMF DESIGNER
16. MASS TIMBER DRAWINGS TO BE PREPARED BY THE SUPPLIER AND SEALED BY A REGISTERED DESIGN PROFESSIONAL
17. SEE MASS TIMBER SHOP DRAWINGS FOR FINAL DESIGNS, LAYOUT, REQUIRED BLOCKING, AND BRIDGING
18. FOLLOW MASS TIMBER SUPPLIER DRAWINGS AND NOTES FOR CONSTRUCTION SEQUENCE, TEMPORARY BRACING, HANDLING, AND STORAGE REQUIREMENTS
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HOWELL PUBLIC SCHOOLS

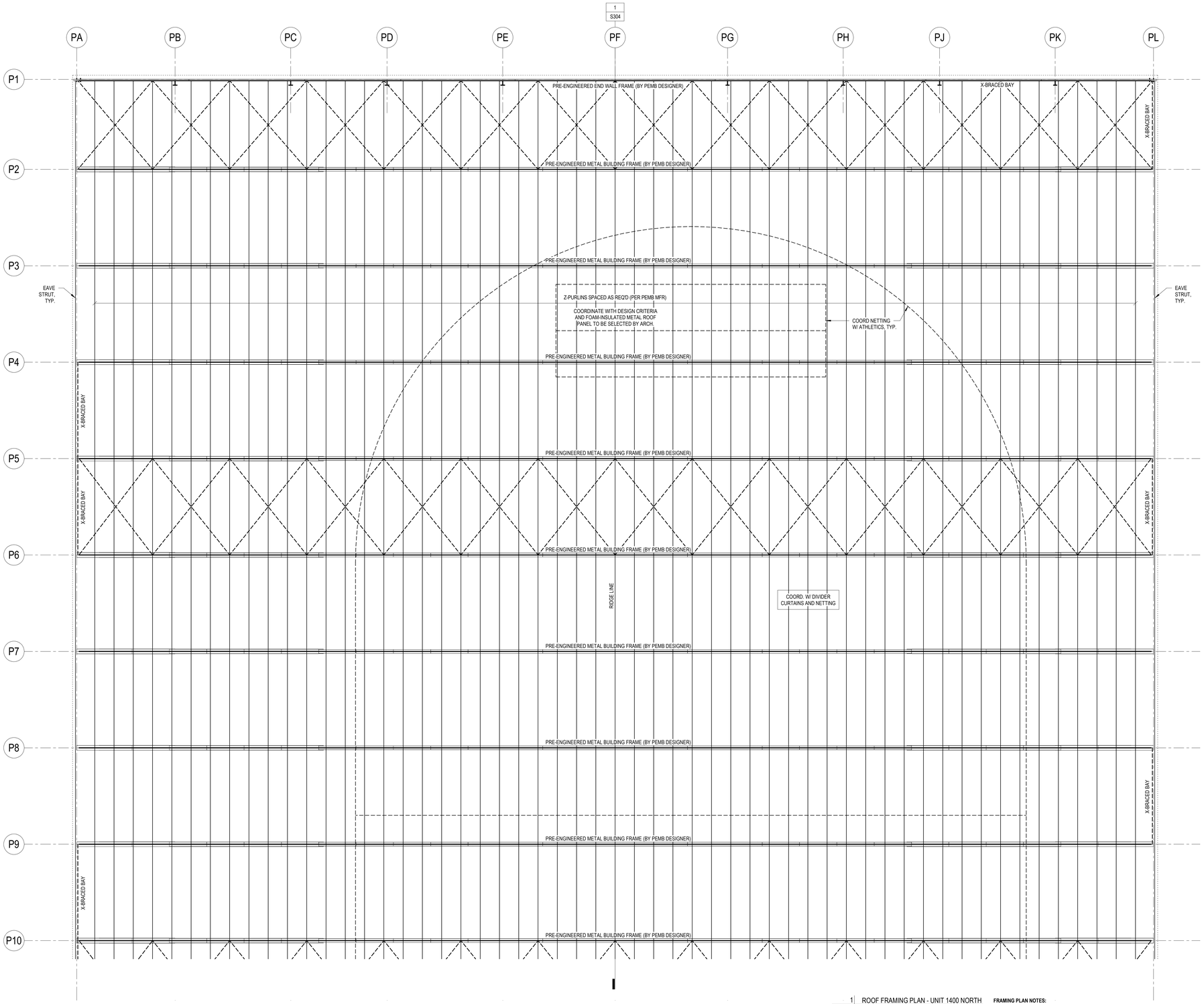
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
ROOF FRAMING PLAN - UNIT 1400 SOUTH

SHEET NO.
S122



1 S123 ROOF FRAMING PLAN - UNIT 1400 NORTH
Scale: 3/32" = 1'-0"

NOTICE TO PEMB DESIGNER:
PRE-ENGINEERED METAL BUILDING (PEMB) IS INTENDED TO BE PRE-ENGINEERED AND PRE-MANUFACTURED BY A QUALIFIED SUPPLIER AS A DELEGATED DESIGN PACKAGE. PEMB SUPPLIER TO PROVIDE REACTIONS AT EACH COLUMN ITEMIZED FOR EACH LOAD CASE (DEAD, LIVE, SNOW, WIND (NS, EW, AND UPLIFT), AND SEISMIC (NS, EW, AND UPLIFT)). SUPPLIER HAS NOT YET FINALIZED REACTIONS, ALL FOUNDATIONS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COLUMN REACTIONS YET TO BE PROVIDED BY PEMB SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS, WITH CALCULATIONS, ALL SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN AS A DELEGATED DESIGN PACKAGE.

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LINTEL SCHEDULE:

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2. L-B: W8x28 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS
3. L-C: W16x26 + 3/8" CONT BOT PL; END TO BEAR ON 7"x7"x1/2" BEARING PLATE W/ (2) 1/2" Ø HEADED STUDS

FRAMING PLAN NOTES:

1. SEE SHEETS S001, S002, S003, & S004 FOR STRUCTURAL NOTES AND TYPICAL DETAILS
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18. FOLLOW MASS TIMBER SUPPLIER DRAWINGS AND NOTES FOR CONSTRUCTION SEQUENCE, TEMPORARY BRACING, HANDLING, AND STORAGE REQUIREMENTS
19. ALL FRAMING CLIPS, STRAPS, AND HANGERS TO BE SIMPSON STRONG-TIE OR APPROVED EQUAL, U.O.N.

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

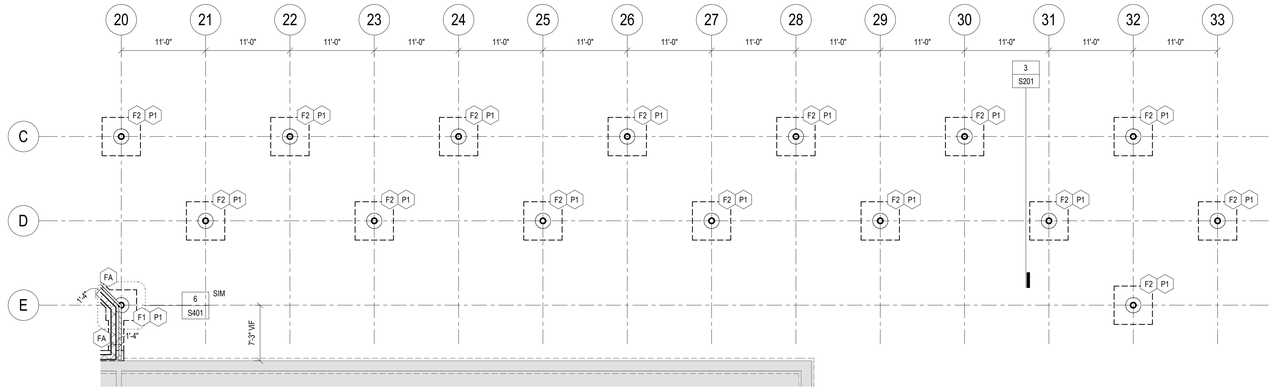
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

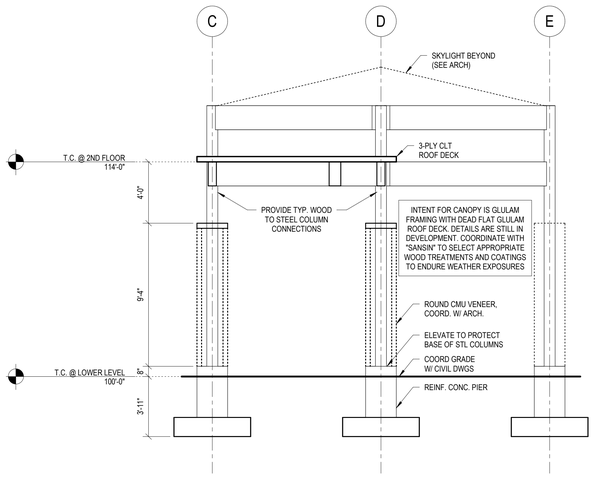
RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
ROOF FRAMING PLAN - UNIT 1400 NORTH

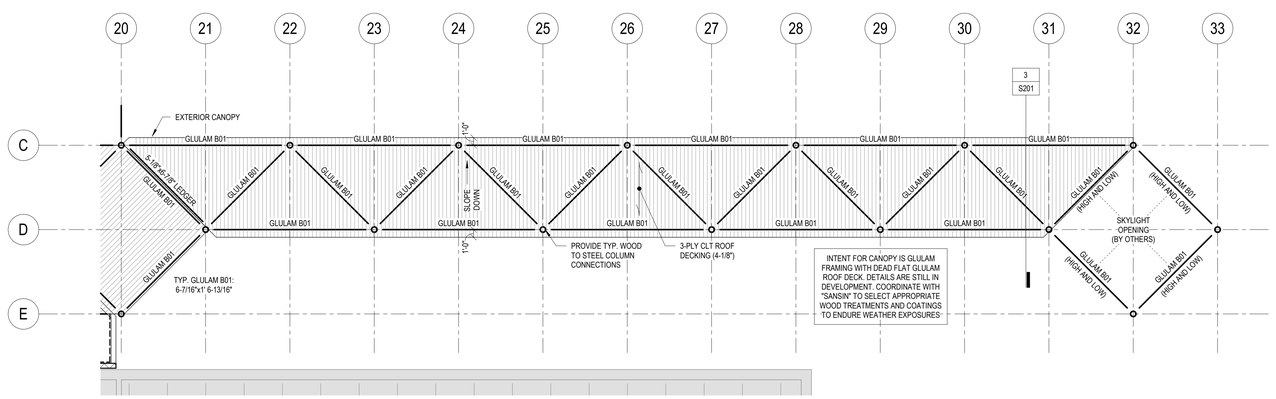
SHEET NO.
S123



1 S201 CANOPY FOUNDATION PLAN
Scale: 1/8" = 1'-0"



3 S201 CANOPY SECTION LOOKING EAST
Scale: 1/4" = 1'-0"



2 S201 CANOPY ROOF FRAMING PLAN
Scale: 1/8" = 1'-0"

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

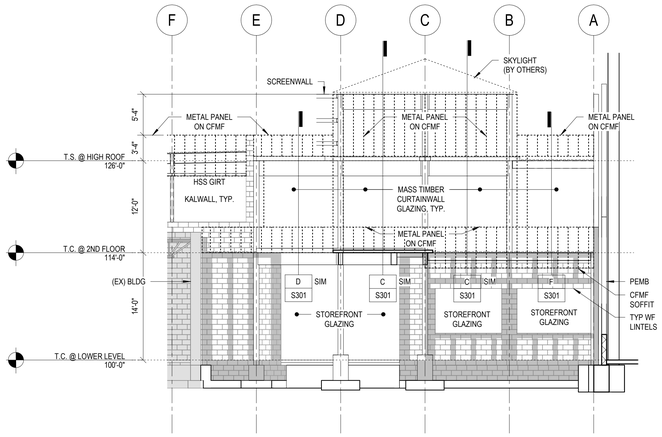
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

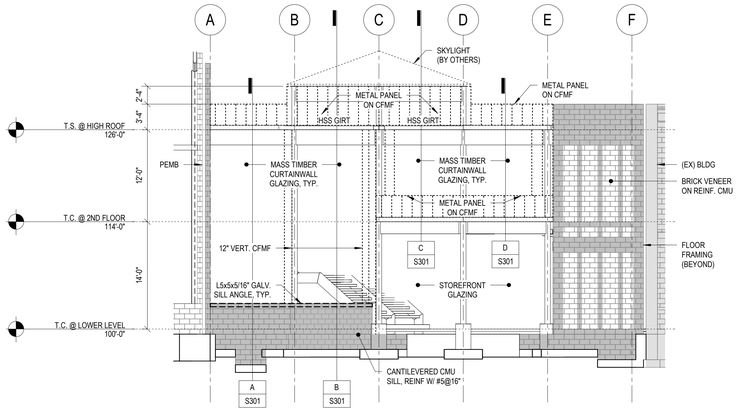
SHEET TITLE
CANOPY FOUNDATION,
FRAMING PLAN, & DETAILS

SHEET NO.
S201

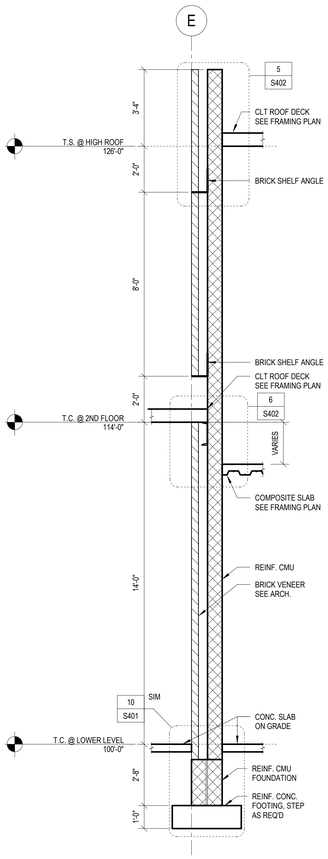
STATE OF MICHIGAN
BRAD
CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



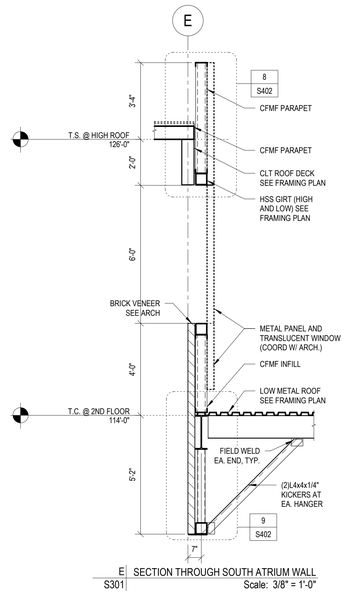
2 EAST ELEVATION - UNIT 1300
S301 Scale: 1/8" = 1'-0"



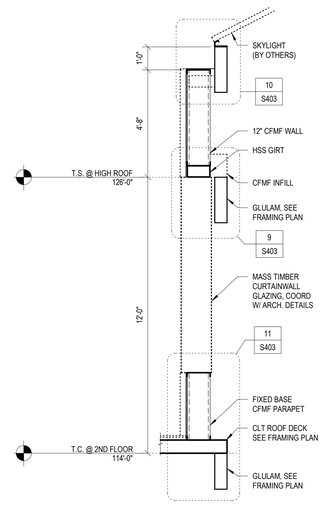
1 WEST ELEVATION - UNIT 1300
S301 Scale: 1/8" = 1'-0"



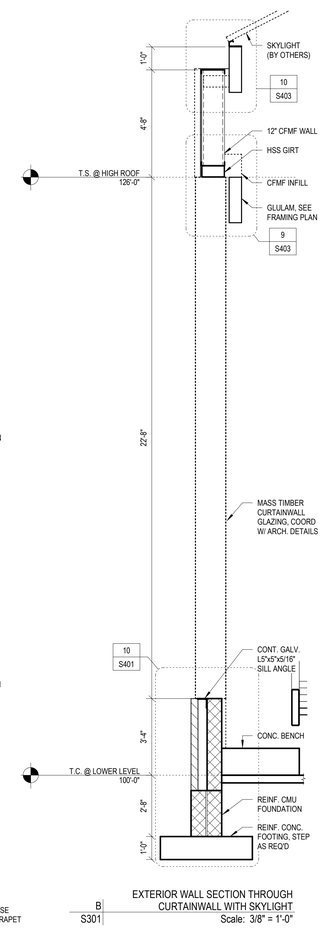
G SECTION AT WEST VESTIBULE CMU WALL
S301 Scale: 3/8" = 1'-0"



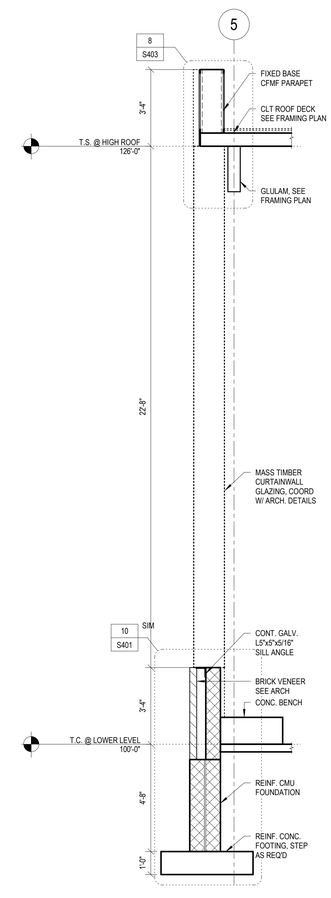
E SECTION THROUGH SOUTH ATRIUM WALL
S301 Scale: 3/8" = 1'-0"



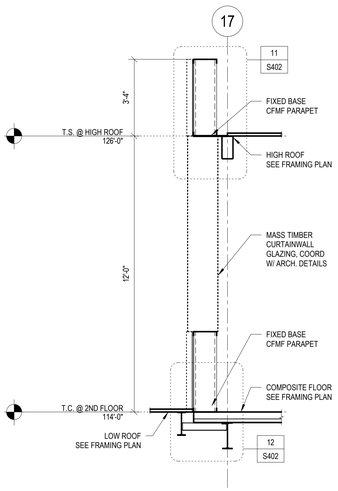
C SECTION THROUGH EXTERIOR WALL
FROM LOW ROOF AT SKYLIGHT
S301 Scale: 3/8" = 1'-0"



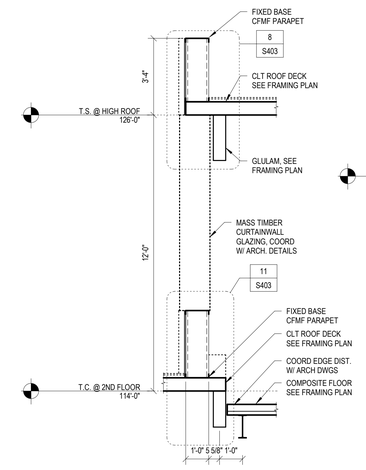
B EXTERIOR WALL SECTION THROUGH
CURTAINWALL WITH SKYLIGHT
S301 Scale: 3/8" = 1'-0"



A EXTERIOR WALL SECTION THROUGH
CURTAINWALL WITH CFMF PARAPET
S301 Scale: 3/8" = 1'-0"



F SECTION THROUGH EAST EXTERIOR
WALL FROM LOW ROOF
S301 Scale: 3/8" = 1'-0"



D SECTION THROUGH EXTERIOR WALL
FROM LOW ROOF
S301 Scale: 3/8" = 1'-0"

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HOWELL PUBLIC SCHOOLS

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HOWELL
PUBLIC SCHOOLS

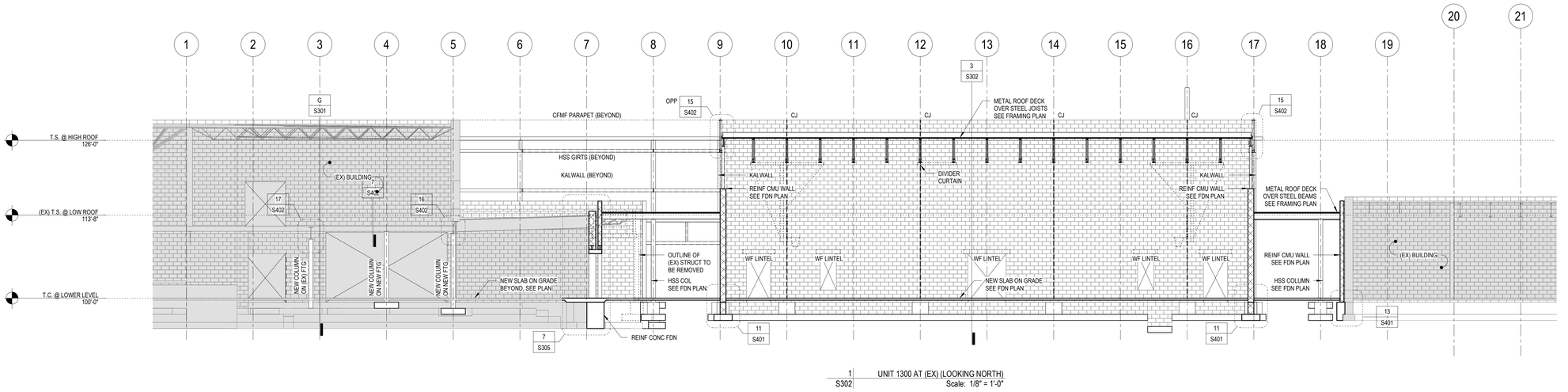
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

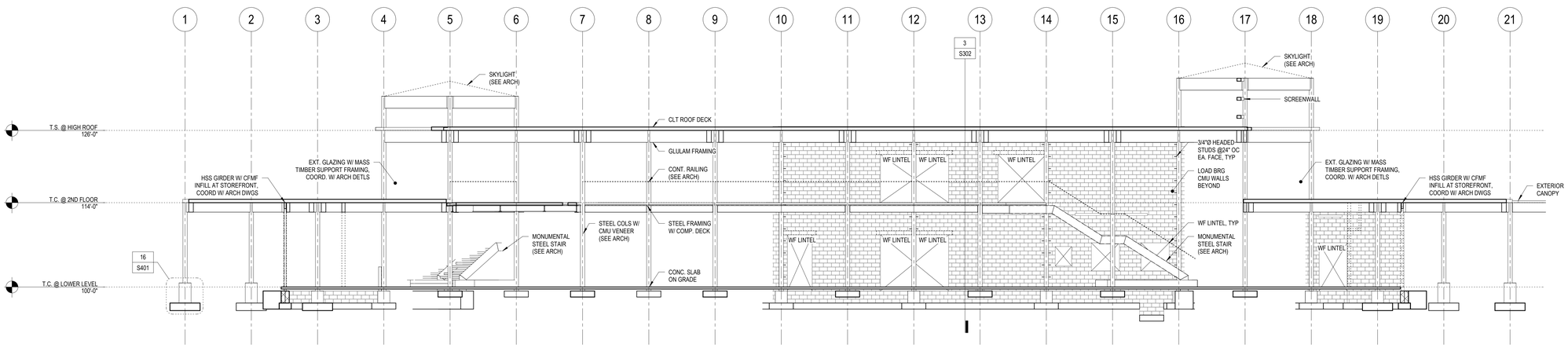
SHEET TITLE
BUILDING ELEVATIONS &
SECTIONS - UNIT 1300

SHEET NO.
S301

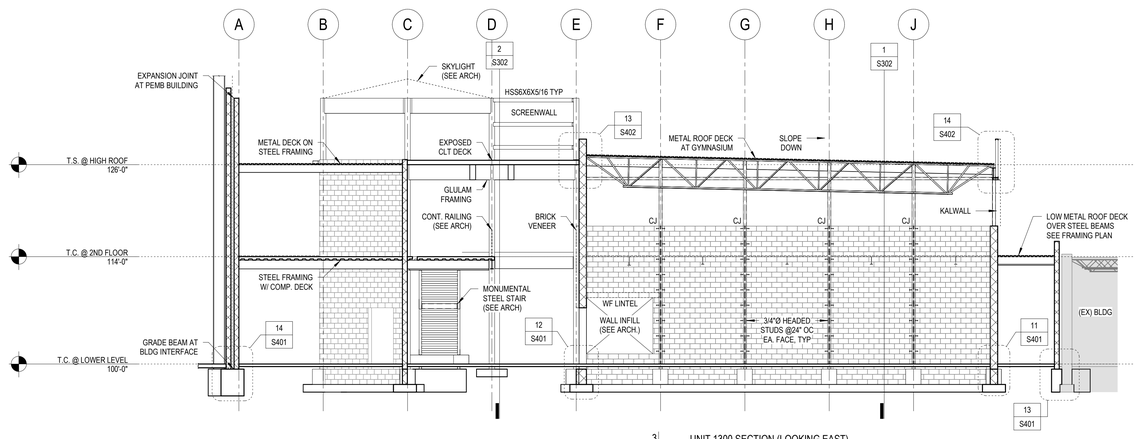
STATE OF MICHIGAN
BRAD
CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



1 S302 UNIT 1300 AT (EX) (LOOKING NORTH)
Scale: 1/8" = 1'-0"



2 S302 UNIT 1300 SECTION (LOOKING NORTH)
Scale: 1/8" = 1'-0"



3 S302 UNIT 1300 SECTION (LOOKING EAST)
Scale: 1/8" = 1'-0"

NOTICE TO MASS TIMBER DESIGNER:
MASS TIMBER ELEMENTS (GLULAM AND CLT DECKING) ARE INTENDED TO BE PRE-MANUFACTURED BY A QUALIFIED SUPPLIER. ALL MASS TIMBER SIZES AND LENGTHS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COORDINATION YET TO BE CONDUCTED WITH THE MASS TIMBER SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS, WITH CALCULATIONS, ALL SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER AS A DELEGATED DESIGN PACKAGE.

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HOWELL PUBLIC SCHOOLS

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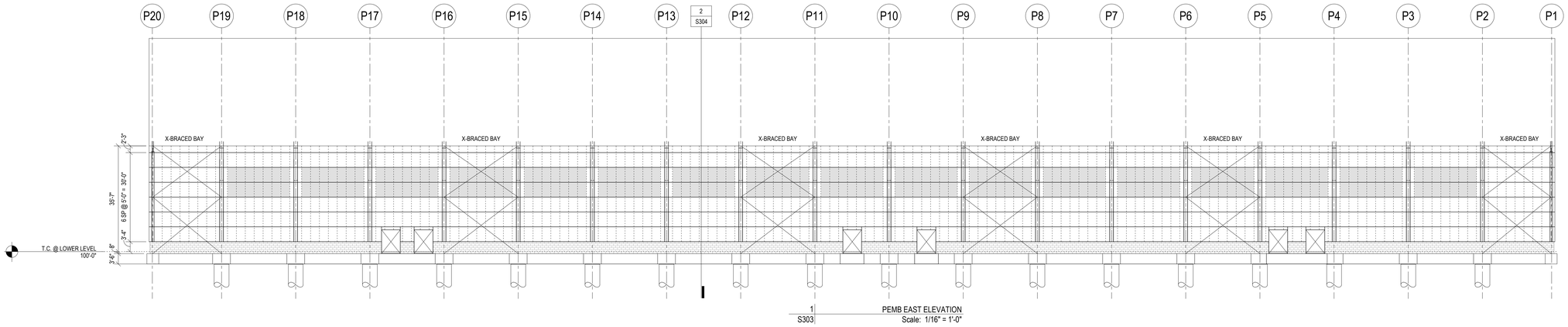
JOB NO. 2600.41F

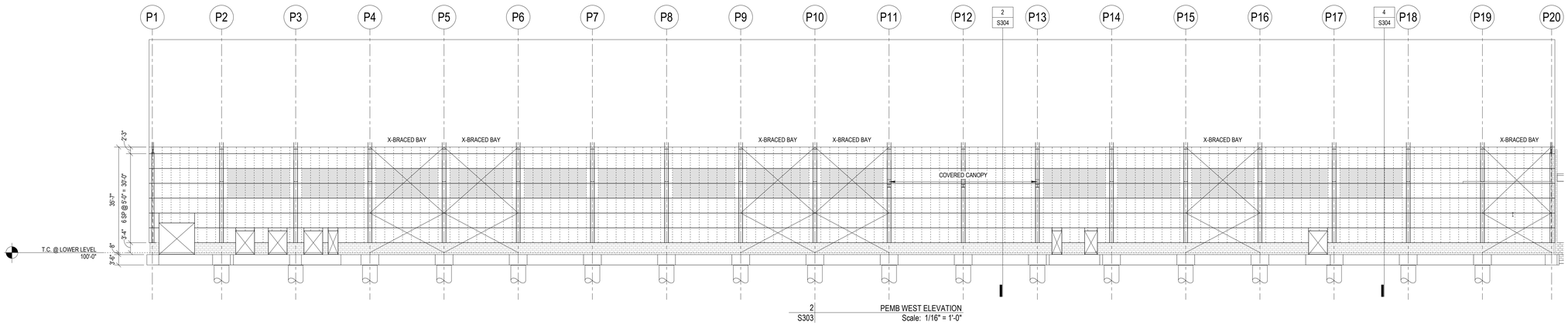
SHEET TITLE
BUILDING SECTIONS & DETAILS - UNIT 1300

SHEET NO.
S302

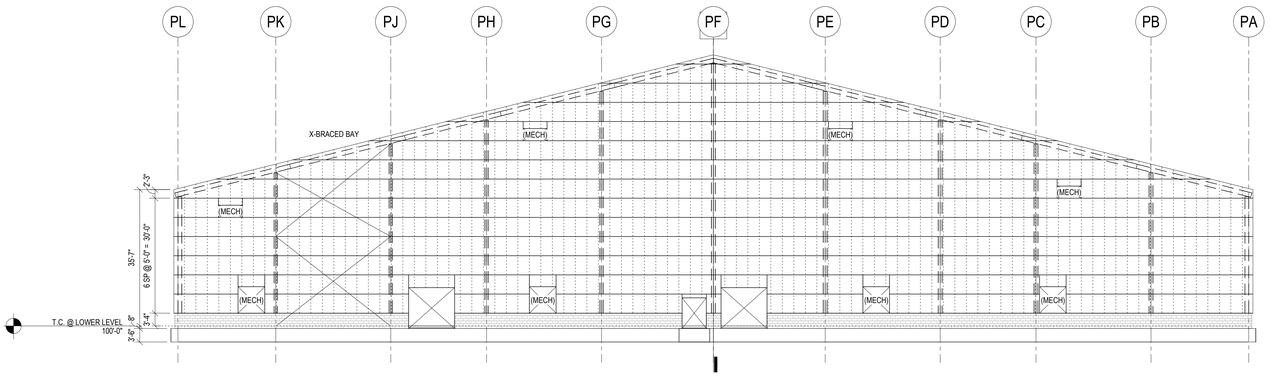
STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



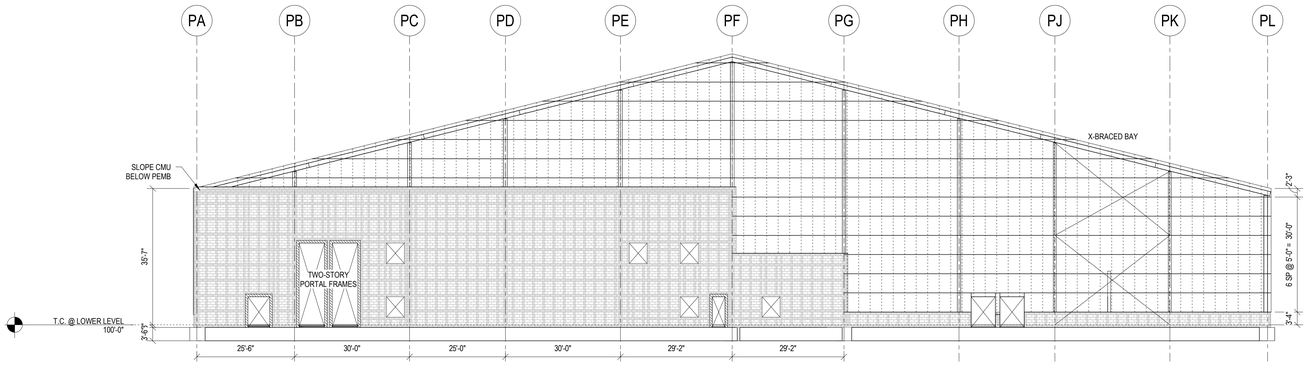
1 S303 PEMB EAST ELEVATION
Scale: 1/16" = 1'-0"



2 S303 PEMB WEST ELEVATION
Scale: 1/16" = 1'-0"



3 S303 PEMB NORTH ELEVATION
Scale: 1/16" = 1'-0"



4 S303 PEMB SOUTH ELEVATION
Scale: 1/16" = 1'-0"

NOTICE TO PEMB DESIGNER:
PRE-ENGINEERED METAL BUILDING (PEMB) IS INTENDED TO BE PRE-ENGINEERED AND PRE-MANUFACTURED BY A QUALIFIED SUPPLIER AS A DELEGATED DESIGN PACKAGE. PEMB SUPPLIER TO PROVIDE REACTIONS AT EACH COLUMN ITEMIZED FOR EACH LOAD CASE [DEAD, LIVE, SNOW, WIND (NS, EW, AND UPLIFT), AND SEISMIC (NS, EW, AND UPLIFT)]. SUPPLIER HAS NOT YET FINALIZED REACTIONS. ALL FOUNDATIONS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COLUMN REACTIONS YET TO BE PROVIDED BY PEMB SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS, WITH CALCULATIONS, ALL SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN AS A DELEGATED DESIGN PACKAGE.

PEMB PRIMARY STRUCTURE (BENTS) ARE REQUIRED TO MEET 1-HOUR FIRE RATING UP TO 20-FEET ABOVE FLOOR LEVEL. INTENT IS TO UTILIZE INTUMESCENT PAINT (FIRETEX FX5090) WHICH REQUIRES THE COL. TO EXCEED A "SECTION FACTOR" OR "WEIGHT PER FT DIVIDED BY PERIMETER" OF W/D > 0.43, IN ORDER TO BE PROTECTED BY INTUMESCENT PAINT.

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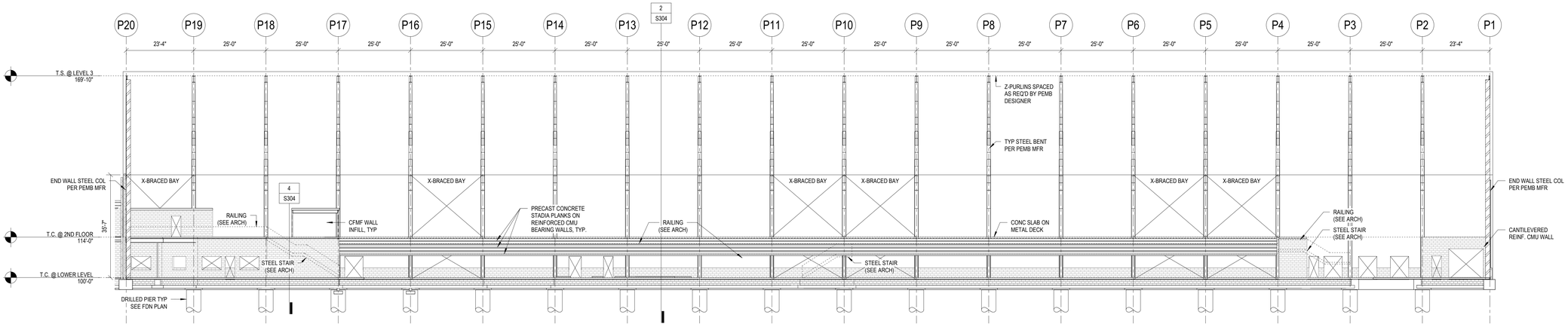
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

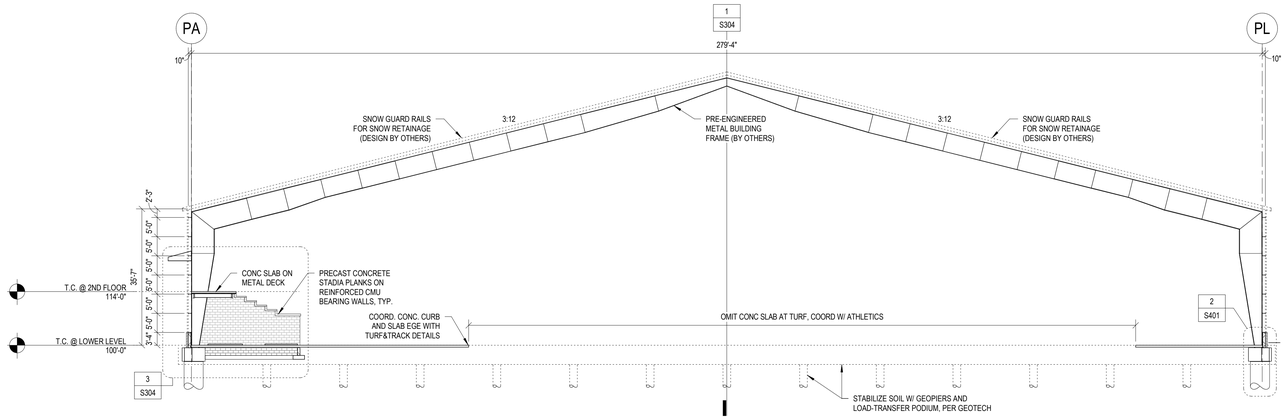
SHEET TITLE
BUILDING ELEVATIONS - UNIT 1400

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

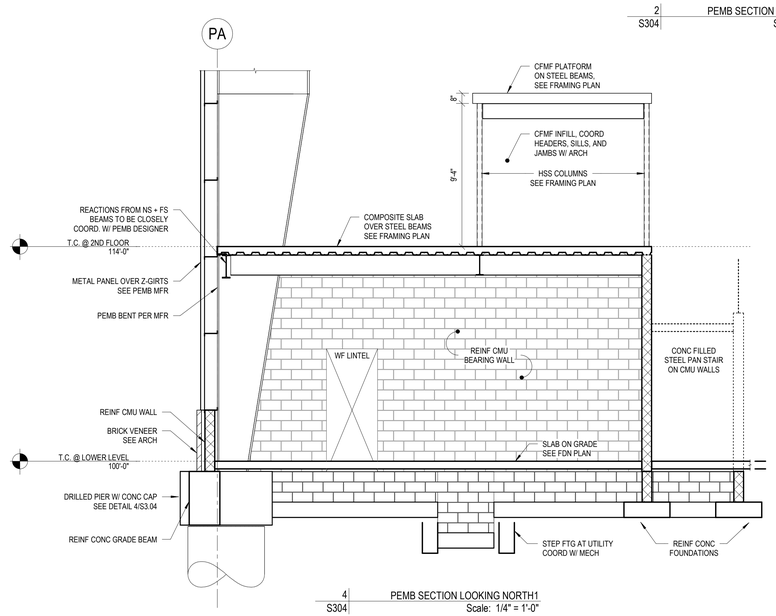
SHEET NO.
S303



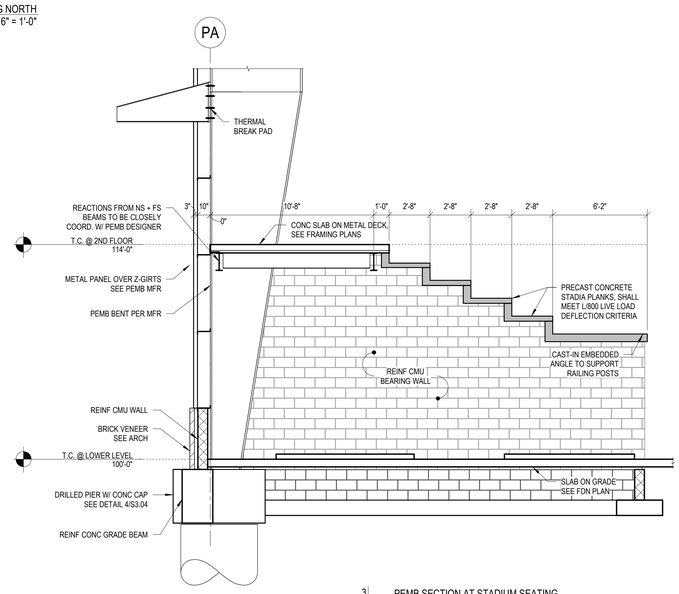
1 S304 PEMB SECTION LOOKING WEST
Scale: 1/16" = 1'-0"



2 S304 PEMB SECTION LOOKING NORTH
Scale: 1/16" = 1'-0"



4 S304 PEMB SECTION LOOKING NORTH1
Scale: 1/4" = 1'-0"



3 S304 PEMB SECTION AT STADIUM SEATING
Scale: 1/4" = 1'-0"

NOTICE TO PEMB DESIGNER:
PRE-ENGINEERED METAL BUILDING (PEMB) IS INTENDED TO BE PRE-ENGINEERED AND PRE-MANUFACTURED BY A QUALIFIED SUPPLIER AS A DELEGATED DESIGN PACKAGE. PEMB SUPPLIER TO PROVIDE REACTIONS AT EACH COLUMN ITEMIZED FOR EACH LOAD CASE [DEAD, LIVE, SNOW, WIND (NS, EW, AND UPLIFT), AND SEISMIC (NS, EW, AND UPLIFT)]. SUPPLIER HAS NOT YET FINALIZED REACTIONS. ALL FOUNDATIONS SHOWN ARE BASED ON PRELIMINARY ASSUMPTIONS AND ARE SUBJECT TO CHANGE PENDING FINAL COLUMN REACTIONS YET TO BE PROVIDED BY PEMB SUPPLIER. SUPPLIER TO PROVIDE FINAL ENGINEERED PLANS, SECTIONS, AND DETAILS, WITH CALCULATIONS, ALL SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN AS A DELEGATED DESIGN PACKAGE.

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PUBLIC SCHOOLS

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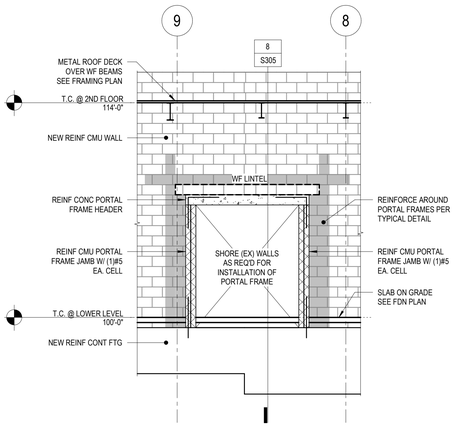
JOB NO. 2600.41F

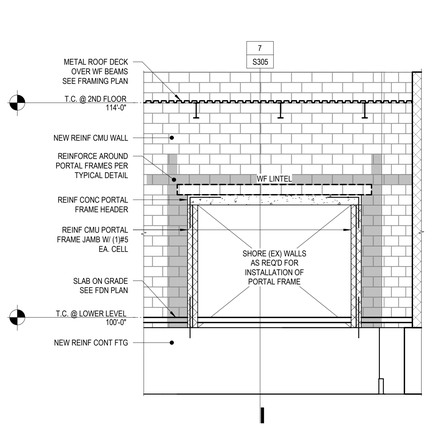
SHEET TITLE
BUILDING SECTIONS & DETAILS - UNIT 1400

SHEET NO.
S304

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



4 S305 PORTAL FRAME D ELEVATION
Scale: 1/4" = 1'-0"



3 S305 PORTAL FRAME C ELEVATION
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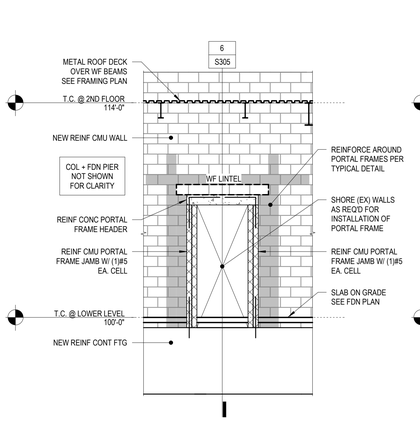
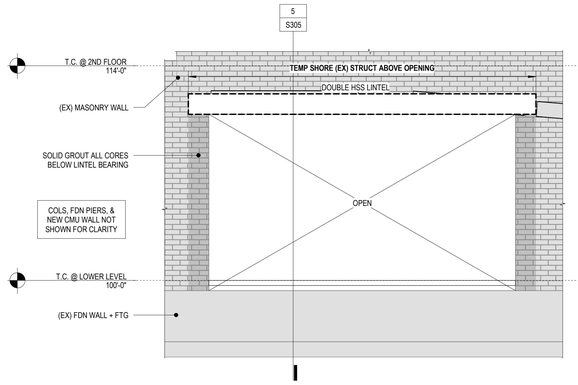
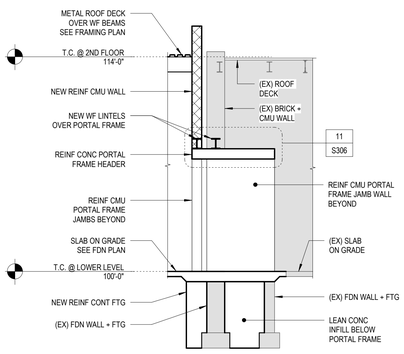


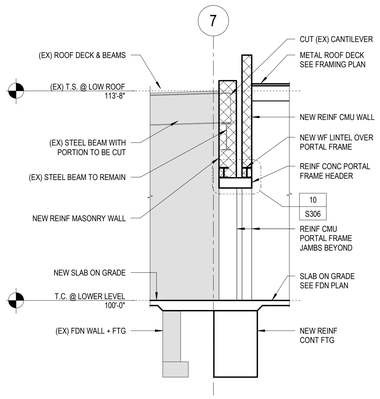
2 S305 PORTAL FRAME B ELEVATION
Scale: 1/4" = 1'-0"



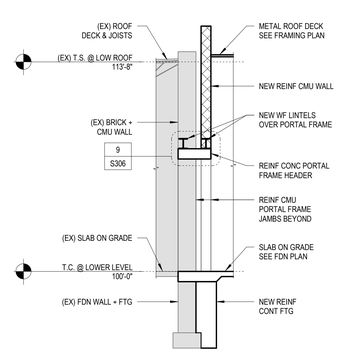
1 S305 ELEVATION AT COILING DOOR
Scale: 1/4" = 1'-0"



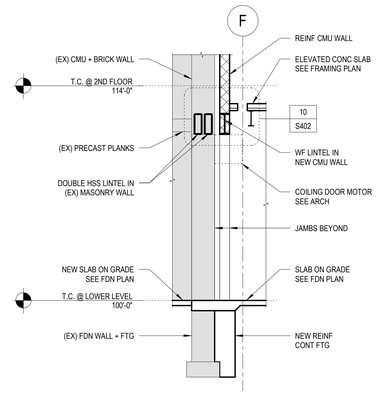
8 S305 PORTAL FRAME D SECTION
Scale: 1/4" = 1'-0"



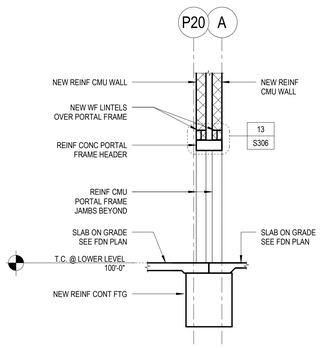
7 S305 PORTAL FRAME C SECTION
Scale: 1/4" = 1'-0"



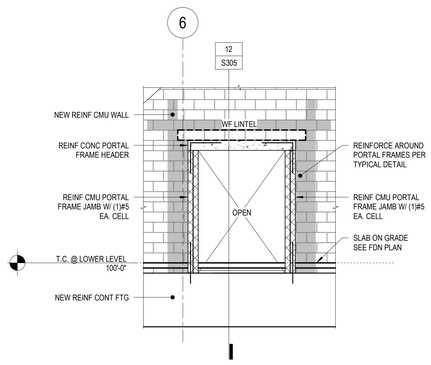
6 S305 PORTAL FRAME B SECTION
Scale: 1/4" = 1'-0"



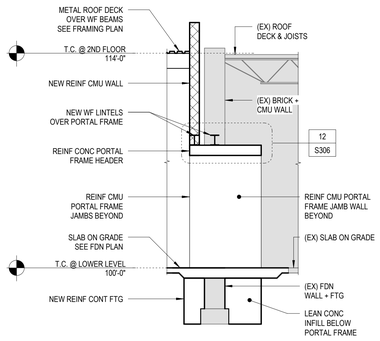
5 S305 SECTION THROUGH COILING DOOR
Scale: 1/4" = 1'-0"



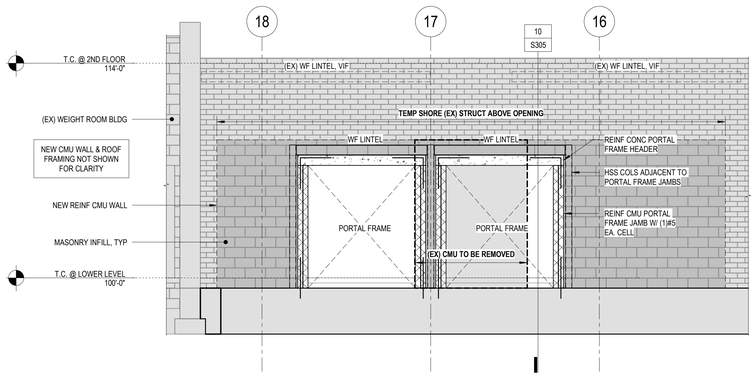
12 S305 PORTAL FRAME F SECTION
Scale: 1/4" = 1'-0"



11 S305 PORTAL FRAME F ELEVATION
Scale: 1/4" = 1'-0"



10 S305 PORTAL FRAME E SECTION
Scale: 1/4" = 1'-0"



9 S305 PORTAL FRAME E ELEVATION
Scale: 1/4" = 1'-0"

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
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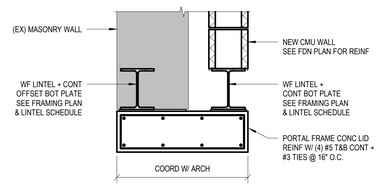
RDA NO. 24053
JOB NO. 2600.41F

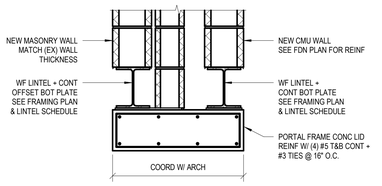
SHEET TITLE
PORTAL FRAME ELEVATIONS & SECTIONS

SHEET NO.
S305

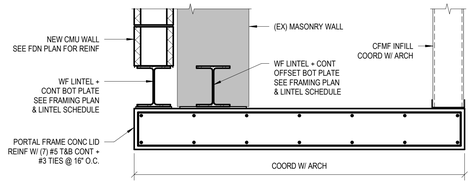
STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



9 S306 PORTAL FRAME B CONCRETE LID DETAIL
Scale: 1" = 1'-0"



10 S306 PORTAL FRAME C CONCRETE LID DETAIL
Scale: 1" = 1'-0"



11 S306 PORTAL FRAME D CONCRETE LID DETAIL
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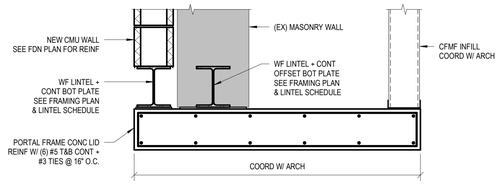
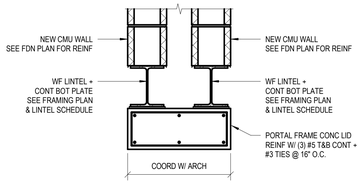
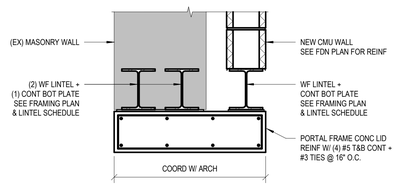


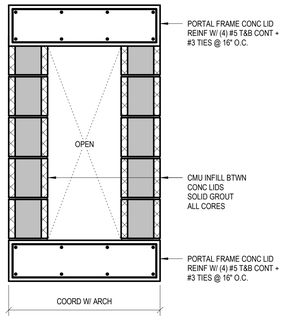
12 S306 PORTAL FRAME E CONCRETE LID DETAIL
Scale: 1" = 1'-0"



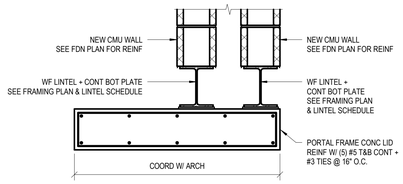
13 S306 PORTAL FRAME F CONCRETE LID DETAIL
Scale: 1" = 1'-0"



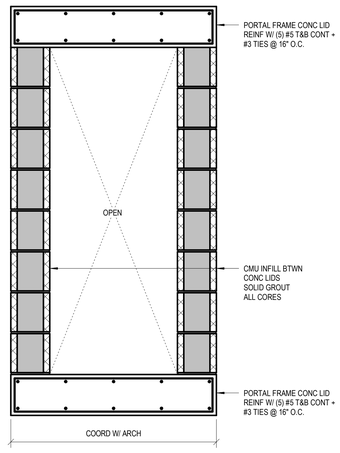
5 S306 PORTAL FRAME A CONCRETE LID DETAIL
Scale: 1" = 1'-0"



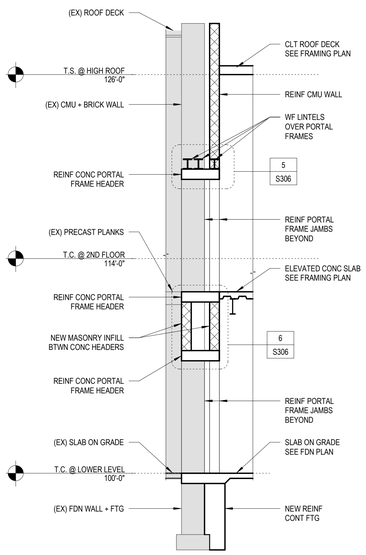
6 S306 PORTAL FRAME A DETAIL
INTERMEDIATE CONC LIDS
Scale: 1" = 1'-0"



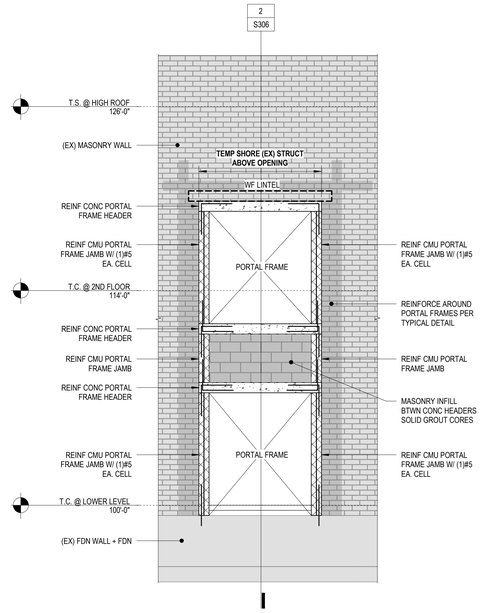
7 S306 PORTAL FRAME G CONCRETE LID DETAIL
Scale: 1" = 1'-0"



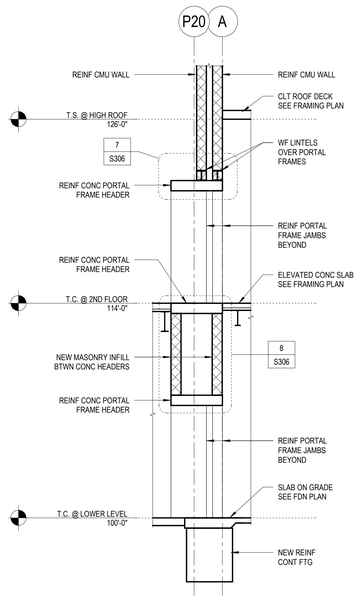
8 S306 PORTAL FRAME G DETAIL
INTERMEDIATE CONCRETE LIDS
Scale: 1" = 1'-0"



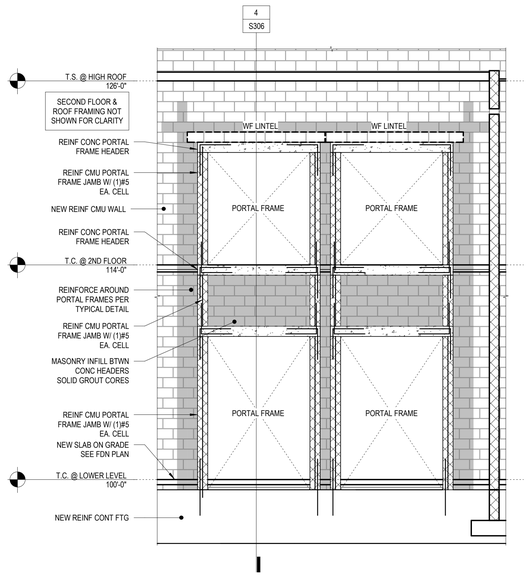
2 S306 PORTAL FRAME A SECTION
Scale: 1/4" = 1'-0"



1 S306 PORTAL FRAME A ELEVATION
Scale: 1/4" = 1'-0"



4 S306 PORTAL FRAME G SECTION
Scale: 1/4" = 1'-0"



3 S306 PORTAL FRAME G ELEVATION
Scale: 1/4" = 1'-0"

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PUBLIC SCHOOLS

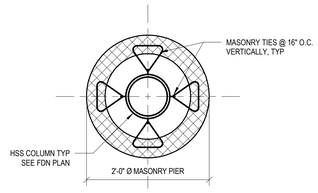
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

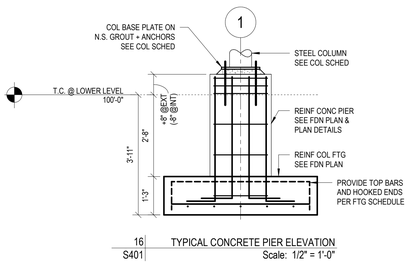
SHEET TITLE
PORTAL FRAME ELEVATIONS & SECTIONS

SHEET NO.
S306

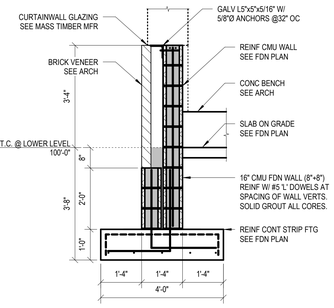
STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER



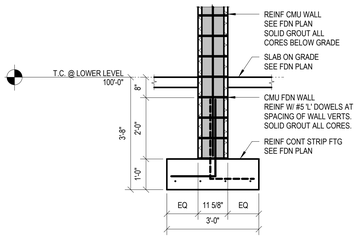
15 S401 TYPICAL MASONRY PIER PLAN DETAIL
Scale: 1" = 1'-0"



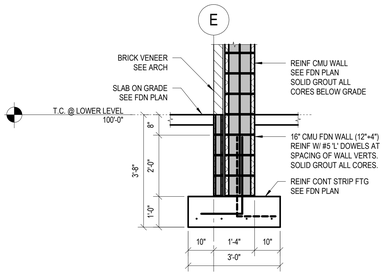
16 S401 TYPICAL CONCRETE PIER ELEVATION
Scale: 1/2" = 1'-0"



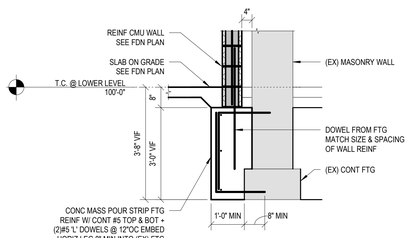
10 S401 TYPICAL FOUNDATION DETAIL AT EXTERIOR WALL
Scale: 1/2" = 1'-0"



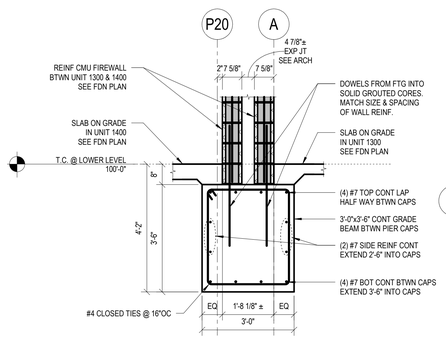
11 S401 TYPICAL FOUNDATION DETAIL AT GYM WALL
Scale: 1/2" = 1'-0"



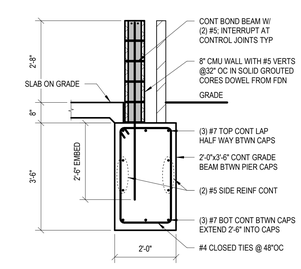
12 S401 FOUNDATION DETAIL AT NORTH GYM WALL
Scale: 1/2" = 1'-0"



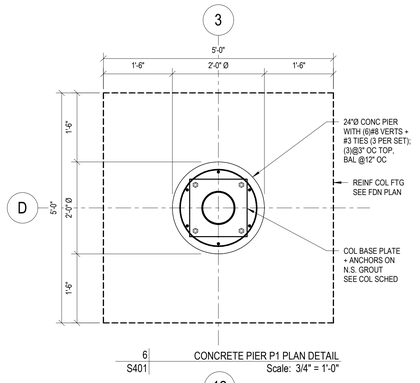
13 S401 FOUNDATION DETAIL AT EXISTING BUILDING
Scale: 1/2" = 1'-0"



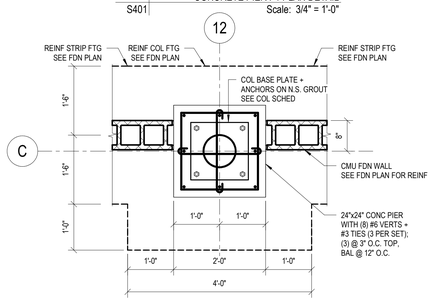
14 S401 FOUNDATION DETAIL AT EXPANSION JOINT
Scale: 1/2" = 1'-0"



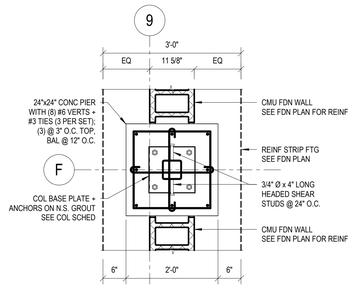
5 S401 TYPICAL FOUNDATION DETAIL THROUGH PEMB WALL
Scale: 1/2" = 1'-0"



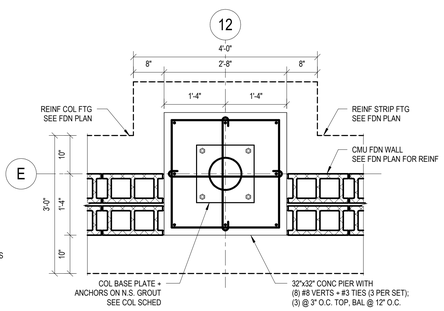
6 S401 CONCRETE PIER P1 PLAN DETAIL
Scale: 3/4" = 1'-0"



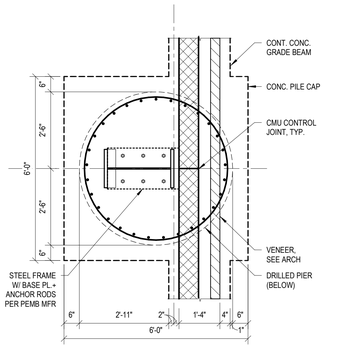
7 S401 CONCRETE PIER P2 PLAN DETAIL AT ROUND HSS COLUMN
Scale: 3/4" = 1'-0"



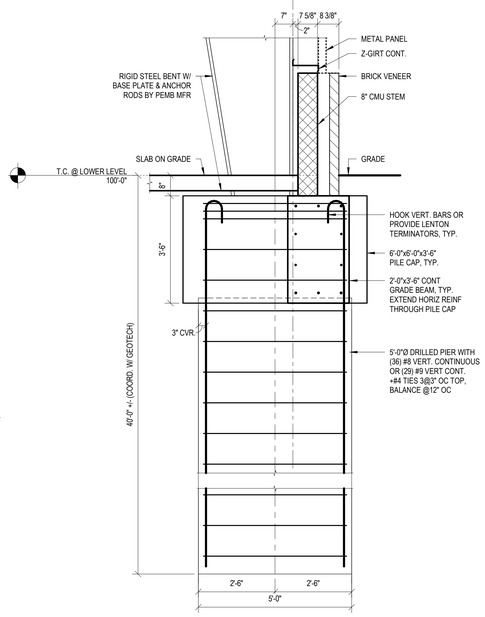
8 S401 CONCRETE PIER P2 PLAN DETAIL AT SQUARE HSS COLUMN
Scale: 3/4" = 1'-0"



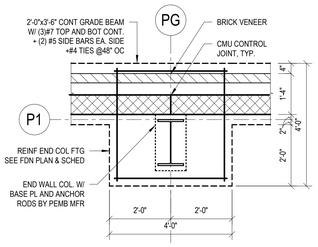
9 S401 CONCRETE PIER P3 PLAN DETAIL
Scale: 3/4" = 1'-0"



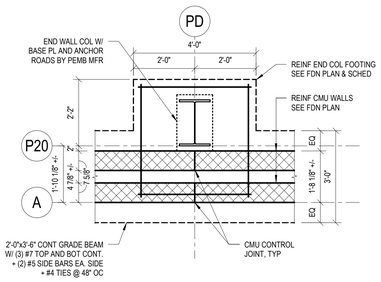
1 S401 TYPICAL PEMB COLUMN PIER PLAN
Scale: 1/2" = 1'-0"



2 S401 TYPICAL PEMB COLUMN PIER DETAIL
Scale: 1/2" = 1'-0"



3 S401 PEMB NORTH END WALL COLUMN PLAN DETAIL
Scale: 1/2" = 1'-0"



4 S401 PEMB SOUTH END WALL COLUMN PLAN DETAIL
Scale: 1/2" = 1'-0"

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HOWELL PUBLIC SCHOOLS

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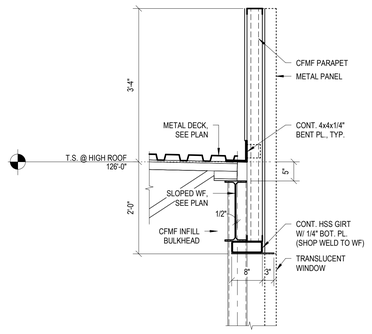
RDA NO. 24053
JOB NO. 2600.41F

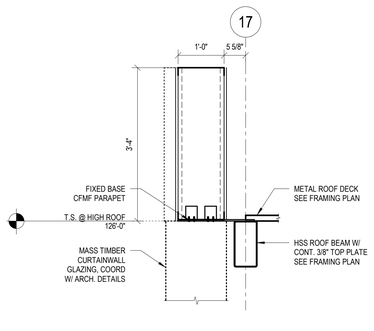
SHEET TITLE
FOUNDATION DETAILS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

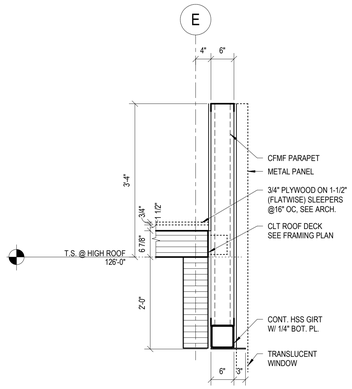
SHEET NO.
S401



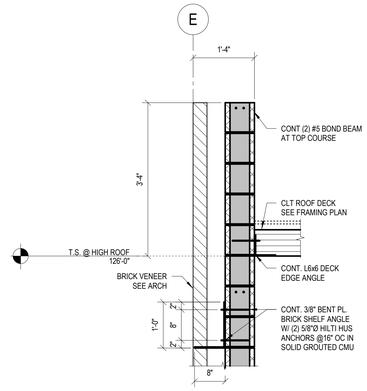
14 TYPICAL ROOF DETAIL AT GYMNASIUM
S402 Scale: 3/4" = 1'-0"



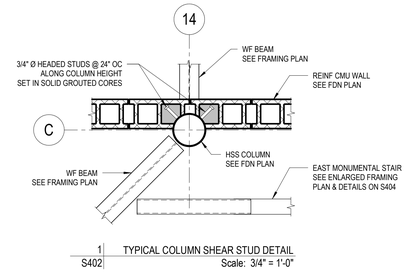
11 DETAIL AT EAST WALL CFMF PARAPET
S402 Scale: 3/4" = 1'-0"



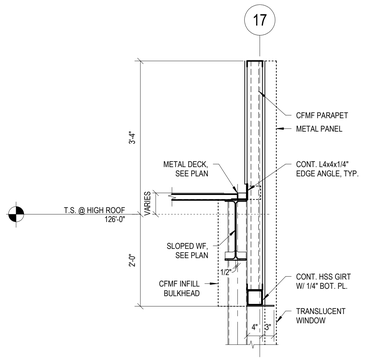
8 SOUTH ATRIUM WALL HIGH GIRT DETAIL
S402 Scale: 3/4" = 1'-0"



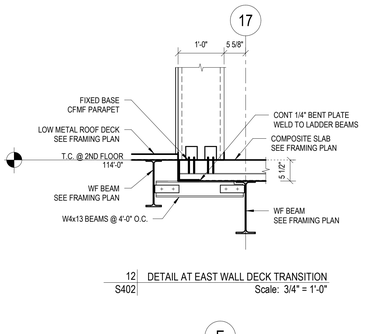
5 ROOF DETAIL AT TOP OF CMU WALL
S402 Scale: 3/4" = 1'-0"



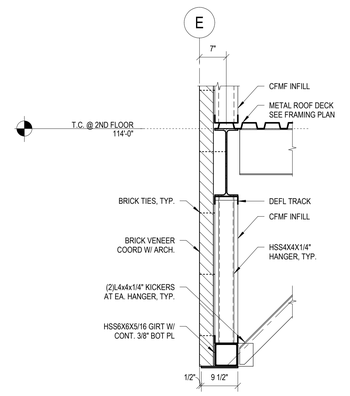
1 TYPICAL COLUMN SHEAR STUD DETAIL
S402 Scale: 3/4" = 1'-0"



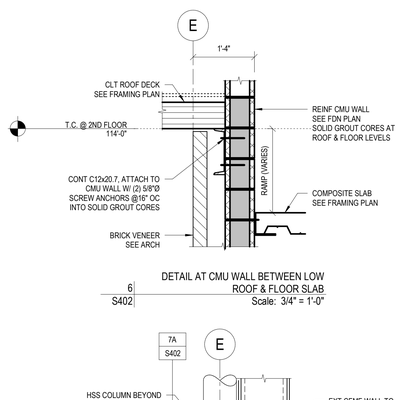
15 EAST AND WEST GYM GIRT DETAIL
S402 Scale: 3/4" = 1'-0"



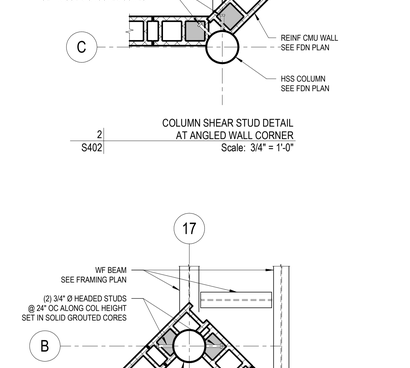
12 DETAIL AT EAST WALL DECK TRANSITION
S402 Scale: 3/4" = 1'-0"



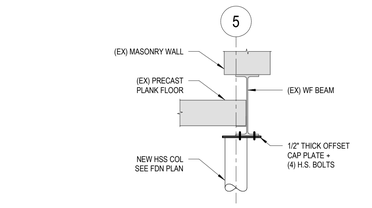
9 SOUTH ATRIUM WALL LOW GIRT DETAIL
S402 Scale: 3/4" = 1'-0"



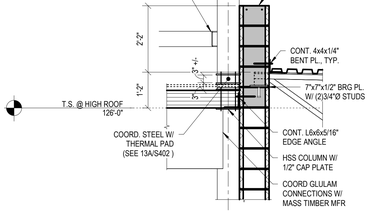
DETAIL AT CMU WALL BETWEEN LOW ROOF & FLOOR SLAB
6 S402 Scale: 3/4" = 1'-0"



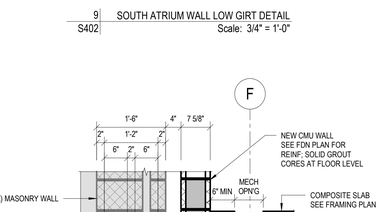
2 COLUMN SHEAR STUD DETAIL AT ANGLED WALL CORNER
S402 Scale: 3/4" = 1'-0"



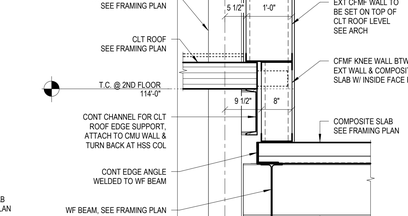
16 DETAIL AT TOP OF COLUMN H-5
S402 Scale: 1/2" = 1'-0"



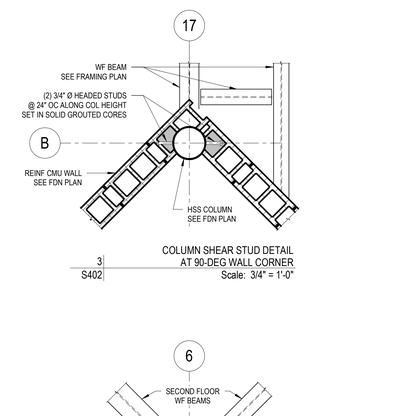
13 ROOF DETAIL AT NORTH GYM WALL
S402 Scale: 1/2" = 1'-0"



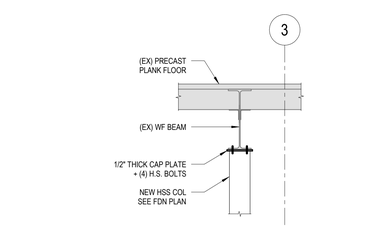
10 DETAIL AT LINTEL OVER COILING DOOR
S402 Scale: 3/4" = 1'-0"



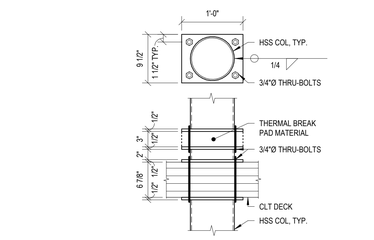
7 EXTERIOR CFMF WALL DETAIL ALONG SOUTH EDGE AT WEST LOW CLT ROOF
S402 Scale: 3/4" = 1'-0"



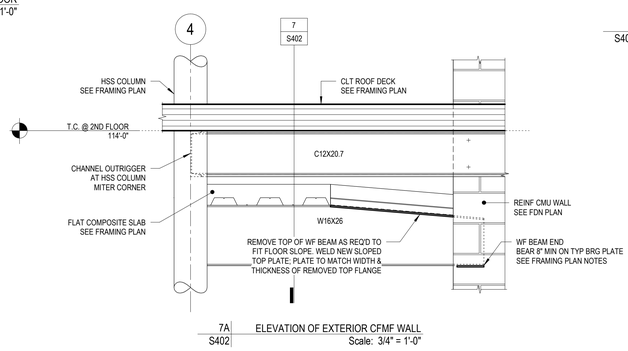
3 COLUMN SHEAR STUD DETAIL AT 90-DEG WALL CORNER
S402 Scale: 3/4" = 1'-0"



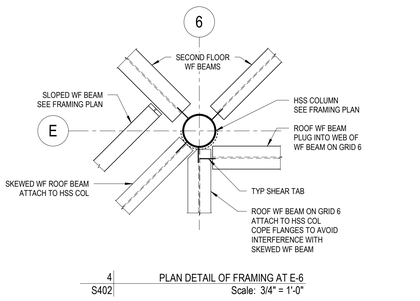
17 DETAIL AT TOP OF COLUMN OFFEST G-3
S402 Scale: 1/2" = 1'-0"



13A COLUMN THERMAL BREAK DETAIL
S402 Scale: 1" = 1'-0"



7A ELEVATION OF EXTERIOR CFMF WALL
S402 Scale: 3/4" = 1'-0"



4 PLAN DETAIL OF FRAMING AT E-6
S402 Scale: 3/4" = 1'-0"

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HOWELL PUBLIC SCHOOLS

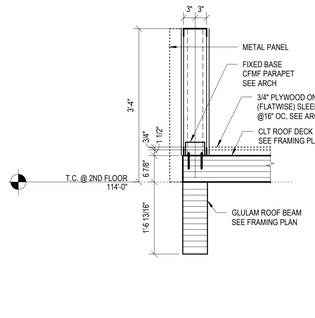
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

RDA NO. 24053
JOB NO. 2600.41F

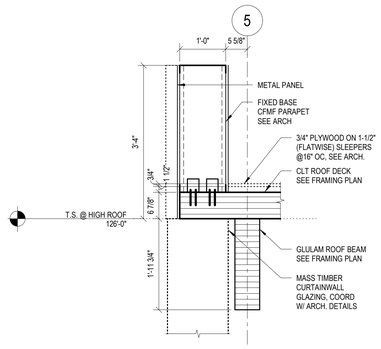
SHEET TITLE
FRAMING DETAILS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

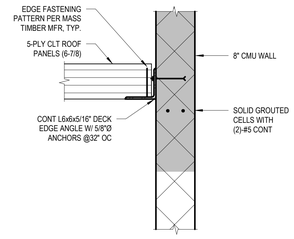
SHEET NO.
S402



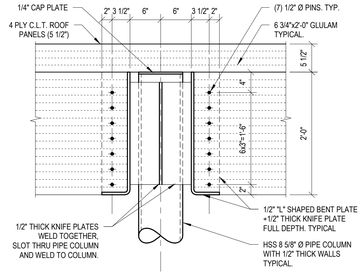
12 S403 FIXED BASE CFMF LOW ROOF PARAPET
Scale: 3/4" = 1'-0"



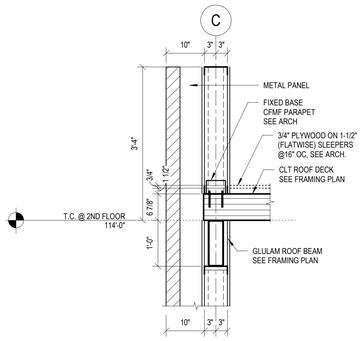
8 S403 FIXED BASE CFMF HIGH ROOF PARAPET
Scale: 3/4" = 1'-0"



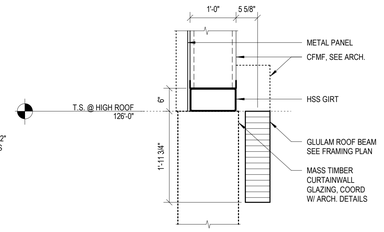
4 S403 TYPICAL DETAIL AT CLT ROOF EDGE
Scale: 1" = 1'-0"



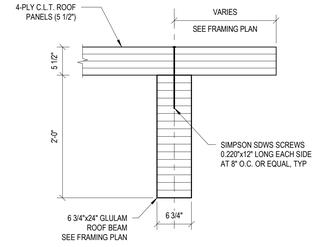
1 S403 TYPICAL GLULAM COLUMN CONNECTION
Scale: 1" = 1'-0"



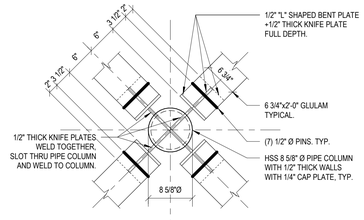
13 S403 CFMF AT WEST VESTIBULE
Scale: 3/4" = 1'-0"



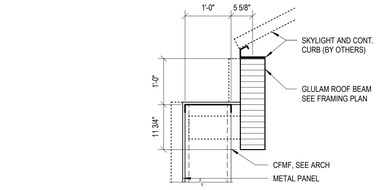
9 S403 MASS TIMBER CURTAINWALL AT HSS GIRT
Scale: 3/4" = 1'-0"



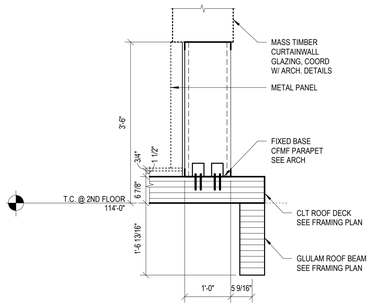
TYPICAL TIMBER ROOF PANEL CANTILEVER DETAIL
5 S403 Scale: 1" = 1'-0"



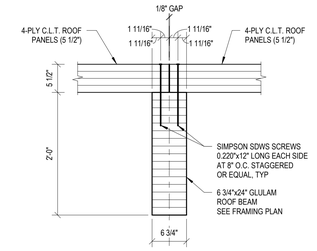
2 S403 GLULAM X-CONNECTION PLAN DETAIL
Scale: 1" = 1'-0"



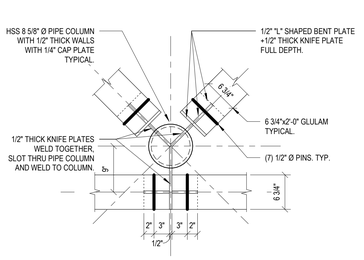
10 S403 DETAIL AT SKYLIGHT BEARING
Scale: 3/4" = 1'-0"



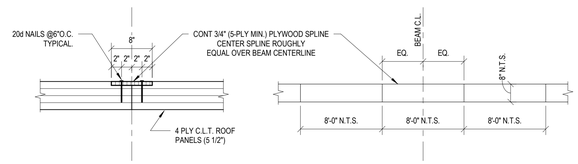
11 S403 CFMF SILL DETAIL ON CLT ROOF DECK
Scale: 3/4" = 1'-0"



6 S403 TYPICAL TIMBER ROOF PANEL SPLICE
Scale: 1" = 1'-0"



3 S403 GLULAM Y-CONNECTION PLAN DETAIL
Scale: 1" = 1'-0"



7 S403 TYPICAL TIMBER ROOF PANEL SPLINE
Scale: 1" = 1'-0"

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

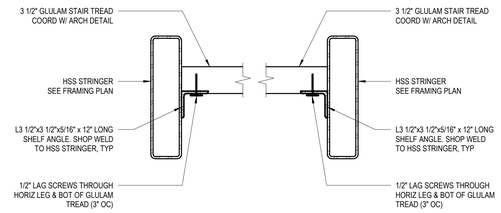
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

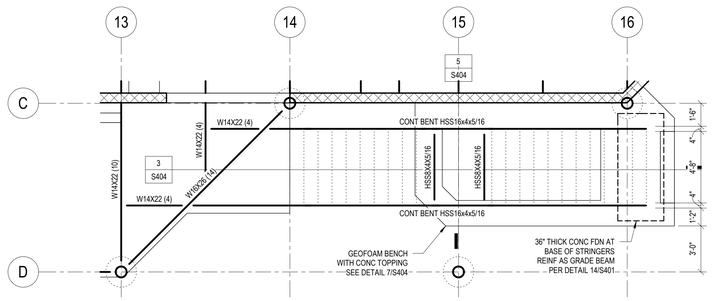
SHEET TITLE
FRAMING DETAILS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
REGISTERED PROFESSIONAL ENGINEER

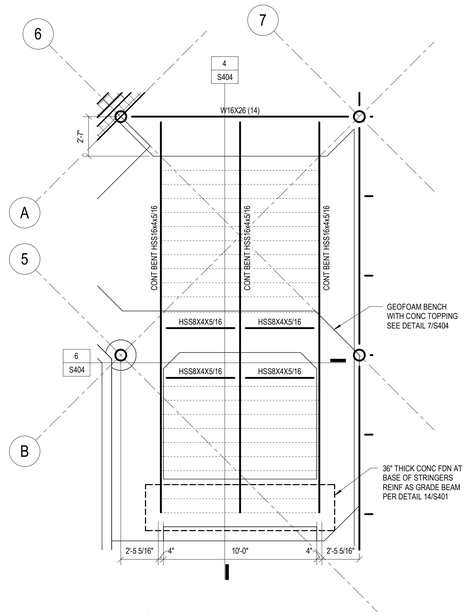
SHEET NO.
S403



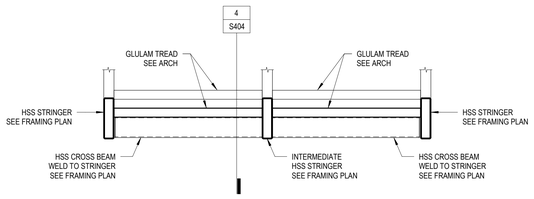
5 S404 EAST MONUMENTAL STAIR DETAIL
Scale: 1 1/2" = 1'-0"



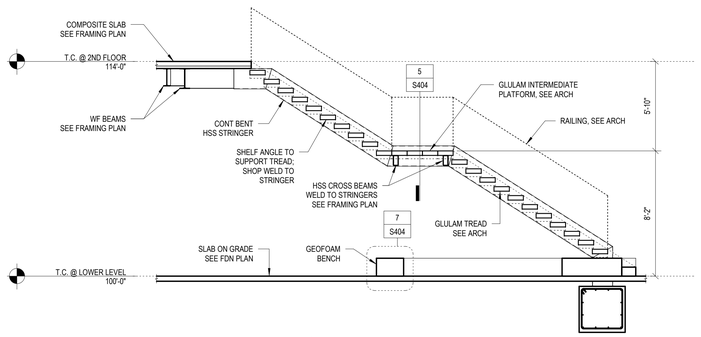
2 S404 EAST MONUMENTAL STAIR PLAN
Scale: 1/4" = 1'-0"



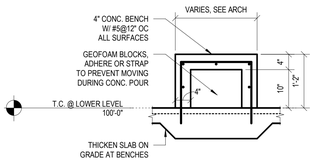
1 S404 WEST MONUMENTAL STAIR PLAN
Scale: 1/4" = 1'-0"



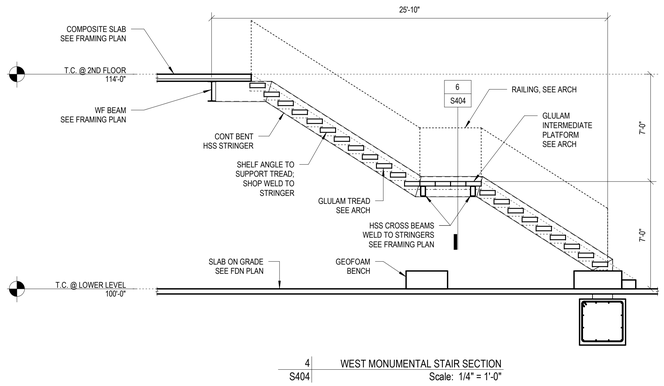
6 S404 WEST MONUMENTAL STAIR DETAIL
Scale: 1/2" = 1'-0"



3 S404 EAST MONUMENTAL STAIR SECTION
Scale: 1/4" = 1'-0"



7 S404 GEOFOAM BENCH DETAIL
Scale: 3/4" = 1'-0"



4 S404 WEST MONUMENTAL STAIR SECTION
Scale: 1/4" = 1'-0"

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
STAIR DETAILS

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
LICENSED PROFESSIONAL ENGINEER

SHEET NO.
S404

(EX) T.S. @ HIGH ROOF																																		(EX) T.S. @ HIGH ROOF
134'-8" T.S. @ HIGH ROOF				HSS8.625X0.250			HSS8.625X0.250				HSS8.625X0.250							HSS8.625X0.250	HSS8.625X0.250																134'-8" T.S. @ HIGH ROOF
126'-0" T.C. @ 2ND FLOOR	HSS8.625X0.250	HSS8.625X0.250			HSS8.625X0.250	HSS8.625X0.250						HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250																		126'-0" T.C. @ 2ND FLOOR
114'-0" T.C. @ LOWER LEVEL			HSS8.625X0.250					HSS8.625X0.250	HSS4AX4X1/4										HSS4AX4X1/4	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	114'-0" T.C. @ LOWER LEVEL
100'-0"																																		100'-0"
Column Locations	A-6	A-8	A-20	B-5	B-7	B-9	B-17	C-2	C-2(5'-7 1/2")	C-4	C-6	C-8	C-10	C-12	C-14	C-16	C-18	C(-3'-0 1/8")-19(4'-1 3/8")	C-20	C-22	C-24	C-26	C-28	C-30	C-32	D-1	D-3	D-5	D-7	D-9				
T.S. ELEV	126'-0"	126'-0"	114'-0"	131'-8"	126'-0"	126'-0"	134'-8"	114'-0"	114'-0"	131'-8"	131'-8"	126'-0"	126'-0"	126'-0"	126'-0"	134'-8"	134'-8"	114'-0"	114'-0"	114'-0"	114'-0"	114'-0"	114'-0"	114'-0"	117'-8"	114'-0"	114'-0"	131'-8"	126'-0"	126'-0"	T.S. ELEV			
TOTAL LOAD (FACTORED)	25.00 kip	25.00 kip	25.00 kip	25.00 kip	80.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	50.00 kip	65.00 kip	25.00 kip	25.00 kip	25.00 kip	45.00 kip	40.00 kip	25.00 kip	30.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	45.00 kip	45.00 kip	40.00 kip	TOTAL LOAD (FACTORED)			
BASE PLATE — TYPE	A	A	A	A	A	A	A	A	C	A	A	A	A	A	A	A	A	C	A	A	A	A	A	A	A	A	A	A	A	A	TYPE			BASE PLATE
BASE PLATE — THICKNESS	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	THICKNESS			
BASE PLATE — BOTTOM ELEVATION	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	100'-7 1/4"	100'-7 1/4"	100'-7 1/4"	100'-7 1/4"	100'-7 1/4"	100'-7 1/4"	100'-7 1/4"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	BOTTOM ELEVATION			
ANCHOR RODS — QUANTITY	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	QUANTITY			
ANCHOR RODS — DIAMETER	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	DIAMETER			
ANCHOR RODS — EMBEDMENT	8"	8"	8"	12"	8"	12"	12"	12"	8"	12"	8"	8"	12"	12"	12"	12"	12"	8"	12"	12"	12"	12"	12"	12"	12"	12"	12"	8"	8"	8"	EMBEDMENT			
ANCHOR RODS — PROJECTION	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	PROJECTION			ANCHOR RODS
CONCRETE PIER — PIER SIZE				24" Ø		24" x 24"	24" x 24"	24" Ø		24" Ø			24" x 24"	24" x 24"	24" x 24"	24" x 24"	24" x 24"		24" Ø	24" Ø	24" Ø	24" Ø	24" Ø	24" Ø	24" Ø	24" Ø	24" Ø				PIER SIZE			
CONCRETE PIER — VERTICAL REINFORCMENT				(6) #6		(8) #6	(8) #6	(6) #6		(6) #6			(8) #6	(8) #6	(8) #6	(8) #6	(8) #6		(6) #6	(6) #6	(6) #6	(6) #6	(6) #6	(6) #6	(6) #6	(6) #6	(6) #6				VERTICAL REINFORCMENT			
CONCRETE PIER — TIES				#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.		#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.		#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.			#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.		#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.				TIES			CONCRETE PIER

(EX) T.S. @ HIGH ROOF																																		(EX) T.S. @ HIGH ROOF
134'-8" T.S. @ HIGH ROOF				HSS8.625X0.250																														134'-8" T.S. @ HIGH ROOF
126'-0" T.C. @ 2ND FLOOR	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250		HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250										126'-0" T.C. @ 2ND FLOOR
114'-0" T.C. @ LOWER LEVEL					HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS4AX4X1/4	HSS8.625X0.250	HSS8.625X0.250	HSS6X6X1/4	HSS6X6X1/4	HSS6X6X1/4	HSS6X6X1/4	114'-0" T.C. @ LOWER LEVEL
100'-0"																																		100'-0"
Column Locations	D-11	D-13	D-15	D-17	D-19	D-21	D-23	D-25	D-27	D-29	D-31	D-33	E-2	E-4	E-6	E-8	E-9	E-10	E-12	E-14	E-16	E-17	E-18	E(2'-10 7/8")-19(4'-1 3/8")	E-20	E-32	E1(-6'-8 1/4")-16(2'-0")	E1(-8'-0")-16(2'-0")	E1(-6'-8 1/4")-17	E1(-8'-0")-17				
T.S. ELEV	126'-0"	126'-0"	126'-0"	134'-8"	114'-0"	114'-0"	114'-0"	114'-0"	114'-0"	114'-0"	117'-8"	117'-8"	114'-0"	126'-0"	126'-0"	126'-0"	126'-0"	126'-0"	126'-0"	126'-0"	126'-8"	126'-0"	114'-0"	114'-0"	114'-0"	117'-8"	108'-8"	108'-8"	108'-8"	108'-8"	T.S. ELEV			
TOTAL LOAD (FACTORED)	40.00 kip	35.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	50.00 kip	30.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	TOTAL LOAD (FACTORED)			
BASE PLATE — TYPE	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	TYPE			BASE PLATE
BASE PLATE — THICKNESS	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	THICKNESS			
BASE PLATE — BOTTOM ELEVATION	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	100'-7 1/4"	100'-7 1/4"	100'-7 1/4"	100'-7 1/4"	100'-7 1/4"	100'-7 1/4"	100'-7 1/4"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	100'-7 1/4"	99'-6"	99'-6"	99'-6"	99'-6"	BOTTOM ELEVATION			
ANCHOR RODS — QUANTITY	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	QUANTITY			
ANCHOR RODS — DIAMETER	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	DIAMETER			
ANCHOR RODS — EMBEDMENT	8"	8"	8"	8"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	8"	8"	12"	12"	12"	12"	12"	12"	8"	8"	12"	12"	8"	8"	8"	8"	EMBEDMENT			
ANCHOR RODS — PROJECTION	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	PROJECTION			ANCHOR RODS
CONCRETE PIER — PIER SIZE					24" Ø	24" Ø	24" Ø	24" Ø	24" Ø	24" Ø	24" Ø	24" Ø	24" Ø	24" Ø			32" x 32"	32" x 32"	32" x 32"	32" x 32"	32" x 32"	32" x 32"			24" Ø	24" Ø					PIER SIZE			
CONCRETE PIER — VERTICAL REINFORCMENT					(6) #6	(6) #6	(6) #6	(6) #6	(6) #6	(6) #6	(6) #6	(6) #6	(6) #6	(6) #6			(12) #6	(12) #6	(12) #6	(12) #6	(12) #6	(12) #6			(6) #6	(6) #6					VERTICAL REINFORCMENT			
CONCRETE PIER — TIES					#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.			#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.			#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.					TIES			CONCRETE PIER

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

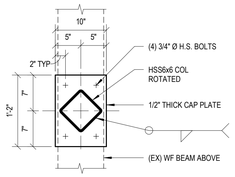
RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
COLUMN SCHEDULE

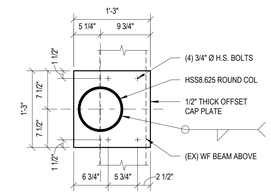
STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
REGISTERED PROFESSIONAL ENGINEER

SHEET NO.
S601

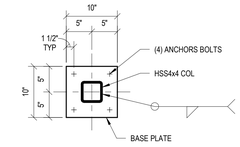
(EX) T.S. @ HIGH ROOF																															(EX) T.S. @ HIGH ROOF
134'-8" T.S. @ HIGH ROOF																															134'-8" T.S. @ HIGH ROOF
126'-0" T.C. @ 2ND FLOOR																															126'-0" T.C. @ 2ND FLOOR
114'-0" T.C. @ LOWER LEVEL	HSS5X5X5/16	HSS5X5X1/4	HSS6X6X1/4	HSS8.625X0.250	HSS5X5X1/4	HSS6X6X1/4	HSS8.625X0.250	HSS8.625X0.250	HSS5X5X1/4	HSS5X5X1/4	HSS8.625X0.250	HSS6X6X1/4	HSS8.625X0.250		HSS8.625X0.250	HSS6X6X1/4	HSS5X5X1/4	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS8.625X0.250	HSS6X6X1/4	HSS5X5X1/4	HSS5X5X1/4	HSS8.625X0.250	HSS8.625X0.250	HSS5X5X5/16	HSS5X5X1/4	HSS8.625X0.250	114'-0" T.C. @ LOWER LEVEL
100'-0"																															100'-0"
Column Locations	E1(1'-6 1/4")-14	E1(1'-6 1/4")-16	E1(1'-6 1/4")-17(-5 7/8")	E1(1'-0")-18	E1(-6'-8 1/4")-18(-2'-0")	E1(-8'-0")-18(-2'-0")	F-3	F-5	F-9(5 7/8")	F-17(-5 7/8")	F-18	G(-5'-2 3/8")-3(-1'-5 5/8")	G-4	G-8	G-9(5 7/8")	G-17(-5 7/8")	G-18	H-5	H-8	H-9(5 7/8")	H-17(-5 7/8")	H-18	J-6	J-8	J-9(5 7/8")	J(-10'-5 3/4")-9(5 7/8")	J(-10'-5 3/4")-10	J(-10'-5 3/4")-12	J-17(-5 7/8")	J-18	
T.S. ELEV	125'-7"	125'-7"	126'-0"	112'-10 1/4"	108'-8"	108'-8"	126'-0"	126'-0"	126'-11 1/4"	126'-11 1/4"	113'-0"	109'-8 1/4"	111'-0"	114'-0"	126'-8 3/8"	126'-8 3/8"	113'-0"	110'-7 7/8"	114'-0"	126'-5 5/8"	126'-5 5/8"	113'-0"	111'-10"	114'-0"	126'-2 3/4"	126'-0"	125'-7"	125'-7"	126'-2 3/4"	113'-0"	T.S. ELEV
TOTAL LOAD (FACTORED)	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	25.00 kip	TOTAL LOAD (FACTORED)
BASE PLATE — TYPE	B	B	A	A	B	B	A	B	A	A	B	B	A	A	A	B	B	A	A	A	B	B	A	B	B	B	B	B	B	A	TYPE — BASE PLATE
BASE PLATE — THICKNESS	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	THICKNESS — BASE PLATE
BASE PLATE — BOTTOM ELEVATION	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	98'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	98'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	99'-6"	BOTTOM ELEVATION — BASE PLATE
ANCHOR RODS — QUANTITY	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	QUANTITY — ANCHOR RODS
ANCHOR RODS — DIAMETER	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"	DIAMETER — ANCHOR RODS
ANCHOR RODS — EMBEDMENT	8"	8"	12"	12"	12"	12"	12"	8"	8"	12"	12"	12"	12"	8"	12"	12"	12"	12"	8"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	EMBEDMENT — ANCHOR RODS
ANCHOR RODS — PROJECTION	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	6"	PROJECTION — ANCHOR RODS
CONCRETE PIER — PIER SIZE			24" Ø	24" Ø	24" x 24"	24" x 24"	24" Ø			24" Ø	24" x 24"	24" x 24"	24" Ø		24" Ø	24" x 24"	24" x 24"	24" Ø		24" Ø	24" x 24"	24" x 24"	24" Ø	24" x 24"	24" x 24"	24" x 24"	24" x 24"	24" x 24"	24" x 24"	24" Ø	PIER SIZE — CONCRETE PIER
CONCRETE PIER — VERTICAL REINFORCMENT			(6) #6	(6) #6	(8) #6	(8) #6	(6) #6			(6) #6	(8) #6	(8) #6	(6) #6		(6) #6	(8) #6	(8) #6	(6) #6		(6) #6	(8) #6	(8) #6	(6) #6	(8) #6	(8) #6	(8) #6	(8) #6	(8) #6	(8) #6	(6) #6	VERTICAL REINFORCMENT — CONCRETE PIER
CONCRETE PIER — TIES			#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.			#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.		#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.		#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	#3 (3 PER SET) (3) @ 3" O.C. BAL @ 12" O.C.	TIES



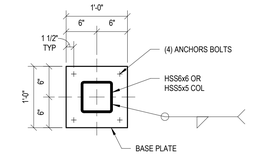
5 S602 CAP PLATE DETAIL AT COLUMN OFFSET
Scale: 1" = 1'-0"



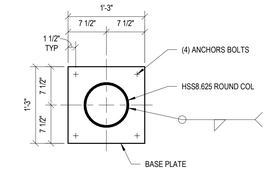
4 S602 CAP PLATE DETAIL AT COLUMN H-5
Scale: 1" = 1'-0"



3 S602 BASE PLATE DETAIL TYPE C
Scale: 1" = 1'-0"



2 S602 BASE PLATE DETAIL TYPE B
Scale: 1" = 1'-0"



1 S602 BASE PLATE DETAIL TYPE A
Scale: 1" = 1'-0"

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | ROYAL OAK

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	**07.30.2026**

RDA NO. 24053
JOB NO. 2600.41F

SHEET TITLE
COLUMN SCHEDULE

STATE OF MICHIGAN
BRAD CUTTER
ENGINEER
No. 6201063383
PROFESSIONAL ENGINEER

SHEET NO.
S602

BUILDING CODE INFORMATION

BUILDING CODE:	MICHIGAN BUILDING CODE 2021
PLUMBING CODE:	MICHIGAN PLUMBING CODE 2021
MECHANICAL CODE:	MICHIGAN MECHANICAL CODE 2021
ENERGY CODE:	MICHIGAN UNIFORM ENERGY CODE 2021
FIRE CODE:	INTERNATIONAL FIRE CODE 2021
FUEL GAS CODE:	INTERNATIONAL FUEL GAS CODE 2021
ELECTRICAL CODE:	MICHIGAN ELECTRICAL CODE 2023
NFPA STANDARDS:	NFPA 13 & 20 2019 NFPA 101 WITH EFS AMENDMENTS 2012
ICC/ANSI STANDARDS:	ICC/ANSI A117.1 ACCESSIBLE AND USABLE BUILDING AND FACILITIES 2017
ADA STANDARDS:	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA-AG)

MECHANICAL SHEET INDEX

NO.	NAME
MECHANICAL	
M001	MECHANICAL DATA SHEET
M151.a	FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT 1000
M151.b	FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT 1100
M151.c	FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT 1200
M151.d	FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT 1300A
M152.a	SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT 2000
M152.b	SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT 2100
M152.c	SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT 2200
M152.d	SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT 2300A
M159.a	MECHANICAL ROOF DEMOLITION PLAN - UNIT 9000
M211.a	FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1000
M211.b	FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1100
M211.d	FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1300A
M211.e	FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1300B
M211.f	FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1400A
M211.g	FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1400B
M211.h	FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1400C
M211.k	FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1400E
M212.a	SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2000
M212.b	SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2100
M212.c	SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2200
M212.d	SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2300A
M212.f	SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400A
M212.g	SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400B
M212.h	SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400C
M212.j	SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400D
M212.k	SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400E
M212.m	SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400F
M221.a	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1000
M221.b	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1100
M221.c	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1200
M221.d	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1300A
M221.e	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1300B
M221.f	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400A
M221.g	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400B
M221.h	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400C
M221.j	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400D
M221.k	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400E
M221.m	FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400F
M222.a	SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2000
M222.b	SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2100
M222.c	SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2200
M222.d	SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2300A
M222.f	SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400A
M222.g	SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400B
M222.h	SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400C
M222.j	SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400D
M222.k	SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400E
M222.m	SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400F
M259.a	MECHANICAL ROOF PLAN - UNIT 9000
M259.d	MECHANICAL ROOF PLAN - UNIT 9300A
M400	MECHANICAL ENLARGED PLANS & SECTIONS
M401	MECHANICAL ENLARGED PLANS & SECTIONS
M402	MECHANICAL ENLARGED PLANS & SECTIONS
M403	MECHANICAL ENLARGED PLANS & SECTIONS
M404	MECHANICAL ENLARGED PLANS & SECTIONS
M405	MECHANICAL ENLARGED PLANS & SECTIONS
M406	MECHANICAL ENLARGED PLANS & SECTIONS
M500	MECHANICAL DETAILS
M501	MECHANICAL DETAILS
M502	MECHANICAL DETAILS
M503	MECHANICAL DETAILS
M504	MECHANICAL DETAILS - AHU/RTU DIMENSIONS
M505	MECHANICAL DETAILS - AHU/RTU DIMENSIONS
M506	MECHANICAL DETAILS - AHU/RTU DIMENSIONS
M507	MECHANICAL DETAILS - AHU/RTU DIMENSIONS
M508	MECHANICAL DETAILS - AHU/RTU DIMENSIONS
M600	MECHANICAL SCHEDULES
M601	MECHANICAL SCHEDULES
M602	MECHANICAL SCHEDULES
M603	MECHANICAL SCHEDULES
M604	MECHANICAL SCHEDULES
M605	MECHANICAL SCHEDULES - VENTILATION - NEW BUILDING
M606	MECHANICAL SCHEDULES - VENTILATION - EXIST BLDG
M607	MECHANICAL SCHEDULES - REFRIGERANT CALCULATIONS
M700	MECHANICAL RISER DIAGRAM
M701	MECHANICAL RISER DIAGRAM
M702	MECHANICAL RISER DIAGRAM
M800	CONTROLS DATA SHEET
M801	MECHANICAL CONTROLS RISER
M802	MECHANICAL CONTROLS RISER
M803	MECHANICAL CONTROLS RISER
M804	MECHANICAL CONTROLS RISER
M805	MECHANICAL CONTROLS RISER
M806	MECHANICAL CONTROLS (PEMB BOILER PLANT)
M807	MECHANICAL CONTROLS (DOAS)
M808	MECHANICAL CONTROLS (RTU-1N)
M809	MECHANICAL CONTROLS (RTU-2N)
M810	MECHANICAL CONTROLS (RTU-1)
M811	MECHANICAL CONTROLS (RTU-3)
M812	MECHANICAL CONTROLS (AHU-2)
M813	MECHANICAL CONTROLS (RTU-14)
M814	MECHANICAL CONTROLS (AHU-15)
M815	MECHANICAL CONTROLS (AHU-16 & AHU-17)
M816	MECHANICAL CONTROLS (MSC. AIR)
M817	MECHANICAL CONTROLS (MSC. WATER)
M818	MECHANICAL CONTROLS (MSC)
M819	MECHANICAL CONTROLS (FIELDHOUSE BOILER PLANT UPGRADES)

HVAC SYMBOLS

- BALANCING DAMPER
- FIRE DAMPER (HORIZONTAL)
- FIRE DAMPER (VERTICAL)
- COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
- COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
- SMOKE DAMPER
- SUPPLY DIFFUSER
- RETURN DIFFUSER
- EXHAUST DIFFUSER
- OPPOSED BLADE DAMPER (MOTORIZED)
- OPPOSED BLADE DAMPER (MOTORIZED) W/ END SWTICH
- VAV DAMPER (MOTORIZED)
- PARALLEL BLADE DAMPER (MOTORIZED)
- PARALLEL BLADE DAMPER (MOTORIZED) W/ END SWTICH

PIPING, VALVES, AND SPECIALTIES SYMBOLS

- ANGLE VALVE
- AUTOMATIC AIR VENTING VALVE
- BACK FLOW PREVENTER
- BALANCING VALVE
- BLOWDOWN VALVE
- CHECK VALVE
- CLEANOUT (FLOOR)
- CLEANOUT (INLINE)
- CLEANOUT (WALL)
- COMBINATION FLOW MEASURING AND BALANCING VALVE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- ELBOW DOWN
- ELBOW UP
- FLANGE
- FLEXIBLE CONNECTION
- FLOOR DRAIN
- FLOOR DRAIN (SECTION)
- FLOOR DRAIN W/ FUNNEL (SECTION)
- FLOW ARROW
- HOSE BIBB
- HOSE END DRAIN VALVE
- ISOLATION VALVE
- MANUAL AIR VENT
- METER
- NEEDLE VALVE
- OUTSIDE SCREW AND YOKE VALVE (OSHY)
- P-TRAP (PLAN)
- P-TRAP (SECTION)
- PIPE CAP
- PIPE CONTINUTATION
- PLUG VALVE
- PRESSURE GAUGE W/ SNUBBER AND VALVE
- PRESSURE REGULATING VALVE
- P/T PORT
- RELIEF VALVE
- SIAMESE CONNECTION
- STRAINER
- THERMOMETER
- TRIPLE DUTY VALVE
- UNION
- WATER METER ASSEMBLY

EQUIPMENT SYMBOLS

- COOLING COIL (CHW)
- COOLING COIL (DX)
- HEATING COIL (ELECTRIC)
- HEATING COIL (GAS)
- HEATING COIL (HHW)
- HEATING COIL (REHEAT)
- AIR AND DIRT SEPARATOR
- CHEMICAL SHOT FEEDER
- EXPANSION TANK (VERTICAL)
- ENERGY RECOVERY WHEEL
- GLYCOL FILL STATION
- SIDE STREAM FILTER
- FILTER
- FILTER W/ DPT
- FAN (CENTRIFUGAL)
- FAN (PLENUM)
- FAN (PROP)
- PUMP (CIRCULATION)
- PUMP (END SUCTION)
- PUMP (INLINE)
- PUMP (SUMP)

GENERAL SYMBOLS

- EXISTING CONSTRUCTION
- DEMOLITION
- NEW CONSTRUCTION
- NEW KEYNOTE TAG
- DEMOLITION KEYNOTE TAG
- EQUIPMENT TAG
- TYPE-NO. NECK-Ø CFM-NO. DIFFUSER TAG
- ELEVATION
- WALL SECTION
- BUILDING SECTION
- PLAN-SECTION DETAIL
- NEW CONNECTION

ABBREVIATIONS

(E)	EXISTING
°F	DEGREES FAHRENHEIT
2D	TWO-DIMENSIONAL
3D	THREE-DIMENSIONAL
AAC	ADVANCED APPLICATION CONTROLLER
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
ABV	ABOVE
AC	AIR CONDITIONING
ACB	ACTIVE CHILLED BEAM
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
ACFM	ABSOLUTE CUBIC FEET PER MINUTE
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AFM	AIRFLOW MEASURING DEVICE
AFMS	AIRFLOW MEASURING STATION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
ALT	ALTERNATOR
AO	ANALOG OUTPUT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
APPROX	APPROXIMATE
AS	AIR SEPARATOR
ASC	APPLICATION SPECIFIC CONTROLLER
ASR	AUTOMATIC SPRINKLER RISER
AX	AUXILIARY CONTACT
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BC	BUILDING CONTROLLER
BD	BACKDRAFT DAMPER
BDD	BACKDRAFT DAMPER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
CA	COMBUSTION AIR
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CB	CHILLED BEAM
CBCHW	CHILLED BEAM CHILLED WATER
CBHW	CHILLED BEAM HOT WATER
CC	COOLING COIL
CCDT	COOLING COIL DISCHARGE TEMPERATURE
CDSR	CONDENSER
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CURRENT INPUT
CIRC	CIRCULATING
CLG	COOLING
CM	CONTROL MODULE
CO	CLEAN OUT
CO2	CARBON DIOXIDE
COMP	COMPRESSOR
CONC	CONCRETE
COND	CONDENSATE
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CP	CONDENSATE PUMP
CR	CONTROL RELAY
CS	CLEAN STEAM
CSFD	COMBINATION SMOKE/FIRE DAMPER
CSR	CURRENT SWITCH OR CURRENT SENSING RELAY
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D	DAMPER
DAT	DRIP & TRAP
DB	DRY BULB TEMPERATURE
DBA	DECIBELS (A-WEIGHTED SCALE)
DBT	DRY BULB TEMPERATURE °F
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREES
DF	DIESEL FUEL
DI	DIGITAL INPUT
DIA	DIAMETER
DN	DOWN
DO	DIGITAL OUTPUT
DP	DIFFERENTIAL PRESSURE
DPS	DIFFERENTIAL PRESSURE SENSOR
DPT	DEW POINT TEMPERATURE °F
DTC	DRAIN TILE CONNECTION
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DX	DIRECT EXPANSION
EA	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECM	ELECTRONICALLY COMMUTATED MOTOR
ED	ENABLE / DISABLE
EDB	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	ETHYLENE GLYCOL WATER SOLUTION
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
EN	ENABLE / DISABLE
ENT	ENTERING
EP	ELECTRIC TO PNEUMATIC RELAY
EQ	EQUIVALENT
ERU	ENERGY RECOVERY UNIT
ES	END SWITCH
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EV	EXHAUST VALVE
EWB	ENTERING WET BULB TEMPERATURE
EWG	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERAL
F	FAHRENHEIT
F	FIRE PROTECTION SYSTEM - WET
F-DRY	FIRE PROTECTION SYSTEM - DRY
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAH	FAHRENHEIT
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FD/SD	COMBINATION FIRE AND SMOKE DAMPER
FDAT	FAN DISCHARGE AIR TEMPERATURE
FDC	FIRE DEPARTMENT CONNECTION
FFD	FUNNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FH	FUME HOOD
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FL	FLUE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONNECTION
FLR	FLOOR
FM	FLOW METER
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
FR	FIELD RELAY
FS	FLOW SWITCH
FSD	FIRE & SMOKE DAMPER
FT	FEET or FOOT
FTR	FIN TUBE RADIATION
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
FZ	FREEZESTAT
G	GLYCOL
GA	GAUGE
GAL	GALLONS
GCF	GARAGE CIRCULATION FAN
GCO	GRADE CLEAN OUT
GEF	GARAGE EXHAUST FAN
GIF	GARAGE INTAKE FAN
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRAINS
H	HEIGHT
HB	HOSE BIBB
HC	HEATING COIL
HEX	HEAT EXCHANGER
HG	MERCURY
HHW	HEATING HOT WATER
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HI	HIGH
HL	HIGH LEVEL
HO	HUB OUTLET
HP	HORSE POWER
HR	HOUR
HTG	HEATING
HUM	HUMIDIFIER
HVAC	HEATING VENTILATING AND AIR CONDITIONING
HYD	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IFB	INTEGRAL FACE AND BY-PASS
IN	INCHES
INST	INSTALLED
INV	INVERT
IPLV	INTEGRATED PART LOAD VALUE
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATTS
KWH	KILOWATT HOURS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS	POUNDS
LBS/HR	POUNDS PER HOUR
LBSHR	POUNDS PER HOUR
LCP	LOCAL CONTROL PANEL
LDB	LEAVING DRY BULB TEMPERATURE
LEF	LAB EXHAUST FAN
LL	LOW LEVEL
LO	LOW
LP	LOW POINT
LRA	LOCKED ROTOR AMPERES
LV	LEVEL
LVG	LEAVING
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBH	1000 BTU/HR
MC	MECHANICAL CONTRACTOR
MCA	MAXIMUM CURRENT AMPACITY
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MFR	MANUFACTURER
MH	MANHOLE
MHP	MOTOR HORSEPOWER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOCP	MAXIMUM OVER CURRENT PROTECTION
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)
MOCP	MAXIMUM OVER-CURRENT PROTECTION
MS	MOTOR STARTER
MSI	MASTER SYSTEMS INTEGRATER
MTG	MOUNTING
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NC	NOISE CRITERIA
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NPLV	NON STANDARD PART LOAD VALUE
NPSH	NET POSITIVE SUCTION HEAD
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
OAH	OUTDOOR AIR HUMIDITY
OAT	OUTDOOR AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER / CENTER TO CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
OPR	OPERATING
ORS	OVERFLOW ROOF SUMP
OSHY	OUTSIDE SCREEN AND YOKE
OV	OUTLET VELOCITY
OWS	OPERATOR WORK STATION
P	PUMP
PC	PLUMBING CONTRACTOR
PCB	PASSIVE CHILLED BEAM
PD	PRESSURE DROP (FEET OF WATER)
PG	PROPYLENE GLYCOL WATER SOLUTION
PH	PHASE
PHDT	PREHEAT DISCHARGE TEMPERATURE
PICGV	PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE
PMCS	POWER MONITORING & CONTROL SYSTEM
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRV	PRESSURE REGULATING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PSI(G)	POUNDS PER SQUARE INCH (GAUGE)
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE Q
P/T	PRESSURE / TEMPERATURE PORT
QTY	QUANTITY
RA	RETURN/RELIEF AIR
RAH	RETURN AIR HUMIDITY
RAT	RETURN AIR TEMPERATURE
RC	ROOF CONDUCTOR
RE	REFERENCE
RELA	RELIEF AIR
REQD	REQUIRED
RET	RETURN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RUNNING LOAD AMPS
RLF	RELIEF
RLMS	REFRIGERANT LEAK MONITORING SYSTEM
ROT	ROTATION MONITORING SENSOR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
RS	ROOF SUMP
RTU	ROOFTOP UNIT
S	SOLENOID
SA	SUPPLY AIR
SAN	SANITARY WASTE
SC	SELF CONTAINED UNIT
SCFM	STANDARD CUBIC FEET PER MINUTE
SD	SMOKE DAMPER/SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS	SENSIBLE
SF	SQUARE FEET
SG	SPECIFIC GRAVITY
SH	SHOWER
SL	SOUND LINING
SMW	SNOW MELT WATER
SP	STATIC PRESSURE (INCHES OF WATER)
SPD	SPEED
SPL	SOUND POWER LEVEL
SPS	STATIC PRESSURE SENSOR
SQ	SQUARE
SS	STAINLESS STEEL
STM	STEAM
SV	SUPPLY VALVE
SW	SWITCH
T	TEMPERATURE
T & P	TEMPERATURE AND PRESSURE
TAB	TESTING, ADJUSTING AND BALANCING
TC	TEMPERATURE CONTROL
TCC	TEMPERATURE CONTROLS CONTRACTOR
TEF	TOILET EXHAUST FAN
TH	THERMOSTAT
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TP	TOTAL PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
UR	URINAL
V	VOLTAGE/VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VIFB	VERTICAL INTEGRAL FACE AND BYPASS
VL	VALVE
VLP	VALVE POSITION
VO	VOLTAGE OUTPUT
VP	VIRTUAL POINT
VS	VIBRATION SWITCH
VTR	VENT THRU ROOF
W	WATTS/WIDTH
WEV	WASTE AND VENT
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WG	WATER GAUGE
WH	WALL HYDRANT
WMS	WIRE MESH SCREEN
YCO	YARD CLEAN OUT

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL DATA SHEET

SHEET NO.
M001

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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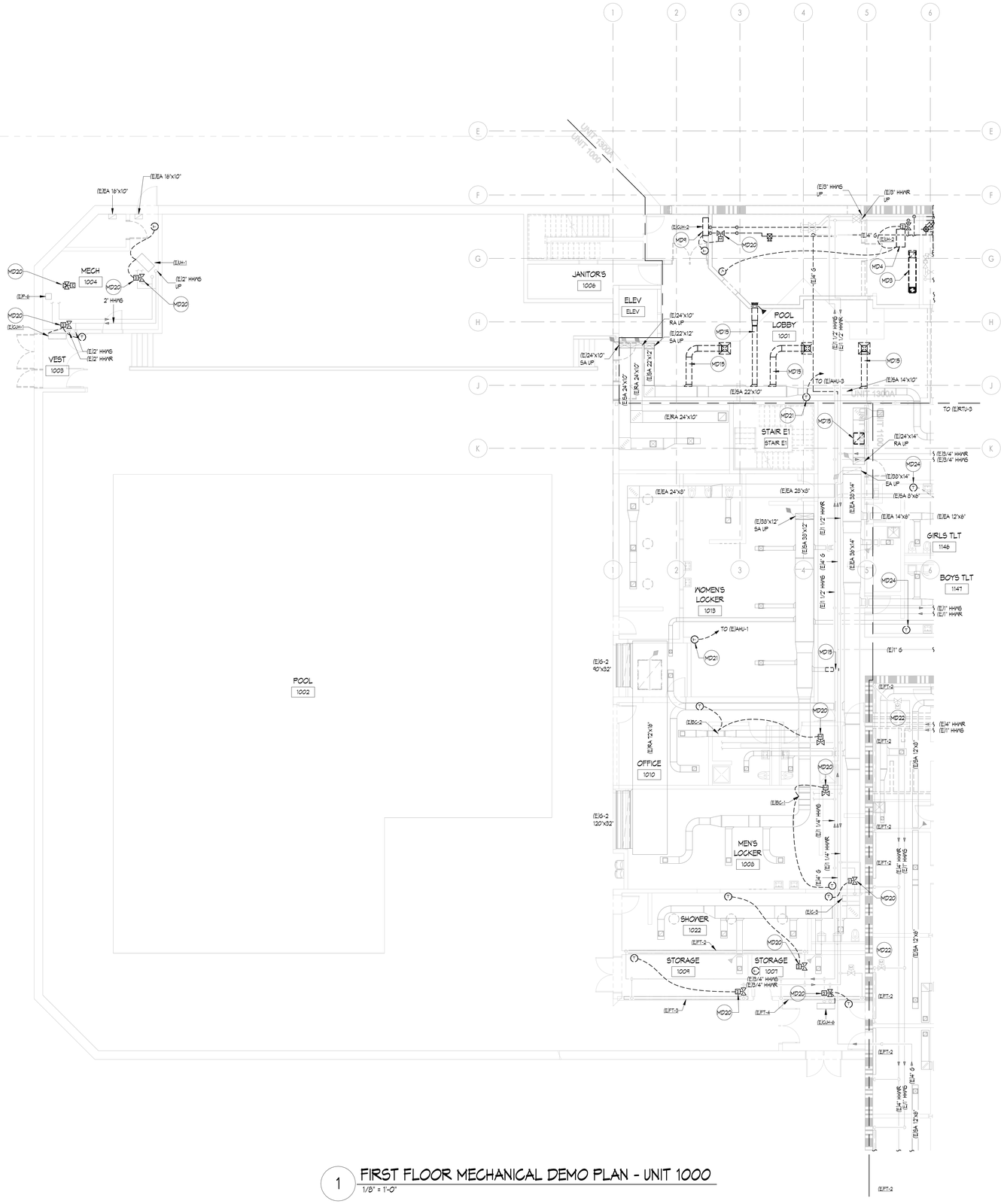

1 FIRST FLOOR MECHANICAL DEMO PLAN - UNIT 1000
1/8" = 1'-0"

MECHANICAL DEMO PLAN GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL EXTEND OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE EXISTING FIELD CONDITIONS AND NEW WORK. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, FOOD SERVICE, ETC.)
2. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
3. VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNERS REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
5. ALL ITEMS ON DEMOLITION PLANS SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION BY CONTRACTOR.
6. ALL ITEMS INDICATED WITH BROKEN LINES SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE DISPOSED LEGALLY. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING, RELOCATED, AND OWNER-PROVIDED EQUIPMENT.
9. ANY SYSTEM WITH PARTIAL DEMOLITION PIPING, DUCTWORK, CONTROLS, ETC. AND WHICH IS INTENDED TO REMAIN OPERATIONAL DURING OR AFTER CONSTRUCTION SHALL BE CAPPED AND SEALED PROPERLY TO MAINTAIN FUNCTIONALITY. THIS INCLUDES BUT IS NOT LIMITED TO DUCTWORK, PIPING SYSTEMS, AND PNEUMATIC TUBING.
10. EXISTING TO REMAIN DUCTWORK IN THE SCOPE AREA SHALL BE EXAMINED FOR LEAKS, HOLES, BREAKS, ETC. AND SEALED/INSULATED COMPLETELY.

MECHANICAL DEMOLITION KEYNOTE

MD1 EXISTING INDOOR AIR HANDLING UNIT WITH ASSOCIATED OUTDOOR CONDENSING UNIT TO BE DEMOLISHED COMPLETE. DEMOLISH EXISTING HEATING COIL PUMP, REFRIGERANT PIPING AND REFRIGERANT, ALL CONTROLS, WIRING, DUCTWORK AND PIPING TO EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW UNITS (AS APPLICABLE). EXISTING ROOF RAILS FOR CONDENSING UNITS AND HOUSEKEEPING PADS FOR AHU'S SHALL BE DEMOLISHED COMPLETE. REFER TO NEW WORK PLANS.

MD2 DEMOLISH EXISTING EXHAUST FAN COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, GRILLES AND ROOF CURB. DEMOLISH DUCTWORK TO THE EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW WORK. REFER TO NEW WORK PLANS.

MD3 DEMOLISH EXISTING EXHAUST FAN COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, DUCTWORK, GRILLES AND ROOF CURB.

MD4 DEMOLISH EXISTING UNIT HEATER COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, PIPING, HANGERS, ETC.

MD5 EXISTING INDOOR AIR HANDLING UNIT TO BE DEMOLISHED COMPLETE. DEMOLISH EXISTING HEATING COIL PUMP, ALL CONTROLS, WIRING, DUCTWORK AND PIPING TO EXTENT SHOWN AND AS REQUIRED TO ACCOMODATE NEW UNITS (AS APPLICABLE). EXISTING HOUSEKEEPING PADS TO BE REVISED TO ACCOMMODATE NEW AHU DIMENSIONS AND LAYOUT. REFER TO NEW WORK PLANS.

MD6 EXISTING LOUVER TO BE DEMOLISHED COMPLETE.

MD7 EXISTING RETURN AIR FAN TO BE DEMOLISHED COMPLETE INCLUDING ALL ASSOCIATED CONTROLS, WIRING, SUPPORTS AND DUCTWORK TO EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW UNIT. EXISTING HOUSEKEEPING PAD TO BE REVISED TO ACCOMMODATE NEW FAN DIMENSIONS AND LAYOUT. REFER TO NEW WORK PLANS.

MD8 EXISTING RETURN AIR FAN TO BE DEMOLISHED COMPLETE INCLUDING ALL ASSOCIATED CONTROLS, WIRING, SUPPORTS AND DUCTWORK TO EXTENT SHOWN AND AS REQUIRED. EXISTING HOUSEKEEPING PAD TO BE DEMOLISHED.

MD9 DEMOLISH EXISTING CABINET UNIT HEATER COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, PIPING, HANGERS, ETC.

MD10 DEMOLISH EXISTING BOILER COMPLETE. DEMOLISH EXISTING AIR SEPARATOR, EXPANSION TANK, MAKE-UP CONNECTION, ETC, AND ALL THINGS ASSOCIATED WITH THIS BOILER PLANT AS REQUIRED TO BACKFEED FROM NEW SYSTEM. REFER TO NEW WORK PLANS.

MD11 DEMOLISH EXISTING POOL AND SPA WATER HEATERS COMPLETE INCLUDING HOUSEKEEPING PADS, AND FLUE. EXISTING PLASTIC PIPING, INSTRUMENTATION, VALVING, ETC. TO/FROM POOL SYSTEM TO BE SALVAGED AND REUSED FOR NEW POOL HEATING SYSTEMS. REFER TO NEW WORK PLAN AND RISER DIAGRAMS.

MD12 DEMOLISH EXISTING COMBUSTION AIR LOUVER AND DUCTWORK AND CONTROLS COMPLETE.

MD13 DEMOLISH EXISTING FINNED TUBE COMPLETE NCLUDING CONTROLS AND PIPING TO EXTENT SHOWN.

MD14 DEMOLISH EXISTING FINNED TUBE PIPE AND ENCLOSURE AND PREPARE PIPING FOR NEW FINNED TUBE.

MD15 DEMOLISH EXISTING DUCTWORK AND GRILLES AS REQUIRED TO ACCOMMODATE NEW LAYOUT AND CEILING. REFER TO NEW WORK PLANS.

MD16 DEMOLISH EXISTING CONTROLS PANEL.

MD17 EXISTING JCI FACILITY NAVIGATOR BMS PANEL AND CONTROLLER TO BE DEMOLISHED.

MD18 DEMOLISH EXISTING PNEUMATIC CONTROLS AIR COMPRESSOR AND FILTER DRIER COMPLETE NCLUDING ALL PIPING, TUBNG, ELECTRICAL, ETC. RETURN AIR COMPRESSOR AND FILTER DRIER TO OWNER.

MD19 EXISTING RELIEF AIR DAMPER IN EXISTING DUCTWORK TO BE DEMOLISHED.

MD20 DEMOLISH EXISTING CONTROL VALVE OR CONTROL/BALANCING DEVICE AS WELL AS EXISTING THERMOSTAT AND CONTROL WRING.

MD21 DEMOLISH EXISTING AHU THERMOSTAT COMPLETE.

MD22 ABANDON CONTROL VALVE IN PLACE (CLOSED).

MD23 REMOVE AND SALVAGE HYDRONIC UNIT HEATER FOR RELOCATION. REMOVE HYDRONIC PIPING, VALVES, AND ASSOCIATED COMPONENTS BACK TO MAIN.

MD24 DEMOLISH ABANDONED THERMOSTATS COMPLETE. PROVIDE A WALL PLATE COVER.

MD25 EXISTING INNOVENT POOL UNIT CONTROLS/CONTROLLER TO REMAIN. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS. DEMOLISH EXISTING 3-WAY CONTROL VALVE AND REPLACE IN-KIND.

MD26 TEMPORARY SWITCHOVER - THE POOL AND SPA HEAT EXCHANGER SKID WORK MAY BE PULLED AHEAD PRIOR TO SWITCHING OVER TO THE PEMB BOILER PLANT AS SHOWN IN THIS DIAGRAM. REFER TO DIAGRAM ON M102.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT 1000

SHEET NO.
M131.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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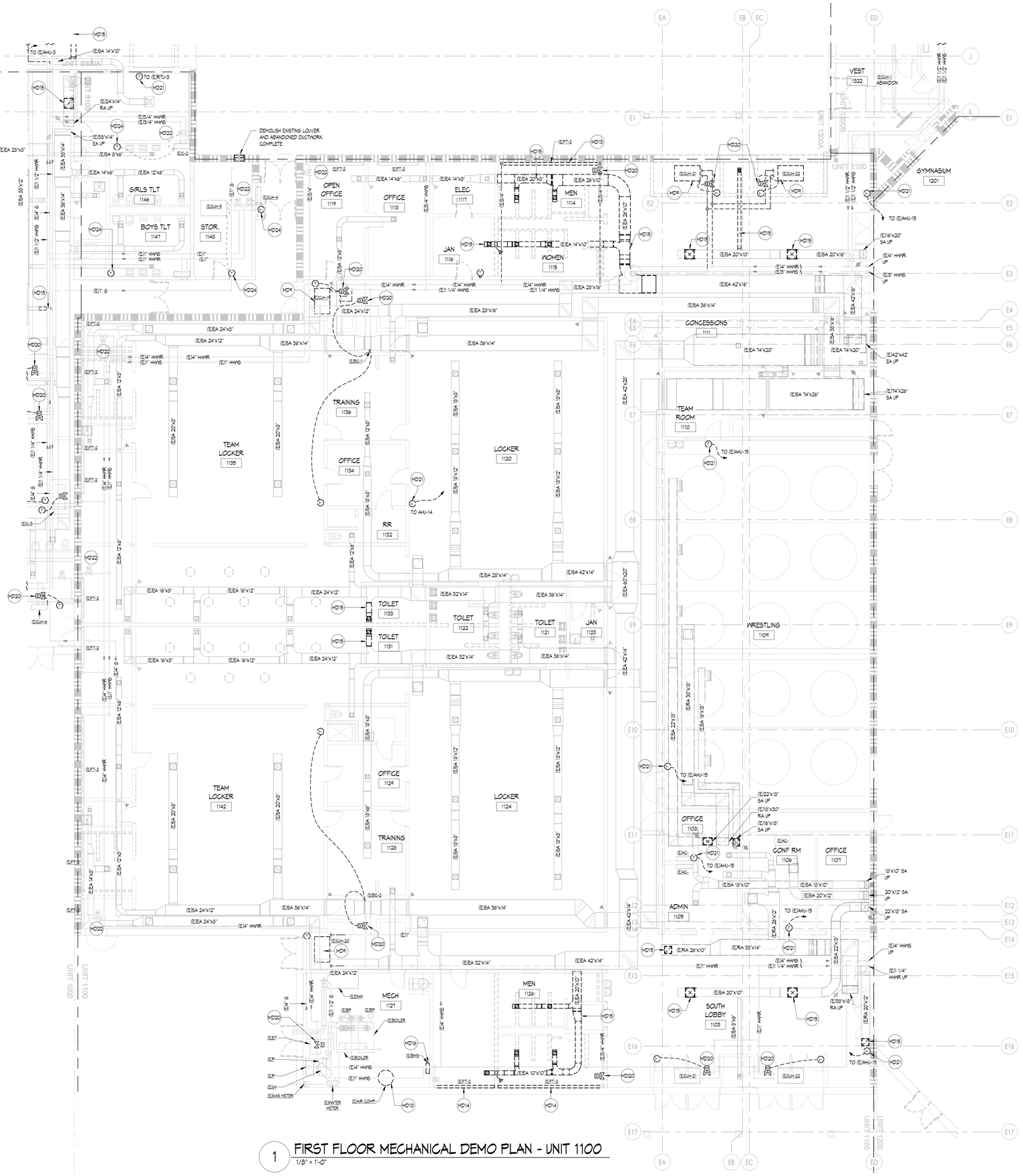

1 FIRST FLOOR MECHANICAL DEMO PLAN - UNIT 1100

1/8" = 1'-0"

MECHANICAL DEMO PLAN GENERAL NOTES

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3. VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNERS REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDINGS OPERATION.
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6. ALL ITEMS INDICATED WITH BROKEN LINES SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE DISPOSED LEGALLY. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING, RELOCATED, AND OWNER-PROVIDED EQUIPMENT.
9. ANY SYSTEM WITH PARTIAL DEMOLITION PIPING, DUCTWORK, CONTROLS, ETC. AND WHICH IS INTENDED TO REMAIN OPERATIONAL DURING OR AFTER CONSTRUCTION SHALL BE CAPPED AND SEALED PROPERLY TO MAINTAIN FUNCTIONALITY. THIS INCLUDES BUT IS NOT LIMITED TO DUCTWORK, PIPING SYSTEMS, AND PNEUMATIC TUBING.
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MECHANICAL DEMOLITION KEYNOTE

- MD1 EXISTING INDOOR AIR HANDLING UNIT WITH ASSOCIATED OUTDOOR CONDENSING UNIT TO BE DEMOLISHED COMPLETE. DEMOLISH EXISTING HEATING COIL PUMP, REFRIGERANT PIPING AND REFRIGERANT, ALL CONTROLS, WIRING, DUCTWORK AND PIPING TO EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW UNITS (AS APPLICABLE). EXISTING ROOF RAILS FOR CONDENSING UNITS AND HOUSEKEEPING PADS FOR AHU'S SHALL BE DEMOLISHED COMPLETE. REFER TO NEW WORK PLANS.
- MD2 DEMOLISH EXISTING EXHAUST FAN COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, GRILLES AND ROOF CURB. DEMOLISH DUCTWORK TO THE EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW WORK. REFER TO NEW WORK PLANS.
- MD3 DEMOLISH EXISTING EXHAUST FAN COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, DUCTWORK, GRILLES AND ROOF CURB.
- MD4 DEMOLISH EXISTING UNIT HEATER COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, PIPING, HANGERS, ETC.
- MD5 EXISTING INDOOR AIR HANDLING UNIT TO BE DEMOLISHED COMPLETE. DEMOLISH EXISTING HEATING COIL PUMP, ALL CONTROLS, WIRING, DUCTWORK AND PIPING TO EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW UNITS (AS APPLICABLE). EXISTING HOUSEKEEPING PADS TO BE REVISED TO ACCOMMODATE NEW AHU DIMENSIONS AND LAYOUT. REFER TO NEW WORK PLANS.
- MD6 EXISTING LOUVER TO BE DEMOLISHED COMPLETE.
- MD7 EXISTING RETURN AIR FAN TO BE DEMOLISHED COMPLETE INCLUDING ALL ASSOCIATED CONTROLS, WIRING, SUPPORTS AND DUCTWORK TO EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW UNIT. EXISTING HOUSEKEEPING PAD TO BE REVISED TO ACCOMMODATE NEW FAN DIMENSIONS AND LAYOUT. REFER TO NEW WORK PLANS.
- MD8 EXISTING RETURN AIR FAN TO BE DEMOLISHED COMPLETE INCLUDING ALL ASSOCIATED CONTROLS, WIRING, SUPPORTS AND DUCTWORK TO EXTENT SHOWN AND AS REQUIRED. EXISTING HOUSEKEEPING PAD TO BE DEMOLISHED.
- MD9 DEMOLISH EXISTING CABINET UNIT HEATER COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, PIPING, HANGERS, ETC.
- MD10 DEMOLISH EXISTING BOILER COMPLETE. DEMOLISH EXISTING AIR SEPARATOR, EXPANSION TANK, MAKE-UP CONNECTION, ETC, AND ALL THINGS ASSOCIATED WITH THIS BOILER PLANT AS REQUIRED TO BACKFEED FROM NEW SYSTEM. REFER TO NEW WORK PLANS.
- MD11 DEMOLISH EXISTING POOL AND SPA WATER HEATERS COMPLETE INCLUDING HOUSEKEEPING PADS, AND FLUE. EXISTING PLASTIC PIPING, INSTRUMENTATION, VALVING, ETC. TO/FROM POOL SYSTEM TO BE SALVAGED AND REUSED FOR NEW POOL HEATING SYSTEMS. REFER TO NEW WORK PLAN AND RISER DIAGRAMS.
- MD12 DEMOLISH EXISTING COMBUSTION AIR LOUVER AND DUCTWORK AND CONTROLS COMPLETE.
- MD13 DEMOLISH EXISTING FINNED TUBE COMPLETE INCLUDING CONTROLS AND PIPING TO EXTENT SHOWN.
- MD14 DEMOLISH EXISTING FINNED TUBE PIPE AND ENCLOSURE AND PREPARE PIPING FOR NEW FINNED TUBE.
- MD15 DEMOLISH EXISTING DUCTWORK AND GRILLES AS REQUIRED TO ACCOMMODATE NEW LAYOUT AND CEILING. REFER TO NEW WORK PLANS.
- MD16 DEMOLISH EXISTING CONTROLS PANEL.
- MD17 EXISTING JCI FACILITY NAVIGATOR BMS PANEL AND CONTROLLER TO BE DEMOLISHED.
- MD18 DEMOLISH EXISTING PNEUMATIC CONTROLS AIR COMPRESSOR AND FILTER DRIER COMPLETE INCLUDING ALL PIPING, TUBING, ELECTRICAL, ETC. RETURN AIR COMPRESSOR AND FILTER DRIER TO OWNER.
- MD19 EXISTING RELIEF AIR DAMPER IN EXISTING DUCTWORK TO BE DEMOLISHED.
- MD20 DEMOLISH EXISTING CONTROL VALVE OR CONTROL/BALANCING DEVICE AS WELL AS EXISTING THERMOSTAT AND CONTROL WIRING.
- MD21 DEMOLISH EXISTING AHU THERMOSTAT COMPLETE.
- MD22 ABANDON CONTROL VALVE IN PLACE (CLOSED).
- MD23 REMOVE AND SALVAGE HYDRONIC UNIT HEATER FOR RELOCATION. REMOVE HYDRONIC PIPING, VALVES, AND ASSOCIATED COMPONENTS BACK TO MAIN.
- MD24 DEMOLISH ABANDONED THERMOSTATS COMPLETE. PROVIDE A WALL PLATE COVER.
- MD25 EXISTING INNOVENT POOL UNIT CONTROLS/CONTROLLER TO REMAIN. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS. DEMOLISH EXISTING 3-WAY CONTROL VALVE AND REPLACE IN-KIND.
- MD26 TEMPORARY SWITCHOVER - THE POOL AND SPA HEAT EXCHANGER SKID WORK MAY BE PULLED AHEAD PRIOR TO SWITCHING OVER TO THE PEMB BOILER PLANT AS SHOWN IN THIS DIAGRAM. REFER TO DIAGRAM ON M122.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE

FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT 1100

SHEET NO.

M131.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

KINGSCOTT ASSOCIATES INC. PORTAGE, MICHIGAN

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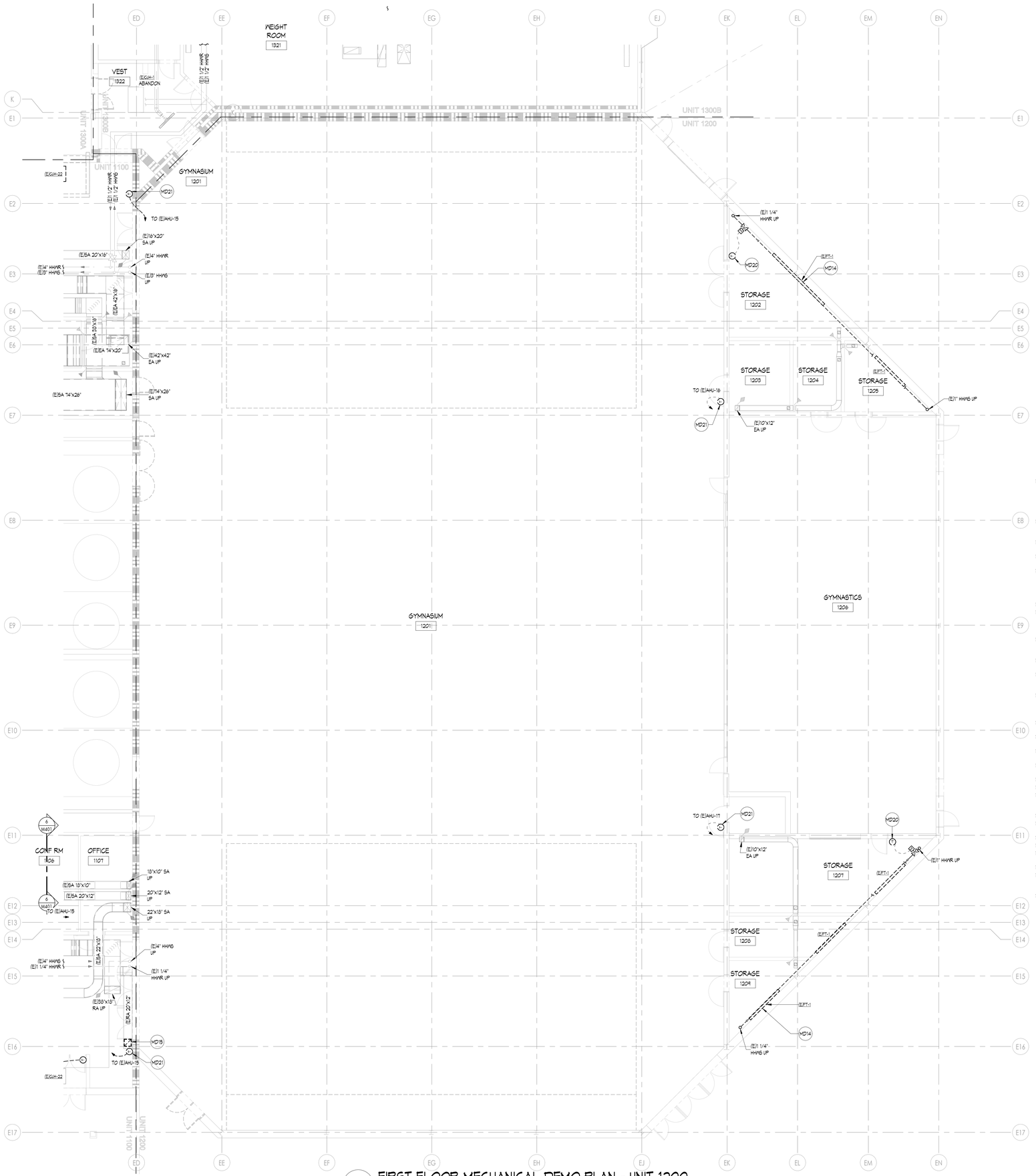

MECHANICAL DEMO PLAN GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL EXTEND OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE EXISTING FIELD CONDITIONS AND NEW WORK. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, FOOD SERVICE, ETC.)
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3. VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNERS REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
5. ALL ITEMS ON DEMOLITION PLANS SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION BY CONTRACTOR.
6. ALL ITEMS INDICATED WITH BROKEN LINES SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE DISPOSED LEGALLY. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING, RELOCATED, AND OWNER-PROVIDED EQUIPMENT.
9. ANY SYSTEM WITH PARTIAL DEMOLITION PIPING, DUCTWORK, CONTROLS, ETC. AND WHICH IS INTENDED TO REMAIN OPERATIONAL DURING OR AFTER CONSTRUCTION SHALL BE CAPPED AND SEALED PROPERLY TO MAINTAIN FUNCTIONALITY. THIS INCLUDES BUT IS NOT LIMITED TO DUCTWORK, PIPING SYSTEMS, AND PNEUMATIC TUBING.
10. EXISTING TO REMAIN DUCTWORK IN THE SCOPE AREA SHALL BE EXAMINED FOR LEAKS, HOLES, BREAKS, ETC. AND SEALED/INSULATED COMPLETELY.

MECHANICAL DEMOLITION KEYNOTE

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1 FIRST FLOOR MECHANICAL DEMO PLAN - UNIT 1200
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT 1200

SHEET NO.
M131.c

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

MECHANICAL DEMO PLAN GENERAL NOTES

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MECHANICAL DEMOLITION KEYNOTE

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MD13 DEMOLISH EXISTING FINNED TUBE COMPLETE INCLUDING CONTROLS AND PIPING TO EXTENT SHOWN.

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MD16 DEMOLISH EXISTING CONTROLS PANEL.

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MD19 EXISTING RELIEF AIR DAMPER IN EXISTING DUCTWORK TO BE DEMOLISHED.

MD20 DEMOLISH EXISTING CONTROL VALVE OR CONTROL/BALANCING DEVICE AS WELL AS EXISTING THERMOSTAT AND CONTROL WIRING.

MD21 DEMOLISH EXISTING AHU THERMOSTAT COMPLETE.

MD22 ABANDON CONTROL VALVE IN PLACE (CLOSED)

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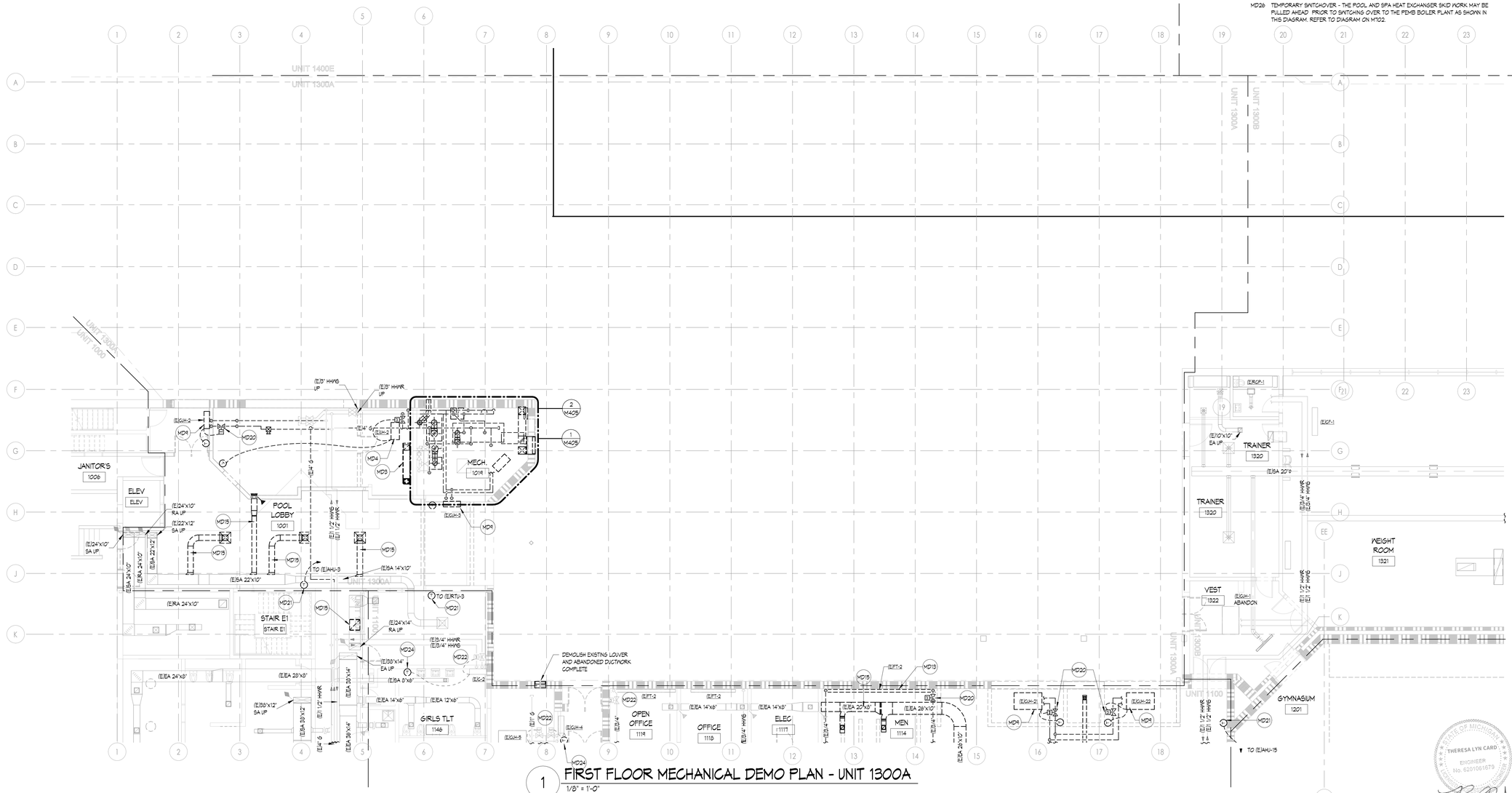

1 FIRST FLOOR MECHANICAL DEMO PLAN - UNIT 1300A
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL DEMOLITION PLAN - UNIT 1300A

SHEET NO.
M131.d

THERESA LYN CARD ENGINEER No. 6201061679 STATE OF MICHIGAN
07/30/2026

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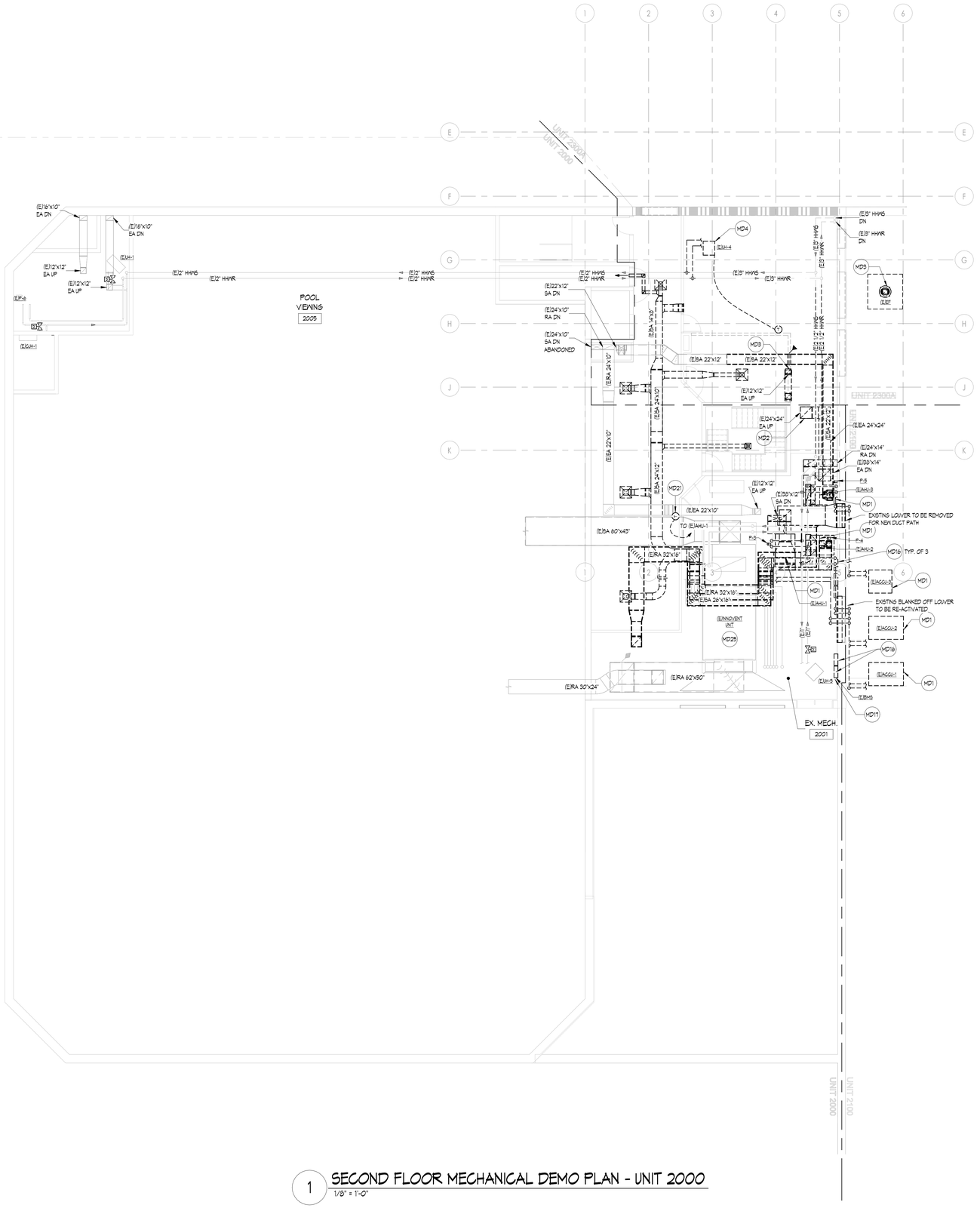

1 SECOND FLOOR MECHANICAL DEMO PLAN - UNIT 2000

1/8" = 1'-0"

MECHANICAL DEMO PLAN GENERAL NOTES

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MD2 DEMOLISH EXISTING EXHAUST FAN COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, GRILLES AND ROOF CURB. DEMOLISH DUCTWORK TO THE EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW WORK. REFER TO NEW WORK PLANS.

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MD4 DEMOLISH EXISTING UNIT HEATER COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, PIPING, HANGERS, ETC.

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MD6 EXISTING LOUVER TO BE DEMOLISHED COMPLETE.

MD7 EXISTING RETURN AIR FAN TO BE DEMOLISHED COMPLETE INCLUDING ALL ASSOCIATED CONTROLS, WIRING, SUPPORTS AND DUCTWORK TO EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW UNIT. EXISTING HOUSEKEEPING PAD TO BE REVISED TO ACCOMMODATE NEW FAN DIMENSIONS AND LAYOUT. REFER TO NEW WORK PLANS.

MD8 EXISTING RETURN AIR FAN TO BE DEMOLISHED COMPLETE INCLUDING ALL ASSOCIATED CONTROLS, WIRING, SUPPORTS AND DUCTWORK TO EXTENT SHOWN AND AS REQUIRED. EXISTING HOUSEKEEPING PAD TO BE DEMOLISHED.

MD9 DEMOLISH EXISTING CABINET UNIT HEATER COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, PIPING, HANGERS, ETC.

MD10 DEMOLISH EXISTING BOILER COMPLETE. DEMOLISH EXISTING AIR SEPARATOR, EXPANSION TANK, MAKE-UP CONNECTION, ETC, AND ALL THINGS ASSOCIATED WITH THIS BOILER PLANT AS REQUIRED TO BACKFEED FROM NEW SYSTEM. REFER TO NEW WORK PLANS.

MD11 DEMOLISH EXISTING POOL AND SPA WATER HEATERS COMPLETE INCLUDING HOUSEKEEPING PADS, AND FLUE. EXISTING PLASTIC PIPING, INSTRUMENTATION, VALVING, ETC. TO/FROM POOL SYSTEM TO BE SALVAGED AND REUSED FOR NEW POOL HEATING SYSTEMS. REFER TO NEW WORK PLAN AND RISER DIAGRAMS.

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MD13 DEMOLISH EXISTING FINNED TUBE COMPLETE INCLUDING CONTROLS AND PIPING TO EXTENT SHOWN.

MD14 DEMOLISH EXISTING FINNED TUBE PIPE AND ENCLOSURE AND PREPARE PIPING FOR NEW FINNED TUBE.

MD15 DEMOLISH EXISTING DUCTWORK AND GRILLES AS REQUIRED TO ACCOMMODATE NEW LAYOUT AND CEILING. REFER TO NEW WORK PLANS.

MD16 DEMOLISH EXISTING CONTROLS PANEL.

MD17 EXISTING JCI FACILITY NAVIGATOR BMS PANEL AND CONTROLLER TO BE DEMOLISHED.

MD18 DEMOLISH EXISTING PNEUMATIC CONTROLS AIR COMPRESSOR AND FILTER DRIER COMPLETE INCLUDING ALL PIPING, TUBING, ELECTRICAL, ETC. RETURN AIR COMPRESSOR AND FILTER DRIER TO OWNER.

MD19 EXISTING RELIEF AIR DAMPER IN EXISTING DUCTWORK TO BE DEMOLISHED.

MD20 DEMOLISH EXISTING CONTROL VALVE OR CONTROL/BALANCING DEVICE AS WELL AS EXISTING THERMOSTAT AND CONTROL WIRING.

MD21 DEMOLISH EXISTING AHU THERMOSTAT COMPLETE.

MD22 ABANDON CONTROL VALVE IN PLACE (CLOSED).

MD23 REMOVE AND SALVAGE HYDRONIC UNIT HEATER FOR RELOCATION. REMOVE HYDRONIC PIPING, VALVES, AND ASSOCIATED COMPONENTS BACK TO MAIN.

MD24 DEMOLISH ABANDONED THERMOSTATS COMPLETE. PROVIDE A WALL PLATE COVER.

MD25 EXISTING INNOVENT POOL UNIT CONTROLS/CONTROLLER TO REMAIN. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS. DEMOLISH EXISTING 3-WAY CONTROL VALVE AND REPLACE IN-KIND.

MD26 TEMPORARY SWITCHOVER - THE POOL AND SPA HEAT EXCHANGER SKID WORK MAY BE PULLED AHEAD PRIOR TO SWITCHING OVER TO THE PEMB BOILER PLANT AS SHOWN IN THIS DIAGRAM. REFER TO DIAGRAM ON M102.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE

SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT 2000

SHEET NO.

M132.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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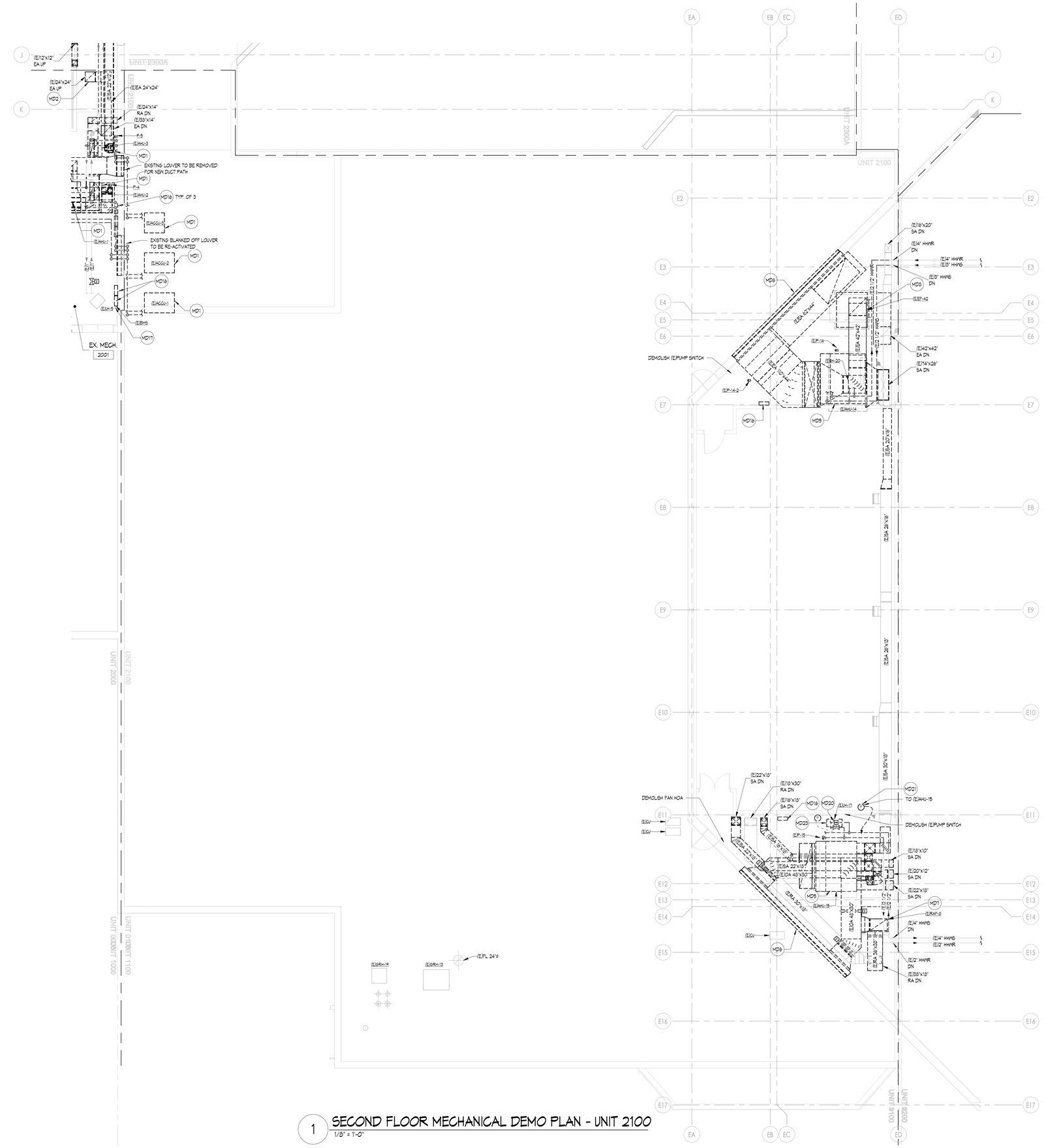

1 SECOND FLOOR MECHANICAL DEMO PLAN - UNIT 2100
1/8" = 1'-0"

MECHANICAL DEMO PLAN GENERAL NOTES

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3. VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNERS REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDINGS OPERATION.
5. ALL ITEMS ON DEMOLITION PLANS SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION BY CONTRACTOR.
6. ALL ITEMS INDICATED WITH BROKEN LINES SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT 2100

SHEET NO.
M132.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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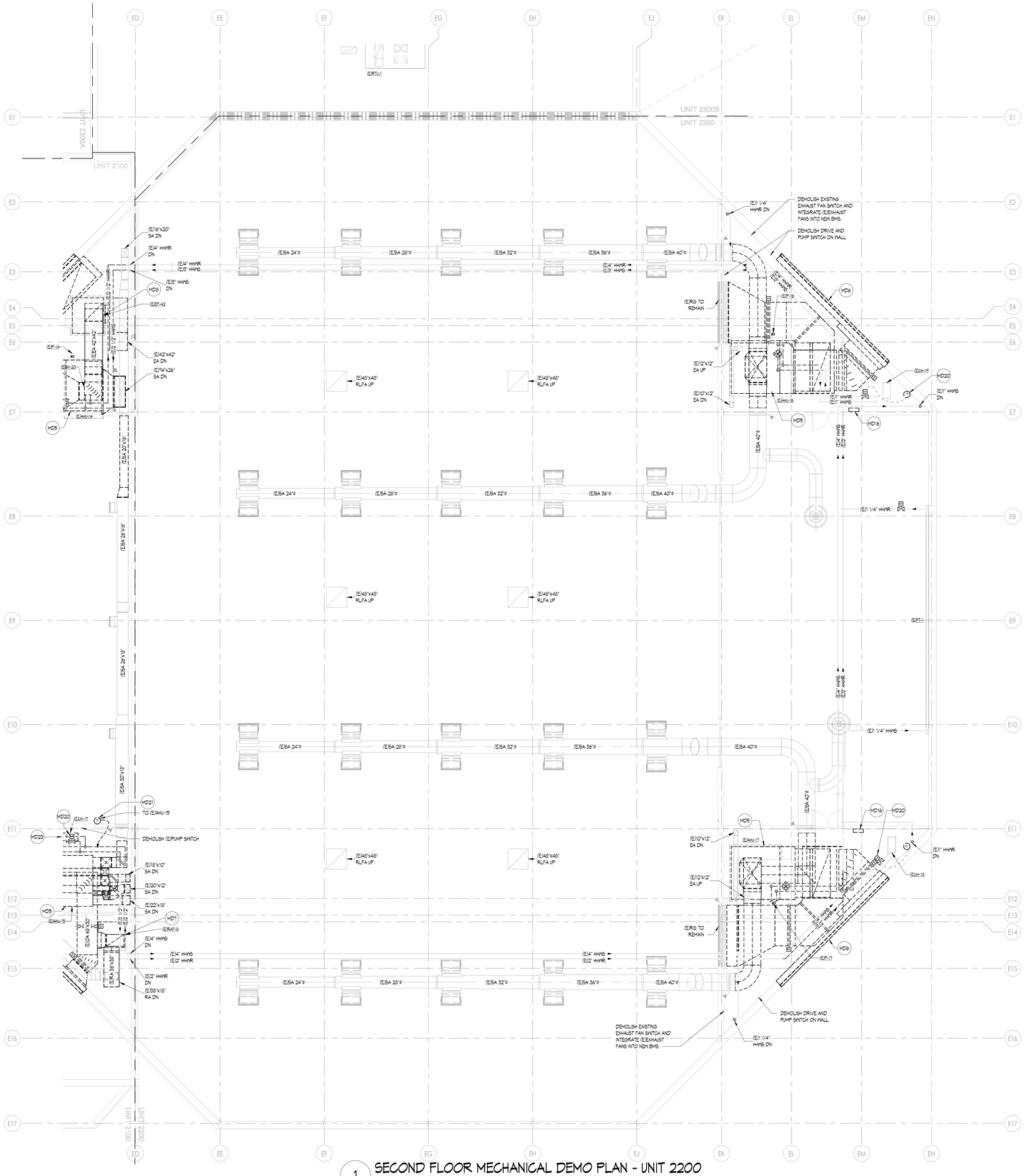

1 SECOND FLOOR MECHANICAL DEMO PLAN - UNIT 2200
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT 2200

SHEET NO.
M132.c

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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MD5 EXISTING INDOOR AIR HANDLING UNIT TO BE DEMOLISHED COMPLETE. DEMOLISH EXISTING HEATING COIL PUMP, ALL CONTROLS, WIRING, DUCTWORK AND PIPING TO EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW UNITS (AS APPLICABLE). EXISTING HOUSEKEEPING PADS TO BE REVISED TO ACCOMMODATE NEW AHU DIMENSIONS AND LAYOUT. REFER TO NEW WORK PLANS.

MD6 EXISTING LOUVER TO BE DEMOLISHED COMPLETE.

MD7 EXISTING RETURN AIR FAN TO BE DEMOLISHED COMPLETE INCLUDING ALL ASSOCIATED CONTROLS, WIRING, SUPPORTS AND DUCTWORK TO EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW UNIT. EXISTING HOUSEKEEPING PAD TO BE REVISED TO ACCOMMODATE NEW FAN DIMENSIONS AND LAYOUT. REFER TO NEW WORK PLANS.

MD8 EXISTING RETURN AIR FAN TO BE DEMOLISHED COMPLETE INCLUDING ALL ASSOCIATED CONTROLS, WIRING, SUPPORTS AND DUCTWORK TO EXTENT SHOWN AND AS REQUIRED. EXISTING HOUSEKEEPING PAD TO BE DEMOLISHED.

MD9 DEMOLISH EXISTING CABINET UNIT HEATER COMPLETE ALONG WITH ASSOCIATED CONTROLS, WIRING, PIPING, HANGERS, ETC.

MD10 DEMOLISH EXISTING BOILER COMPLETE. DEMOLISH EXISTING AIR SEPARATOR, EXPANSION TANK, MAKE-UP CONNECTION, ETC. AND ALL THINGS ASSOCIATED WITH THIS BOILER PLANT AS REQUIRED TO BACKFEED FROM NEW SYSTEM. REFER TO NEW WORK PLANS.

MD11 DEMOLISH EXISTING POOL AND SPA WATER HEATERS COMPLETE INCLUDING HOUSEKEEPING PADS, AND FLUE. EXISTING PLASTIC PIPING, INSTRUMENTATION, VALVING, ETC. TO/FROM POOL SYSTEM TO BE SALVAGED AND RE-USED FOR NEW POOL HEATING SYSTEMS. REFER TO NEW WORK PLAN AND RISER DIAGRAMS.

MD12 DEMOLISH EXISTING COMBUSTION AIR LOUVER AND DUCTWORK AND CONTROLS COMPLETE.

MD13 DEMOLISH EXISTING FINNED TUBE COMPLETE INCLUDING CONTROLS AND PIPING TO EXTENT SHOWN.

MD14 DEMOLISH EXISTING FINNED TUBE PIPE AND ENCLOSURE AND PREPARE PIPING FOR NEW FINNED TUBE.

MD15 DEMOLISH EXISTING DUCTWORK AND GRILLES AS REQUIRED TO ACCOMMODATE NEW LAYOUT AND CEILING. REFER TO NEW WORK PLANS.

MD16 DEMOLISH EXISTING CONTROLS PANEL.

MD17 EXISTING JCI FACILITY NAVIGATOR BMS PANEL AND CONTROLLER TO BE DEMOLISHED.

MD18 DEMOLISH EXISTING PNEUMATIC CONTROLS AIR COMPRESSOR AND FILTER DRIER COMPLETE INCLUDING ALL PIPING, TUBING, ELECTRICAL, ETC. RETURN AIR COMPRESSOR AND FILTER DRIER TO OWNER.

MD19 EXISTING RELIEF AIR DAMPER IN EXISTING DUCTWORK TO BE DEMOLISHED.

MD20 DEMOLISH EXISTING CONTROL VALVE OR CONTROL/BALANCING DEVICE AS WELL AS EXISTING THERMOSTAT AND CONTROL WIRING.

MD21 DEMOLISH EXISTING AHU THERMOSTAT COMPLETE.

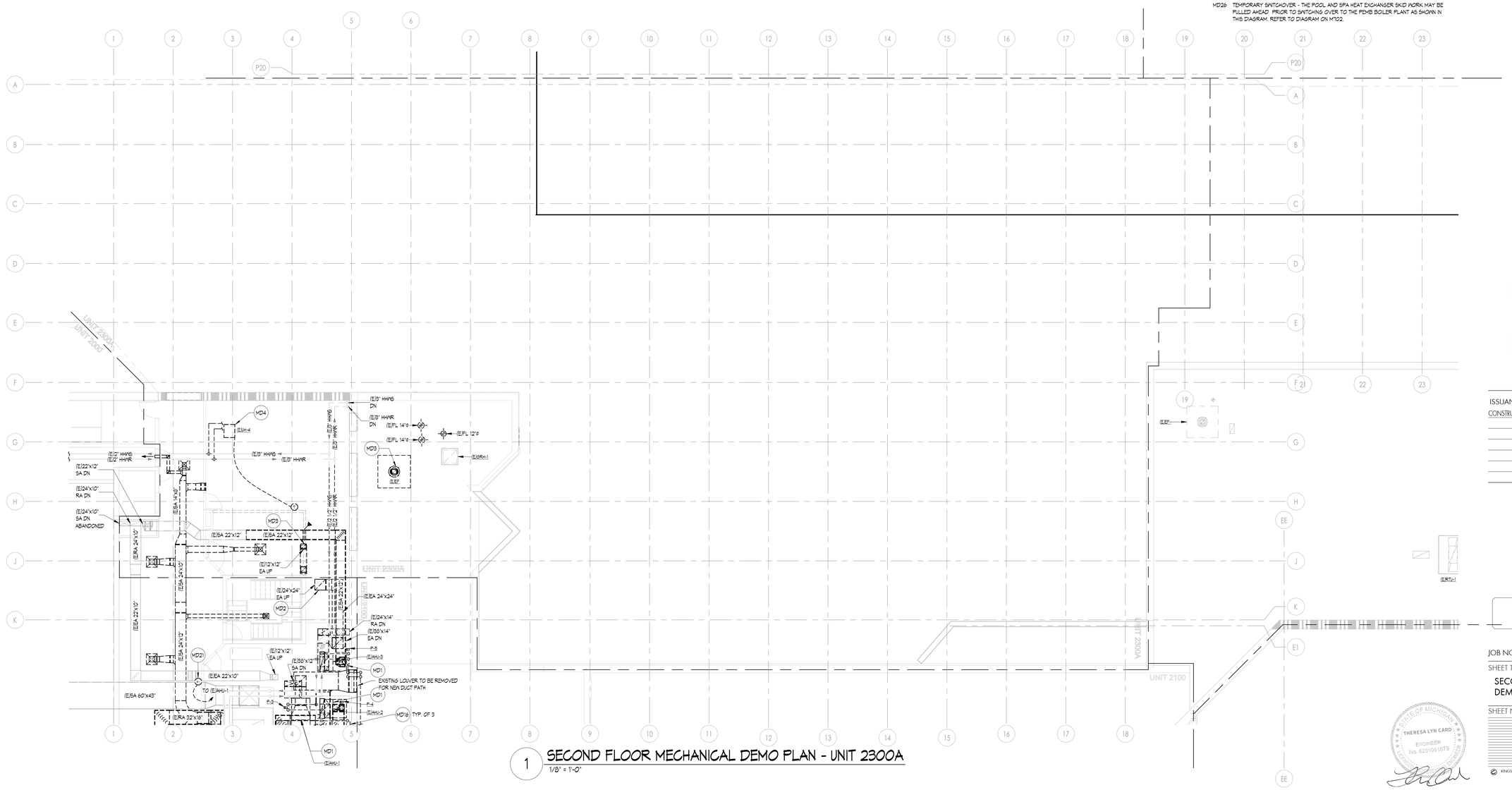
MD22 ABANDON CONTROL VALVE IN PLACE (CLOSED).

MD23 REMOVE AND SALVAGE HYDRONIC UNIT HEATER FOR RELOCATION. REMOVE HYDRONIC PIPING, VALVES, AND ASSOCIATED COMPONENTS BACK TO MAIN.

MD24 DEMOLISH ABANDONED THERMOSTATS COMPLETE. PROVIDE A WALL PLATE COVER.

MD25 EXISTING INNOVENT POOL UNIT CONTROLS/CONTROLLER TO REMAIN. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS. DEMOLISH EXISTING 3-WAY CONTROL VALVE AND REPLACE IN-KIND.

MD26 TEMPORARY SWITCHOVER - THE POOL AND SPA HEAT EXCHANGER SKID WORK MAY BE PULLED AHEAD PRIOR TO SWITCHING OVER TO THE PEMB BOILER PLANT AS SHOWN IN THIS DIAGRAM. REFER TO DIAGRAM ON M702.



1 SECOND FLOOR MECHANICAL DEMO PLAN - UNIT 2300A
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL DEMOLITION PLAN - UNIT 2300A

SHEET NO.
M132.d

THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

KINGSCOTT ASSOCIATES INC. PORTAGE, MICHIGAN

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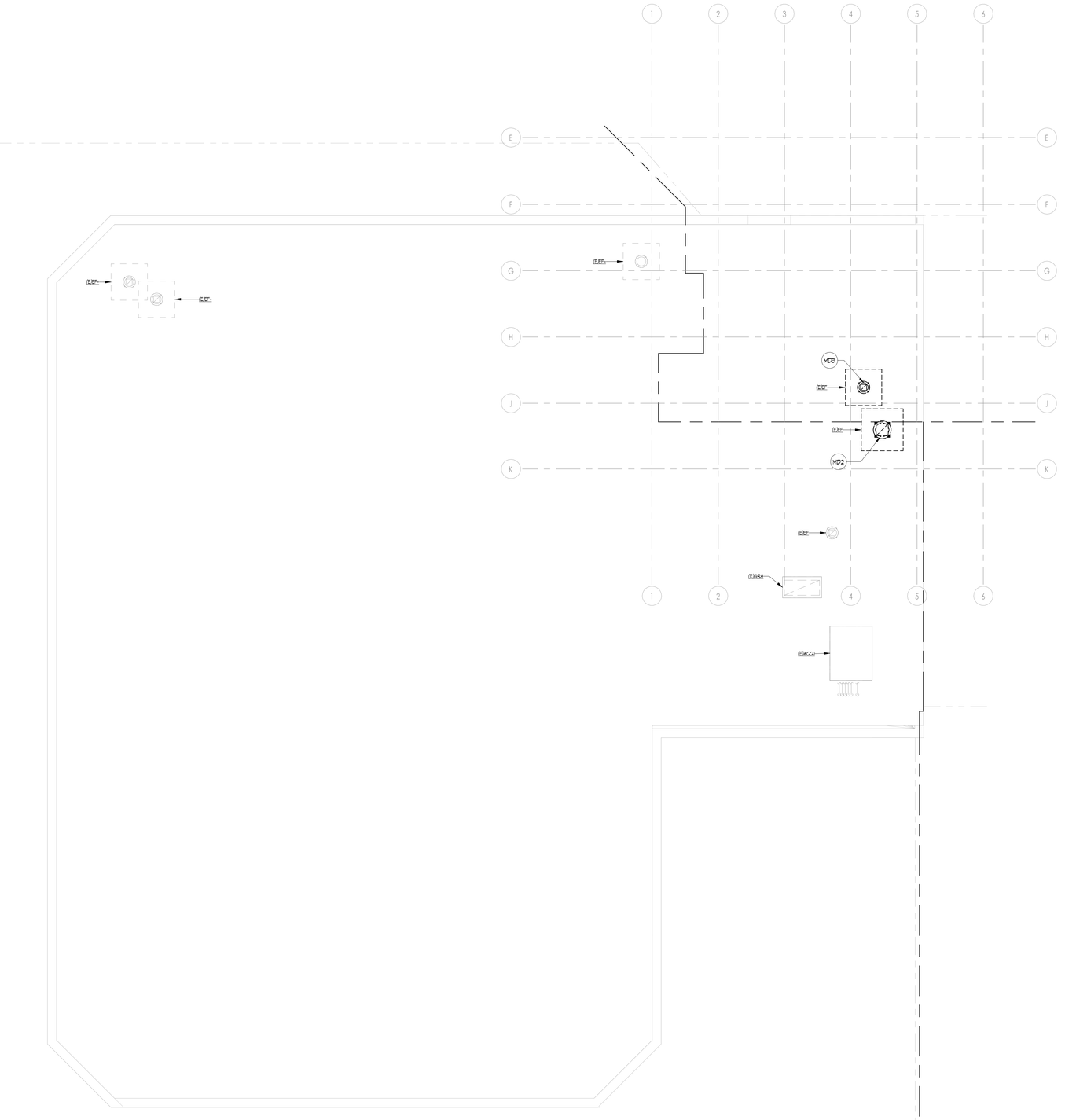

MECHANICAL DEMO PLAN GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL EXTEND OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE EXISTING FIELD CONDITIONS AND NEW WORK. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, FOOD SERVICE, ETC.)
2. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
3. VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
5. ALL ITEMS ON DEMOLITION PLANS SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION BY CONTRACTOR.
6. ALL ITEMS INDICATED WITH BROKEN LINES SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE DISPOSED LEGALLY. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING, RELOCATED, AND OWNER-PROVIDED EQUIPMENT.
9. ANY SYSTEM WITH PARTIAL DEMOLITION PIPING, DUCTWORK, CONTROLS, ETC. AND WHICH IS INTENDED TO REMAIN OPERATIONAL DURING OR AFTER CONSTRUCTION SHALL BE CAPPED AND SEALED PROPERLY TO MAINTAIN FUNCTIONALITY. THIS INCLUDES BUT IS NOT LIMITED TO DUCTWORK, PIPING SYSTEMS, AND PNEUMATIC TUBING.
10. EXISTING TO REMAIN DUCTWORK IN THE SCOPE AREA SHALL BE EXAMINED FOR LEAKS, HOLES, BREAKS, ETC. AND SEALED/INSULATED COMPLETELY.

MECHANICAL DEMOLITION KEYNOTE

MD1 EXISTING INDOOR AIR HANDLING UNIT WITH ASSOCIATED OUTDOOR CONDENSING UNIT TO BE DEMOLISHED COMPLETE. DEMOLISH EXISTING HEATING COIL PUMP, REFRIGERANT PIPING AND REFRIGERANT, ALL CONTROLS, WIRING, DUCTWORK AND PIPING TO EXTENT SHOWN AND AS REQUIRED TO ACCOMMODATE NEW UNITS (AS APPLICABLE). EXISTING ROOF RAILS FOR CONDENSING UNITS AND HOUSEKEEPING PADS FOR AHU'S SHALL BE DEMOLISHED COMPLETE. REFER TO NEW WORK PLANS.

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1 MECHANICAL ROOF DEMO PLAN - UNIT 9000
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE

MECHANICAL ROOF
DEMOLITION PLAN - UNIT 9000

SHEET NO.

M139.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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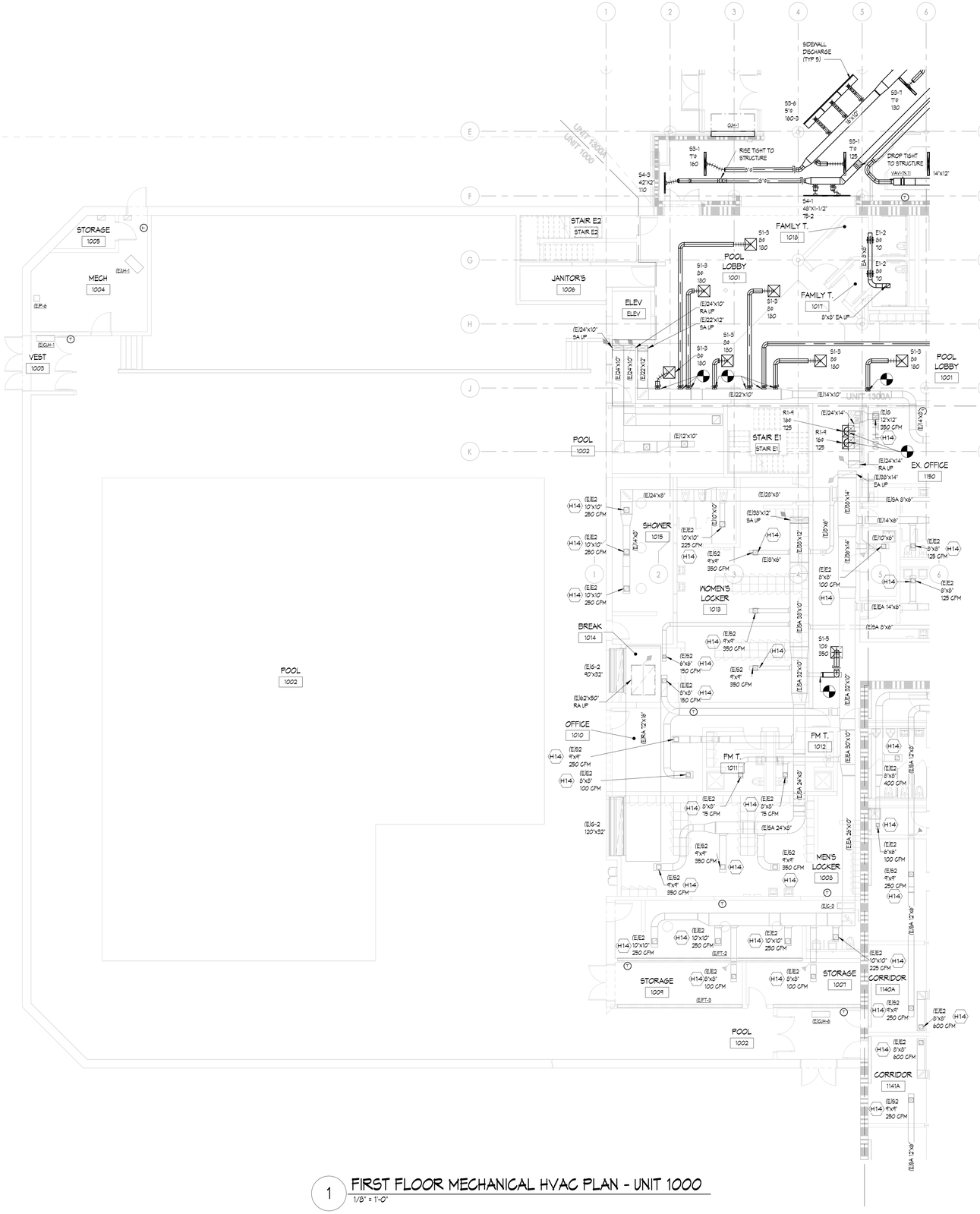

1 FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1000
1/8" = 1'-0"

MECHANICAL HVAC GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. VERIFY ALL EQUIPMENT CONNECTIONS WITH THE MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF WORK. PROVIDE TRANSITIONS AND MAKE FINAL CONNECTIONS TO EQUIPMENT, UNLESS OTHERWISE INDICATED.
5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
14. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
15. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
16. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
17. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE (WHERE NO DUCT SIZE IS INDICATED ON PLAN.
18. DUCTWORK PENETRATIONS OF ALL FIRE RATED AND SMOKE RESISTIVE CONSTRUCTION SHALL BE COORDINATED WITH LIFE SAFETY PLANS. PROVIDE CODE REQUIRED DAMPERS WHERE APPLICABLE. PENETRATION ASSEMBLY TO BE U.L. LISTED.
19. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN OR EXHAUST SYSTEMS, UNLESS OTHERWISE NOTED. FLEXIBLE DUCTWORK MAY BE USED IN SUPPLY SYSTEMS PROVIDED THE LENGTH IS LIMITED TO A TOTAL LENGTH OF FIVE (5) FEET.
20. ALL EXISTING DUCTWORK BEING REUSED IN NEW WORK SCOPE SHALL BE CLEANED BACK TO AIR-HANDLING UNIT.
21. REPLACE ALL RTU FILTERS AT CLOSEOUT, AFTER CLEANING AND CONSTRUCTION HAS CONCLUDED.
22. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED. EQUIPMENT ABOVE CEILINGS SHALL BE INSTALLED NO MORE THAN 3'-0" ABOVE CEILING.
23. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN PEMB WALLS.

HVAC KEYNOTES

H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK COLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.

H2 CLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS; VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.

H3 DOAS UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS). GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO CIVIL PLANS). UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.

H4 FLOOR GRILLE IN 2-HR RATED FLOOR, PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENHECK DFD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.

H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

H6 TERMINATE NEW EXHAUST INTAKE 16" AFF. PROVIDE WITH INSECT SCREEN.

H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.

H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H9 30"X12" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H10 30"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H11 8"X8" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H12 16"X16" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.

H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.

H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MEN'S 2304) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR/VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.

H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)

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Howell Community Center

Howell Public Schools
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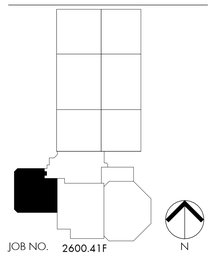
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE
FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1000

SHEET NO.
M211.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

KINGSCOTT ASSOCIATES INC. PORTAGE, MICHIGAN

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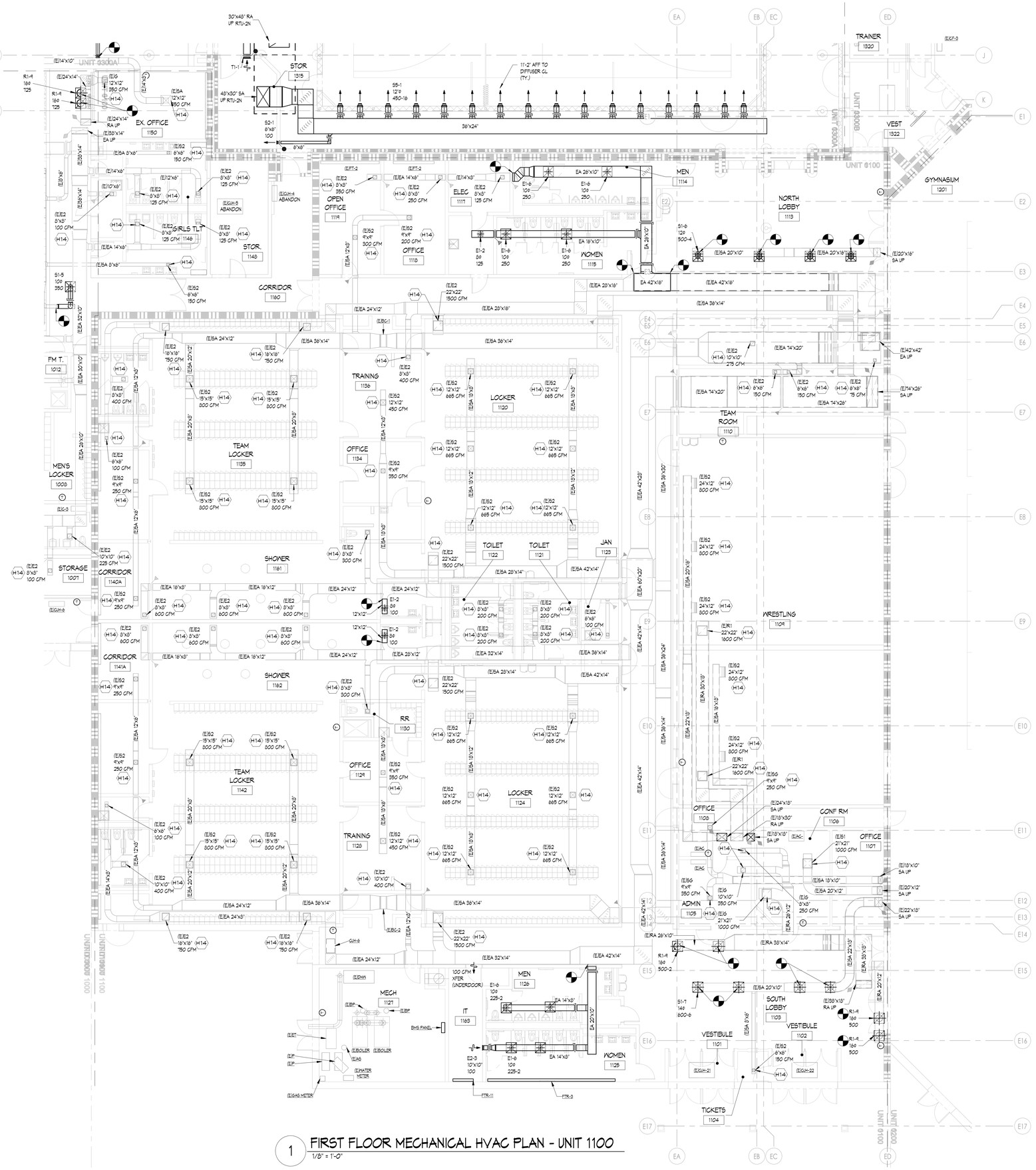

1 FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1100
1/8" = 1'-0"

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7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
14. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
15. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
16. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
17. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE (WHERE NO DUCT SIZE IS INDICATED ON PLAN.
18. DUCTWORK PENETRATIONS OF ALL FIRE RATED AND SMOKE RESISTIVE CONSTRUCTION SHALL BE COORDINATED WITH LIFE SAFETY PLANS. PROVIDE CODE REQUIRED DAMPERS (WHERE APPLICABLE. PENETRATION ASSEMBLY TO BE U.L. LISTED
19. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN OR EXHAUST SYSTEMS, UNLESS OTHERWISE NOTED. FLEXIBLE DUCTWORK MAY BE USED IN SUPPLY SYSTEMS PROVIDED THE LENGTH IS LIMITED TO A TOTAL LENGTH OF FIVE (5) FEET.
20. ALL EXISTING DUCTWORK BEING REUSED IN NEW WORK SCOPE SHALL BE CLEANED BACK TO AIR-HANDLING UNIT.
21. REPLACE ALL RTU FILTERS AT CLOSEOUT, AFTER CLEANING AND CONSTRUCTION HAS CONCLUDED.
22. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED. EQUIPMENT ABOVE CEILINGS SHALL BE INSTALLED NO MORE THAN 9'-0" ABOVE CEILING.
23. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN PEMB WALLS.

HVAC KEYNOTES

- H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK. COLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.
- H2 GLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS, VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.
- H3 DOAS UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS). GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO CIVIL PLANS). UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.
- H4 FLOOR GRILLE IN 2-HR RATED FLOOR. PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENWICK DTD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.
- H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.
- H6 TERMINATE NEW EXHAUST INTAKE 16" AFF. PROVIDE WITH INSECT SCREEN.
- H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.
- H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
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- H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.
- H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MENS 2504) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR/VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.
- H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1100

SHEET NO.
M211.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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MECHANICAL HVAC GENERAL NOTES

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3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
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5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
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H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

H6 TERMINATE NEW EXHAUST INTAKE 18" AFF. PROVIDE WITH INSECT SCREEN.

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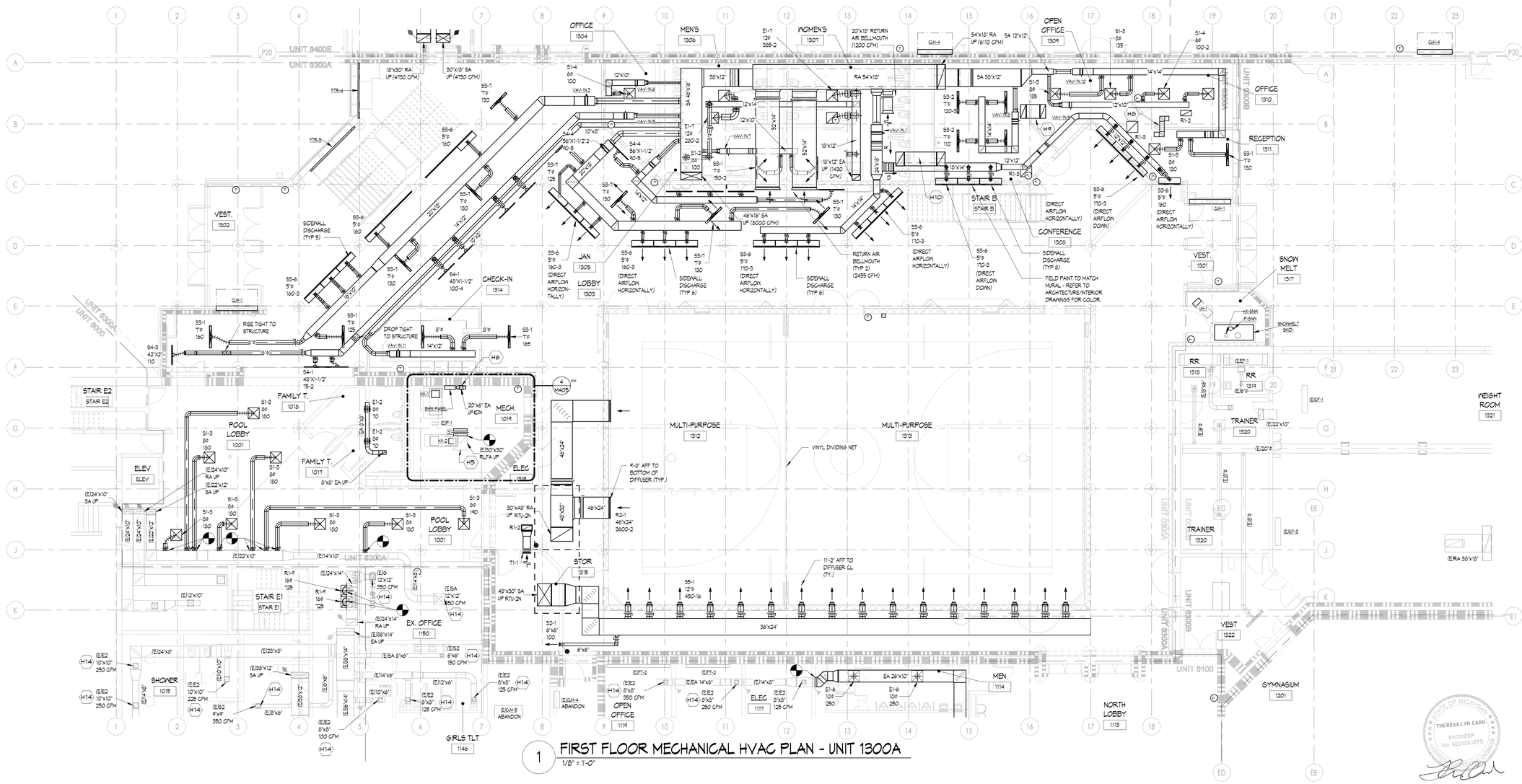

1 FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1300A
1/8" = 1'-0"

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Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1300A

SHEET NO.
M211.d

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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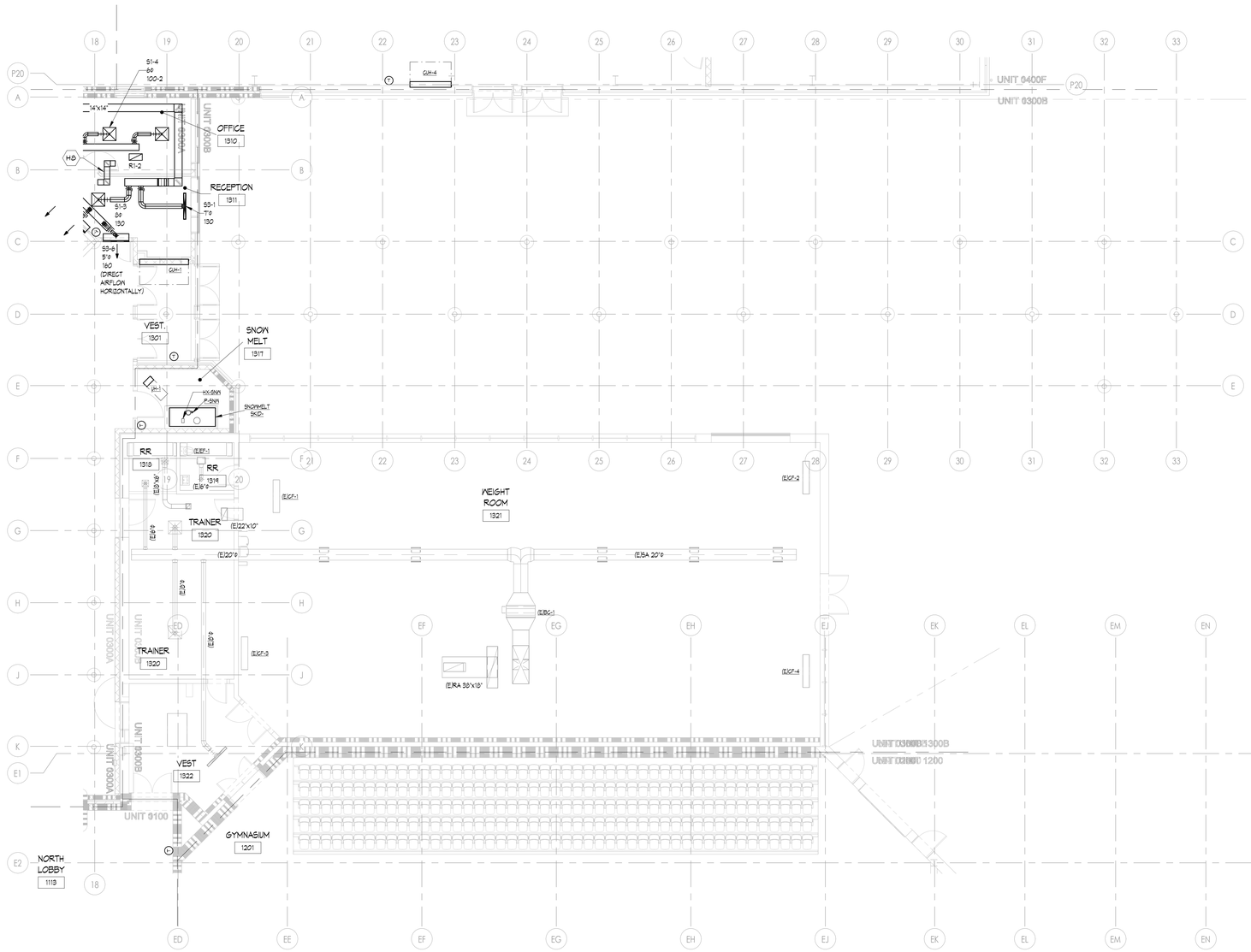

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1/8" = 1'-0"

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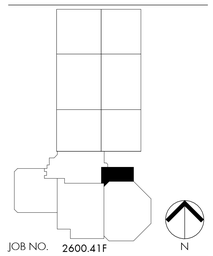
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE

FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1300B

SHEET NO.

M211.e

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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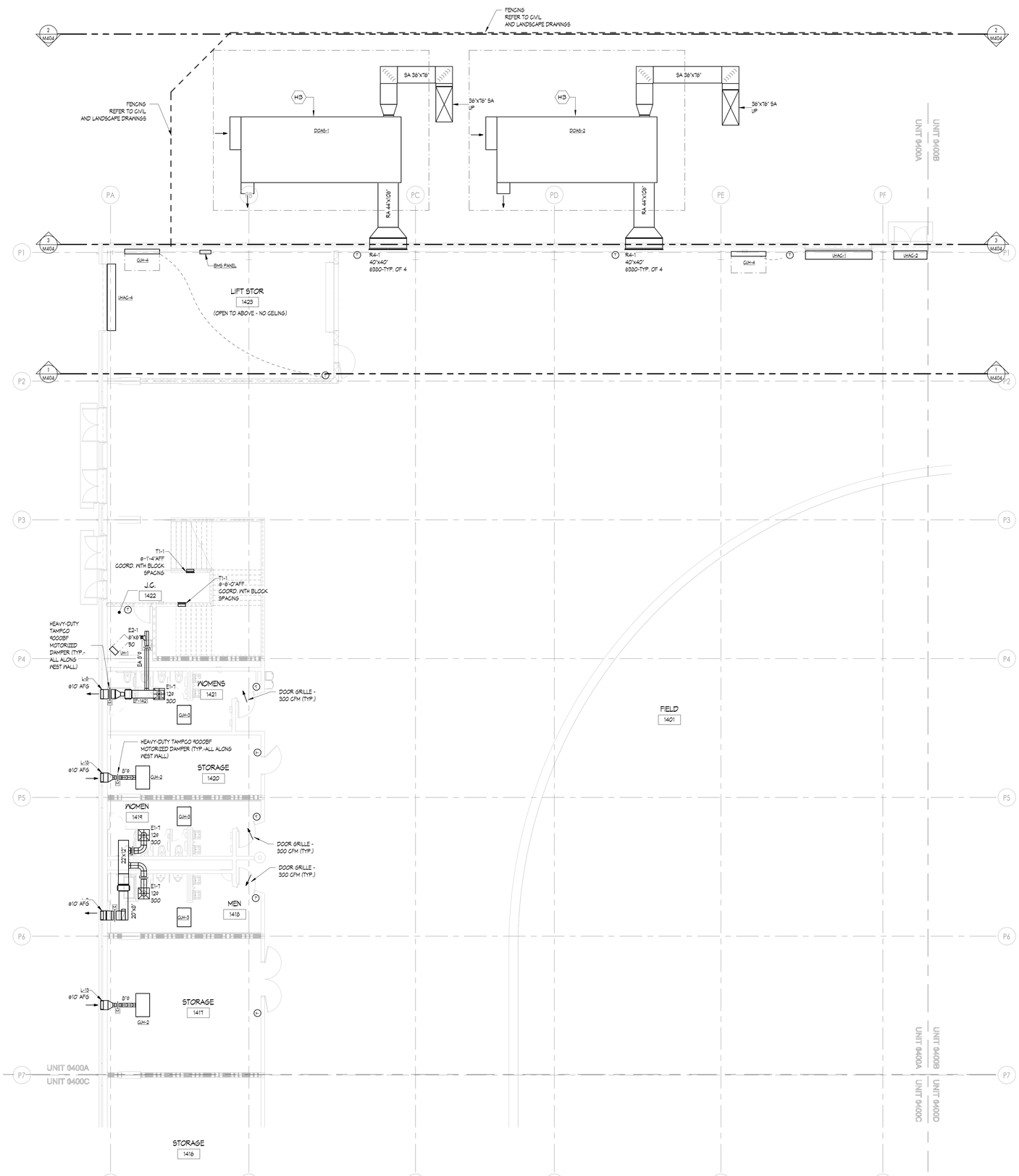

1 FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1400A

1/8" = 1'-0"

MECHANICAL HVAC GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
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3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. VERIFY ALL EQUIPMENT CONNECTIONS WITH THE MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF WORK. PROVIDE TRANSITIONS AND MAKE FINAL CONNECTIONS TO EQUIPMENT, UNLESS OTHERWISE INDICATED.
5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
14. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
15. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
16. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
17. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE (WHERE NO DUCT SIZE IS INDICATED ON PLAN.
18. DUCTWORK PENETRATIONS OF ALL FIRE RATED AND SMOKE RESISTIVE CONSTRUCTION SHALL BE COORDINATED WITH LIFE SAFETY PLANS. PROVIDE CODE REQUIRED DAMPERS WHERE APPLICABLE. PENETRATION ASSEMBLY TO BE U.L. LISTED.
19. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN OR EXHAUST SYSTEMS, UNLESS OTHERWISE NOTED. FLEXIBLE DUCTWORK MAY BE USED IN SUPPLY SYSTEMS PROVIDED THE LENGTH IS LIMITED TO A TOTAL LENGTH OF FIVE (5) FEET.
20. ALL EXISTING DUCTWORK BEING REUSED IN NEW WORK SCOPE SHALL BE CLEANED BACK TO AIR-HANDLING UNIT.
21. REPLACE ALL RTU FILTERS AT CLOSEOUT, AFTER CLEANING AND CONSTRUCTION HAS CONCLUDED.
22. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED. EQUIPMENT ABOVE CEILINGS SHALL BE INSTALLED NO MORE THAN 3'-0" ABOVE CEILING.
23. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN PEMB WALLS.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER, NOTIFY ARCHITECT AND OH IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

MPFP PRECAST SYSTEM GENERAL NOTES

1. PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF PIPING, DUCTWORK, ETC. CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC.
2. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

HVAC KEYNOTES

- H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK COLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.
- H2 CLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS; VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.
- H3 DGM5 UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS.) GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO CIVIL PLANS). UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.
- H4 FLOOR GRILLE IN 2-HR RATED FLOOR. PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENHECK DFD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.
- H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.
- H6 TERMINATE NEW EXHAUST INTAKE 16" AFF. PROVIDE WITH INSECT SCREEN.
- H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.
- H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
- H9 30"X12" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
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- H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.
- H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.
- H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MEN'S 2304) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR/VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.
- H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

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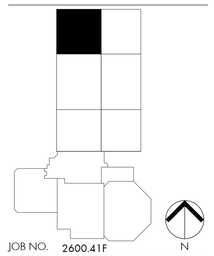

JOB NO. 2600.41F

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SHEET TITLE

FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1400A

SHEET NO.

M211.f



07/30/2026

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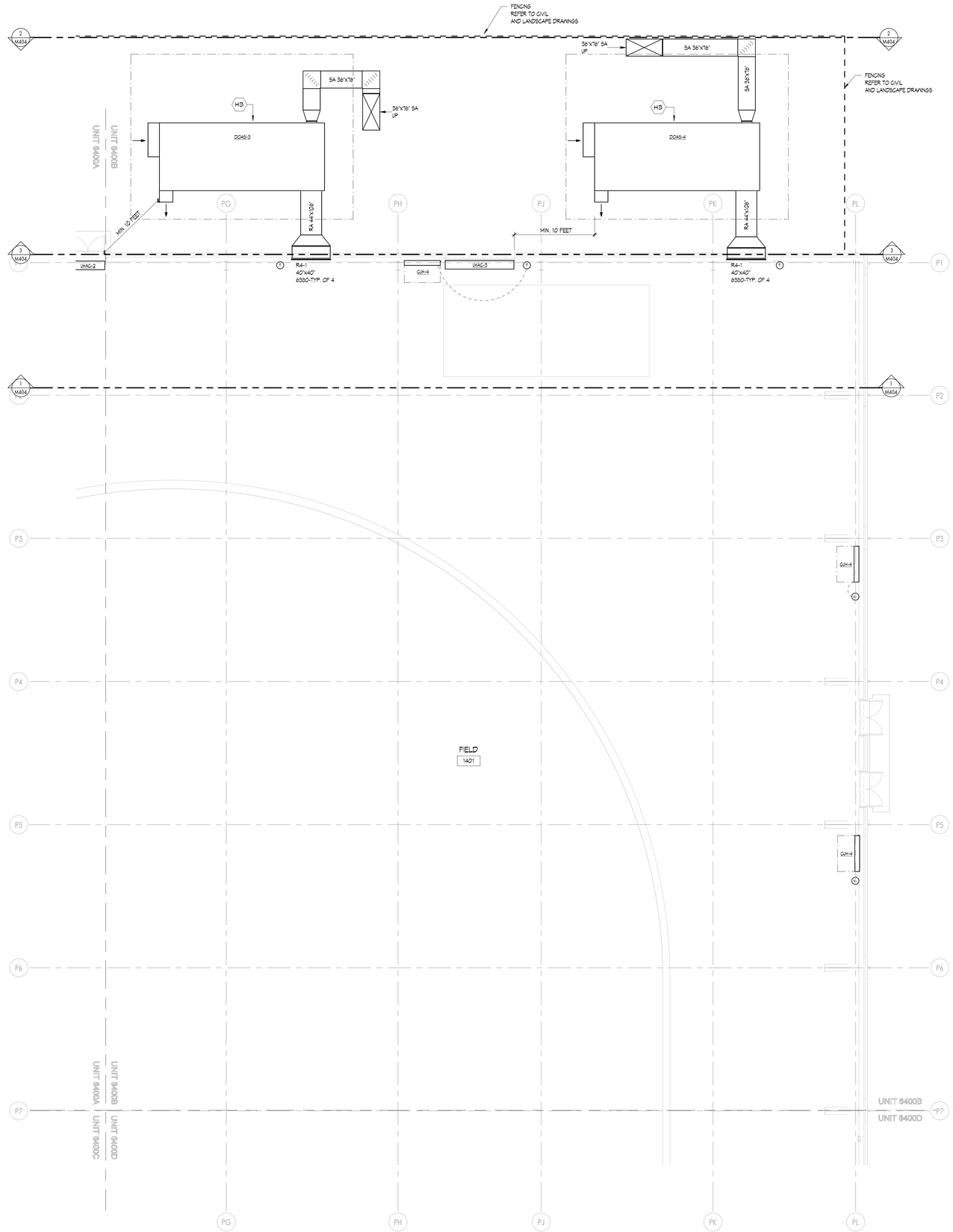

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H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

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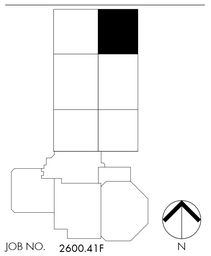

JOB NO. 2600.41F

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SHEET TITLE

FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1400B

SHEET NO.

M211.g

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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1/8" = 1'-0"

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6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE, AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
14. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
15. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
16. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
17. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE WHERE NO DUCT SIZE IS INDICATED ON PLAN.
18. DUCTWORK PENETRATIONS OF ALL FIRE RATED AND SMOKE RESISTIVE CONSTRUCTION SHALL BE COORDINATED WITH LIFE SAFETY PLANS. PROVIDE CODE REQUIRED DAMPERS WHERE APPLICABLE. PENETRATION ASSEMBLY TO BE U.L. LISTED.
19. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN OR EXHAUST SYSTEMS, UNLESS OTHERWISE NOTED. FLEXIBLE DUCTWORK MAY BE USED IN SUPPLY SYSTEMS PROVIDED THE LENGTH IS LIMITED TO A TOTAL LENGTH OF FIVE (5) FEET.
20. ALL EXISTING DUCTWORK BEING REUSED IN NEW WORK SCOPE SHALL BE CLEANED BACK TO AIR-HANDLING UNIT.
21. REPLACE ALL RTU FILTERS AT CLOSEOUT, AFTER CLEANING AND CONSTRUCTION HAS CONCLUDED.
22. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED. EQUIPMENT ABOVE CEILINGS SHALL BE INSTALLED NO MORE THAN 3'-0" ABOVE CEILING.
23. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN PEMB WALLS.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND CM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

MPFP PRECAST SYSTEM GENERAL NOTES

1. PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF PIPING, DUCTWORK, ETC. CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC.
2. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

HVAC KEYNOTES

H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK, COLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.
H2 CLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS; VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.
H3 DOAS UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS). GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO CIVIL PLANS). UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.
H4 FLOOR GRILLE IN 2-HR RATED FLOOR. PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENWICK DTD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.
H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.
H6 TERMINATE NEW EXHAUST INTAKE 16" AFF. PROVIDE WITH INSECT SCREEN.
H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.
H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
H9 30"X12" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
H10 30"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
H11 8"X6" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
H12 18"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.
H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.
H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MENS 230A) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR/VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.
H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)

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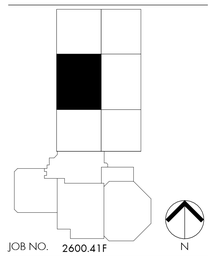
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

N

SHEET TITLE

FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1400C

SHEET NO.

M211.h

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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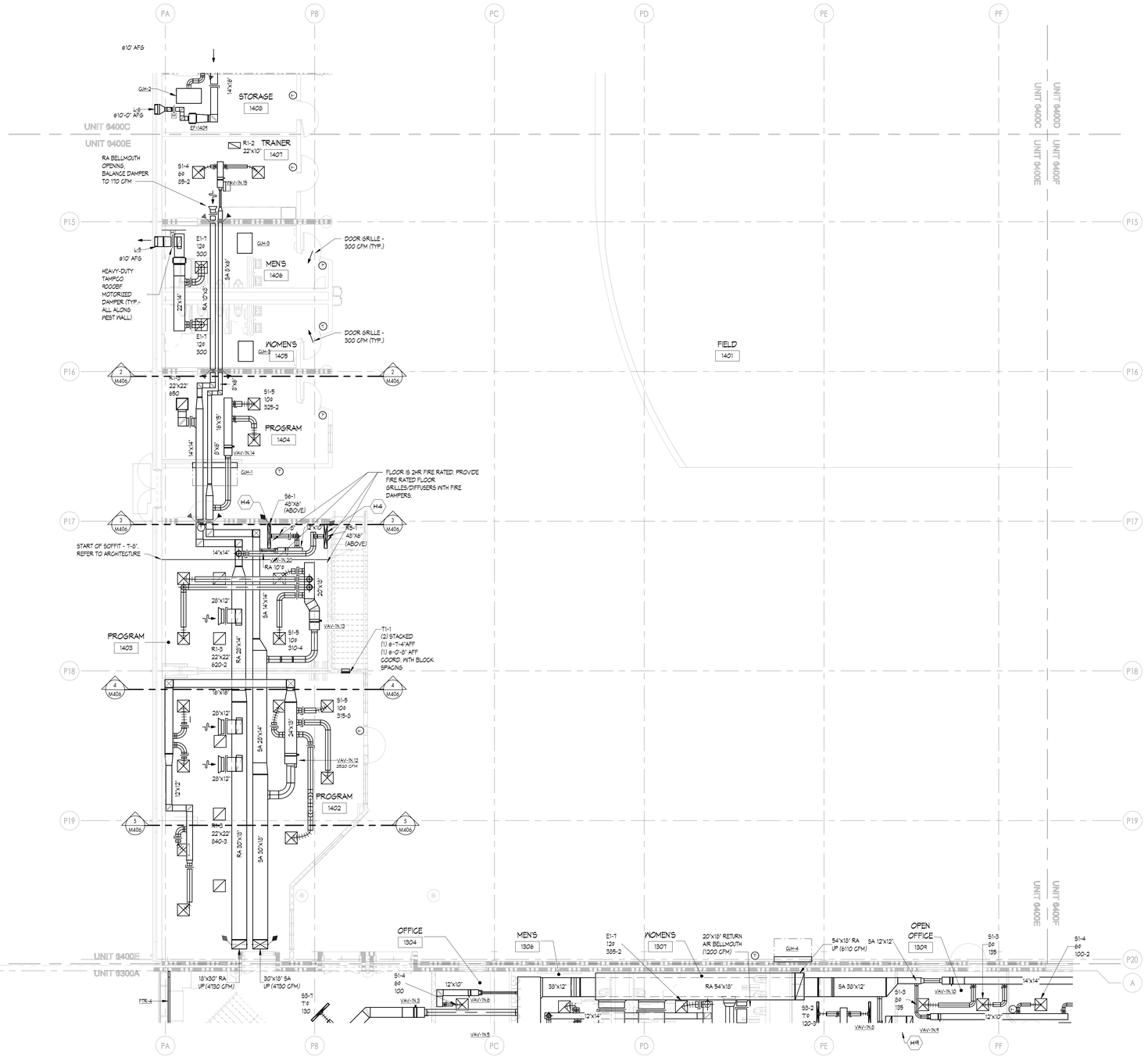

1 FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1400E

1/8" = 1'-0"

MECHANICAL HVAC GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. VERIFY ALL EQUIPMENT CONNECTIONS WITH THE MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF WORK. PROVIDE TRANSITIONS AND MAKE FINAL CONNECTIONS TO EQUIPMENT, UNLESS OTHERWISE INDICATED.
5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
14. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
15. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
16. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
17. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE (WHERE NO DUCT SIZE IS INDICATED ON PLAN.
18. DUCTWORK PENETRATIONS OF ALL FIRE RATED AND SMOKE RESISTIVE CONSTRUCTION SHALL BE COORDINATED WITH LIFE SAFETY PLANS. PROVIDE CODE REQUIRED DAMPERS (WHERE APPLICABLE. PENETRATION ASSEMBLY TO BE U.L. LISTED
19. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN OR EXHAUST SYSTEMS, UNLESS OTHERWISE NOTED. FLEXIBLE DUCTWORK MAY BE USED IN SUPPLY SYSTEMS PROVIDED THE LENGTH IS LIMITED TO A TOTAL LENGTH OF FIVE (5) FEET.
20. ALL EXISTING DUCTWORK BEING REUSED IN NEW WORK SCOPE SHALL BE CLEANED BACK TO AIR-HANDLING UNIT.
21. REPLACE ALL RTU FILTERS AT CLOSEOUT, AFTER CLEANING AND CONSTRUCTION HAS CONCLUDED.
22. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED. EQUIPMENT ABOVE CEILINGS SHALL BE INSTALLED NO MORE THAN 3'-0" ABOVE CEILING.
23. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN PEMB WALLS.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND OH IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

MPFP PRECAST SYSTEM GENERAL NOTES

1. PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF PIPING, DUCTWORK, ETC. CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC.
2. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

HVAC KEYNOTES

H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK GOLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.

H2 CLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS; VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.

H3 DOAS UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS.) GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO CIVIL PLANS). UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.

H4 FLOOR GRILLE IN 2-HR RATED FLOOR. PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENHECK DFD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.

H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

H6 TERMINATE NEW EXHAUST INTAKE 18" AFF. PROVIDE WITH INSECT SCREEN.

H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.

H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H9 30"X12" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H10 30"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H11 8"X8" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H12 18"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.

H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.

H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MEN'S 2304) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR-VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.

H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE

FIRST FLOOR MECHANICAL HVAC PLAN - UNIT 1400E

SHEET NO.

M211.k

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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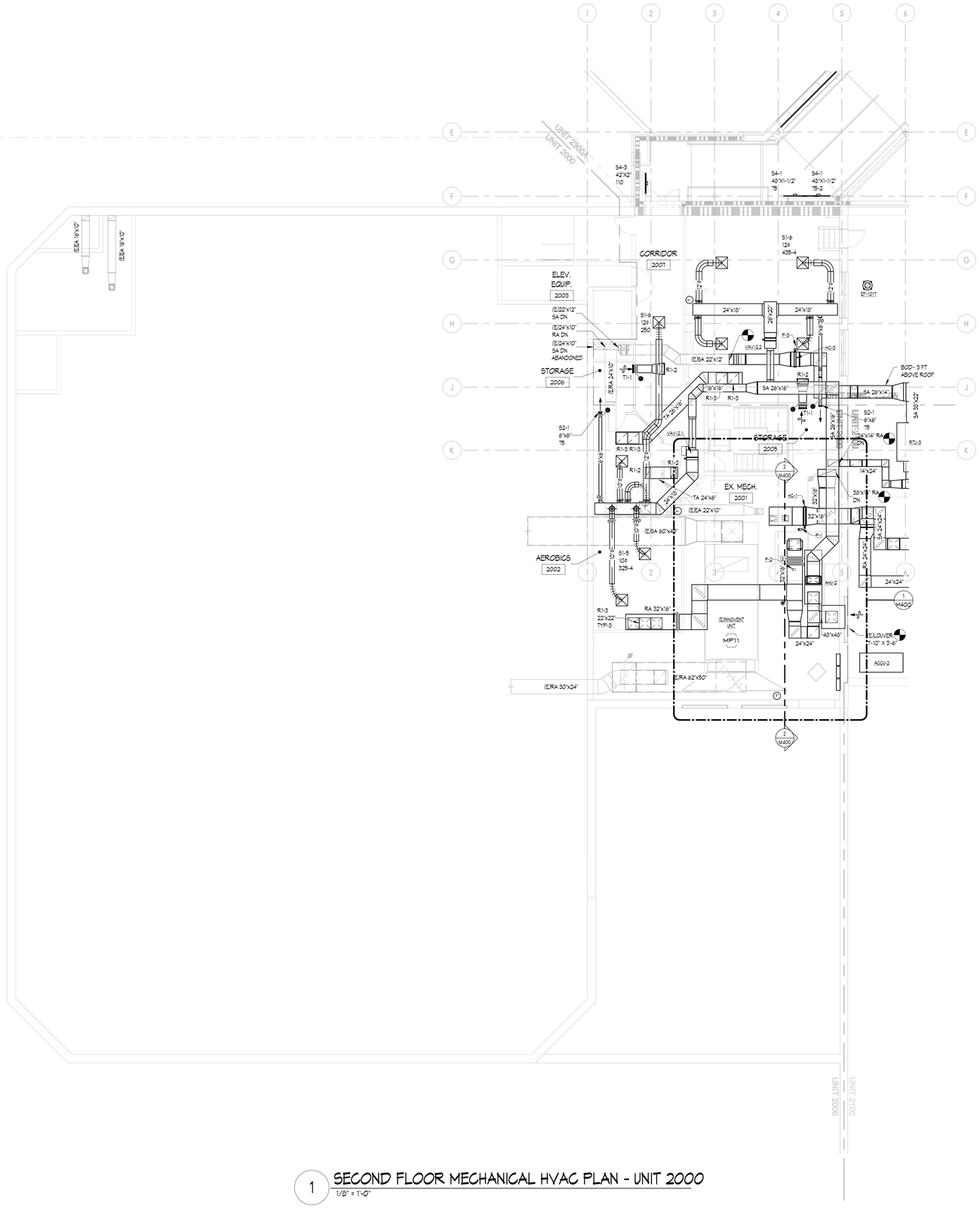

1 SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2000
1/8" = 1'-0"

MECHANICAL HVAC GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. VERIFY ALL EQUIPMENT CONNECTIONS WITH THE MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF WORK. PROVIDE TRANSITIONS AND MAKE FINAL CONNECTIONS TO EQUIPMENT, UNLESS OTHERWISE INDICATED.
5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
14. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
15. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
16. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
17. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE (WHERE NO DUCT SIZE IS INDICATED ON PLAN.
18. DUCTWORK PENETRATIONS OF ALL FIRE RATED AND SMOKE RESISTIVE CONSTRUCTION SHALL BE COORDINATED WITH LIFE SAFETY PLANS. PROVIDE CODE REQUIRED DAMPERS WHERE APPLICABLE. PENETRATION ASSEMBLY TO BE U.L. LISTED.
19. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN OR EXHAUST SYSTEMS, UNLESS OTHERWISE NOTED. FLEXIBLE DUCTWORK MAY BE USED IN SUPPLY SYSTEMS PROVIDED THE LENGTH IS LIMITED TO A TOTAL LENGTH OF FIVE (5) FEET.
20. ALL EXISTING DUCTWORK BEING REUSED IN NEW WORK SCOPE SHALL BE CLEANED BACK TO AIR-HANDLING UNIT.
21. REPLACE ALL RTU FILTERS AT CLOSEOUT, AFTER CLEANING AND CONSTRUCTION HAS CONCLUDED.
22. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED. EQUIPMENT ABOVE CEILINGS SHALL BE INSTALLED NO MORE THAN 9'-0" ABOVE CEILING.
23. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN PEMB WALLS.

HVAC KEYNOTES

H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK COLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.

H2 CLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS, VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.

H3 DOAS UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS). GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO CIVIL PLANS). UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.

H4 FLOOR GRILLE IN 2-HR RATED FLOOR. PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENHECK DTD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.

H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

H6 TERMINATE NEW EXHAUST INTAKE 16" AFF. PROVIDE WITH INSECT SCREEN.

H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.

H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H9 30"X12" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H10 30"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H11 8"X8" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H12 16"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.

H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.

H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MEN'S 2304) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR/VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.

H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2000

SHEET NO.
M212.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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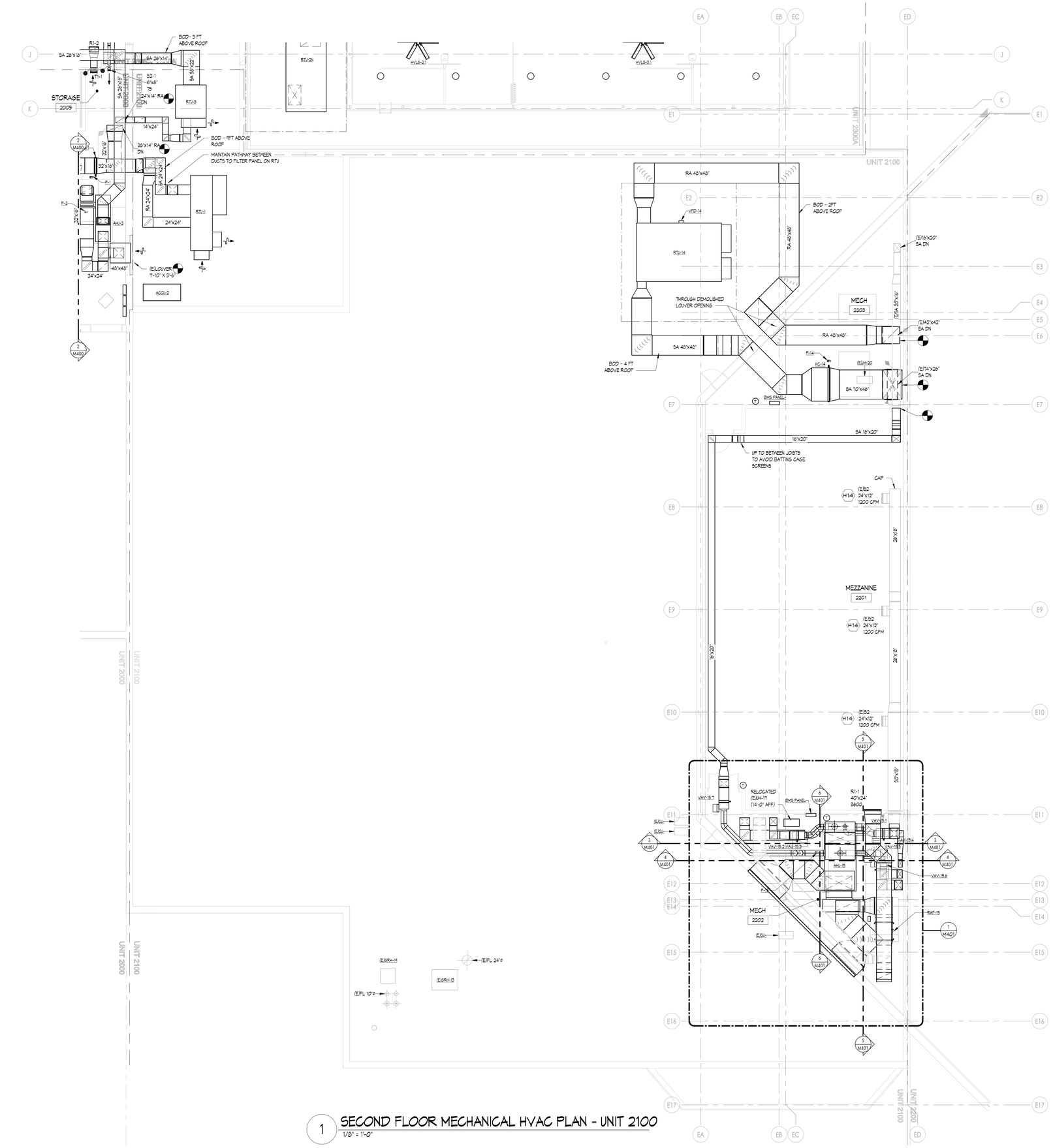

MECHANICAL HVAC GENERAL NOTES

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2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. VERIFY ALL EQUIPMENT CONNECTIONS WITH THE MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF WORK. PROVIDE TRANSITIONS AND MAKE FINAL CONNECTIONS TO EQUIPMENT, UNLESS OTHERWISE INDICATED.
5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
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1 SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2100
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2100

SHEET NO.
M212.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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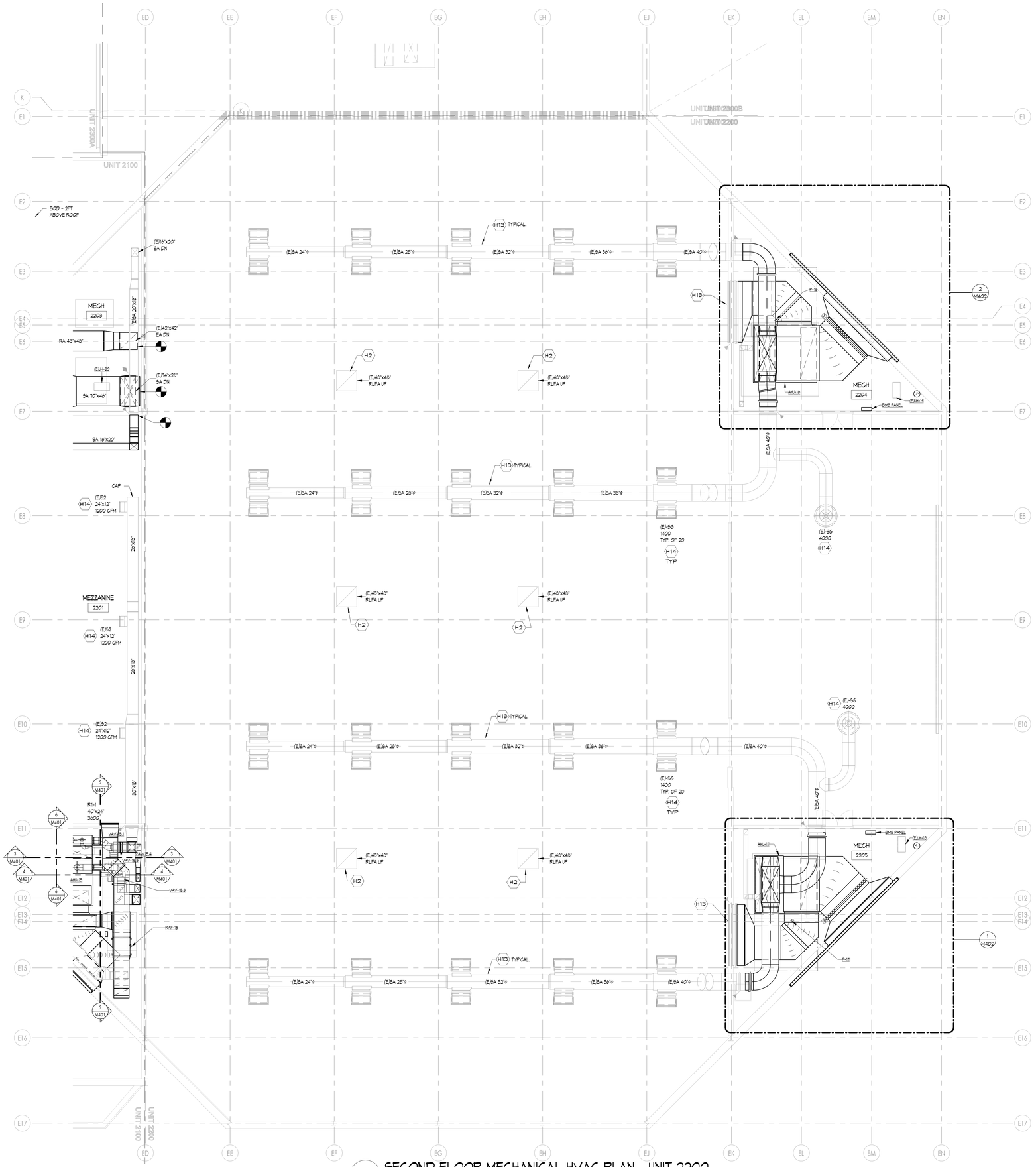

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1 SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2200
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2200

SHEET NO.
M212.c

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

H6 TERMINATE NEW EXHAUST INTAKE 16" AFF. PROVIDE WITH INSECT SCREEN.

H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.

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H10 30"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H11 8"X8" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H12 16"X16" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.

H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.

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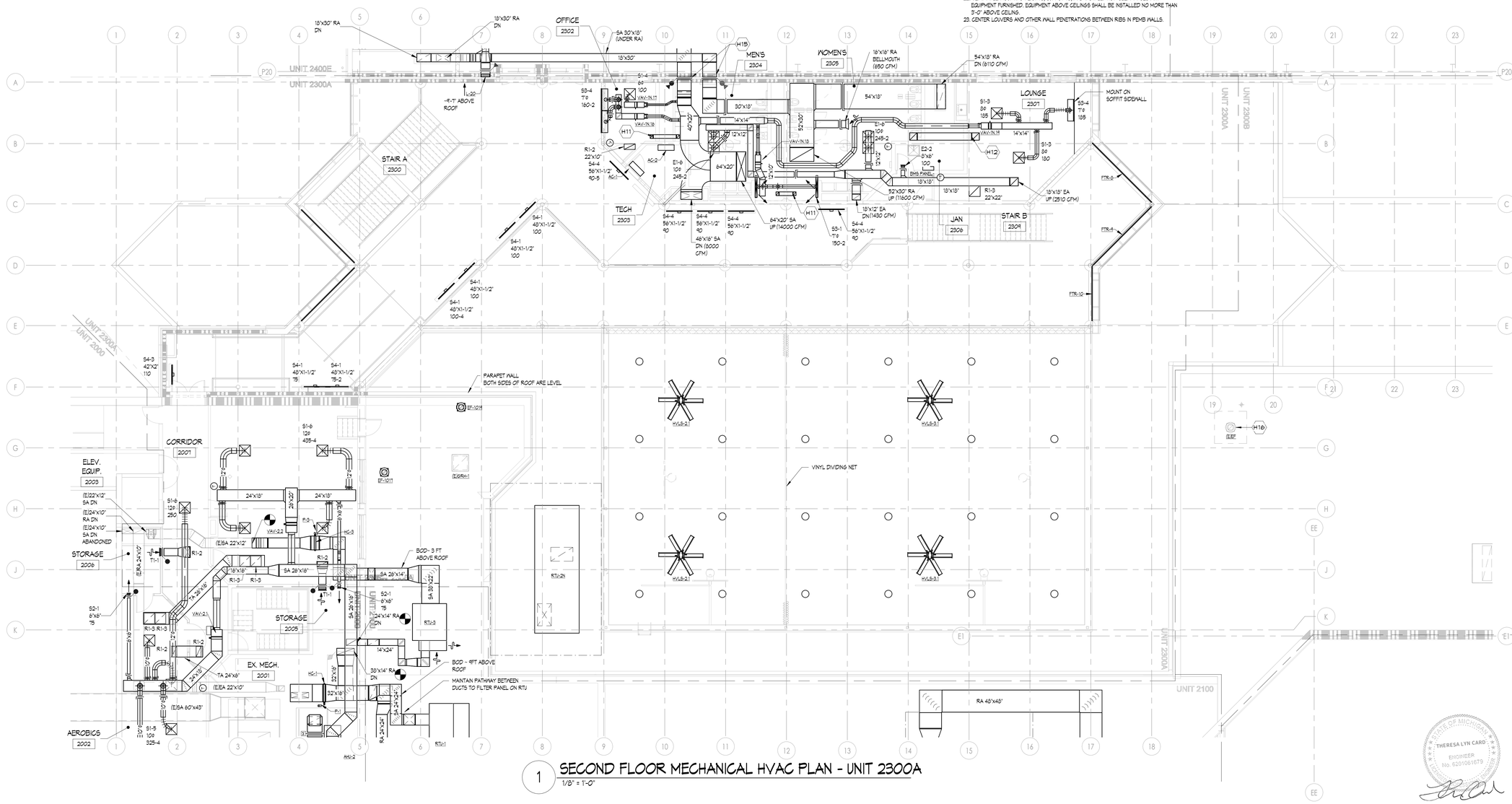

1 SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2300A
1/8" = 1'-0"

Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2300A

SHEET NO.
M212.d

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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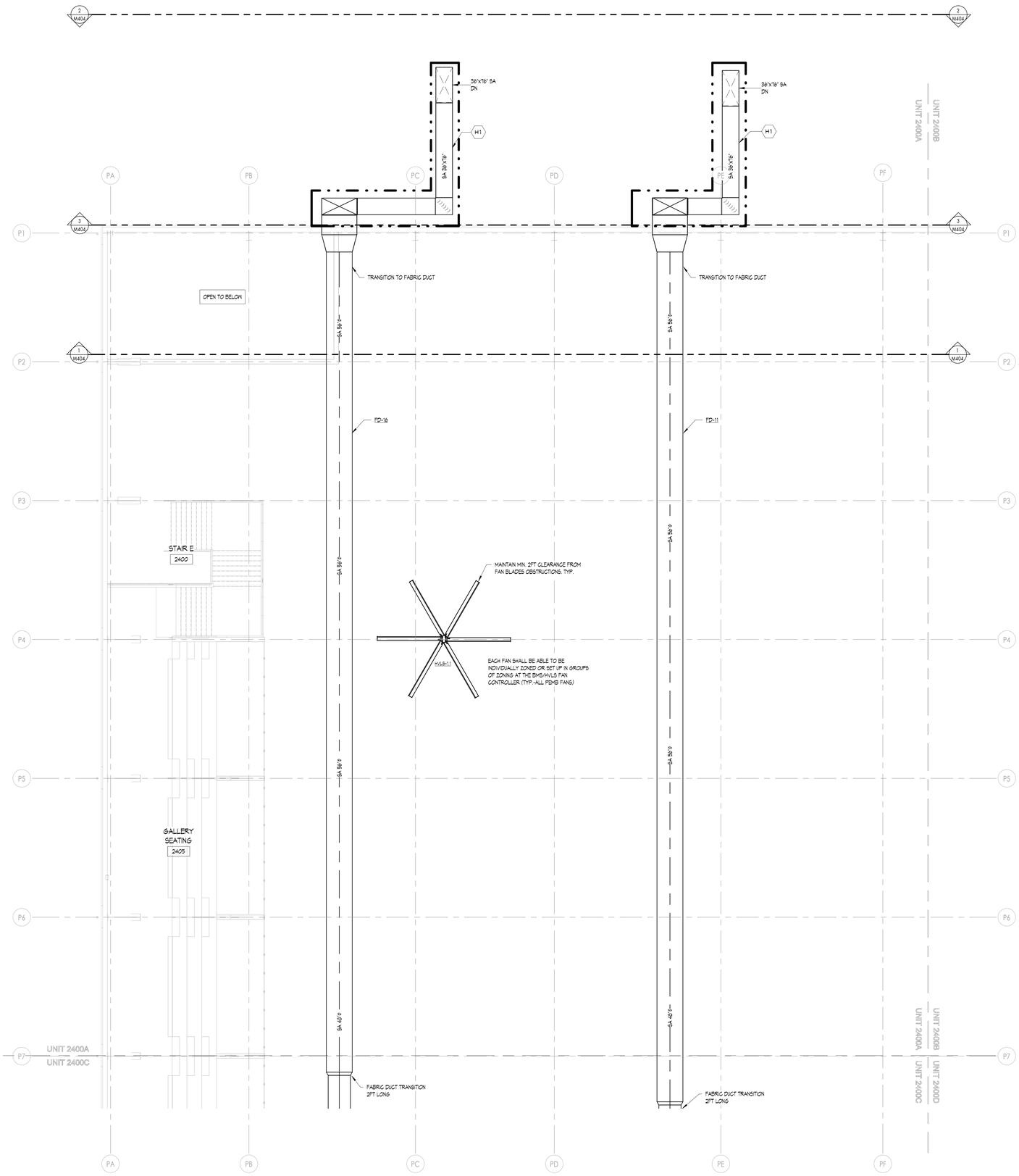

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3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
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5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400A

SHEET NO.
M212.f

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

KINGSCOTT ASSOCIATES INC. PORTAGE, MICHIGAN

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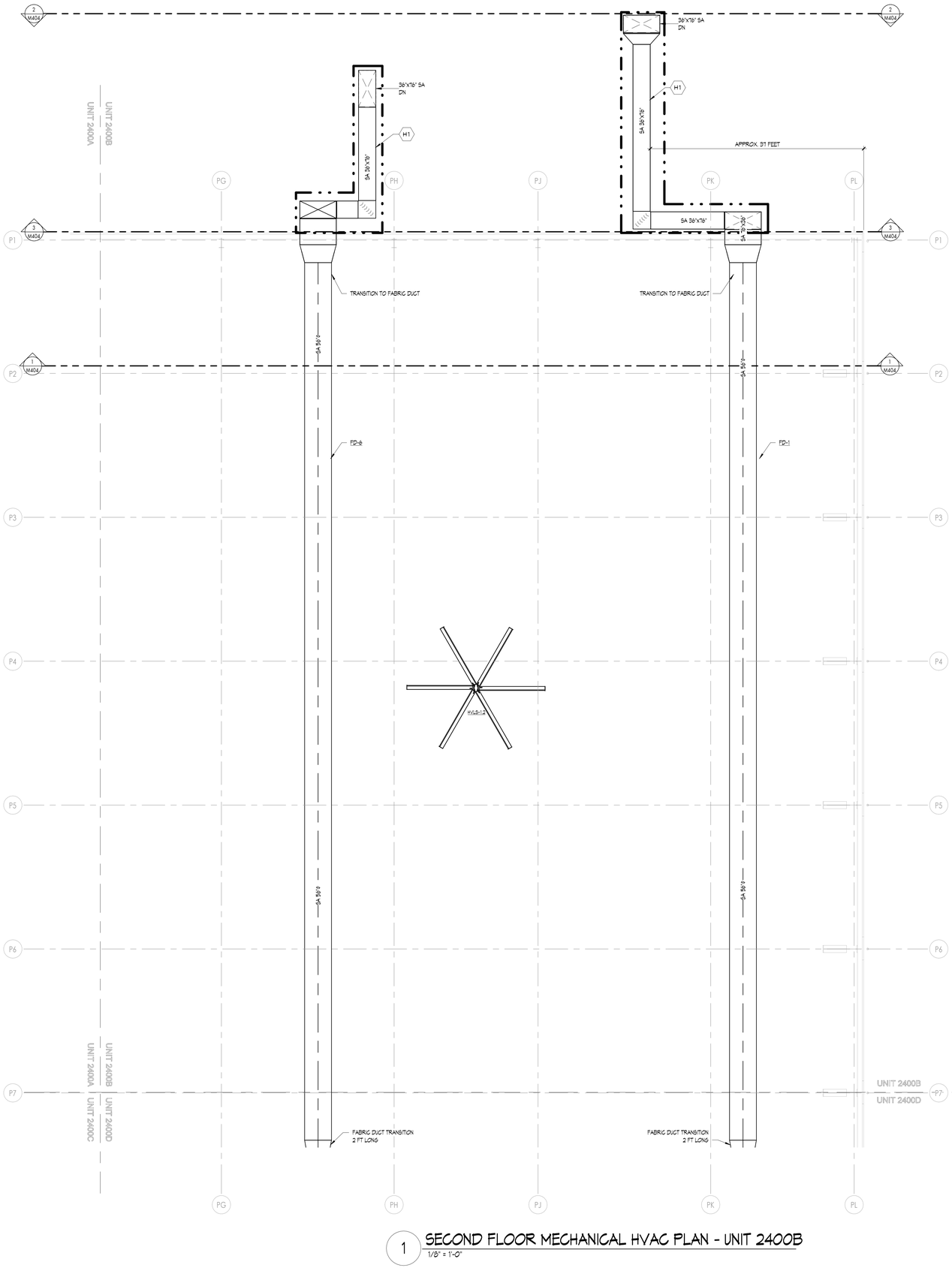

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1/8" = 1'-0"

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- H4 FLOOR GRILLE IN 2-HR RATED FLOOR. PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENHECK DFD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.
- H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.
- H6 TERMINATE NEW EXHAUST INTAKE 18" AFF. PROVIDE WITH INSECT SCREEN.
- H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.
- H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
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- H10 30"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
- H11 8"X8" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
- H12 16"X16" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.
- H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.
- H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.
- H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MEN'S 2304) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR/VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.
- H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)

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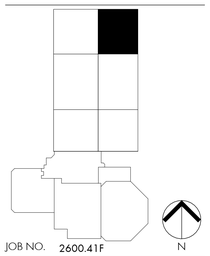
Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE
SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400B

SHEET NO.
M212.g

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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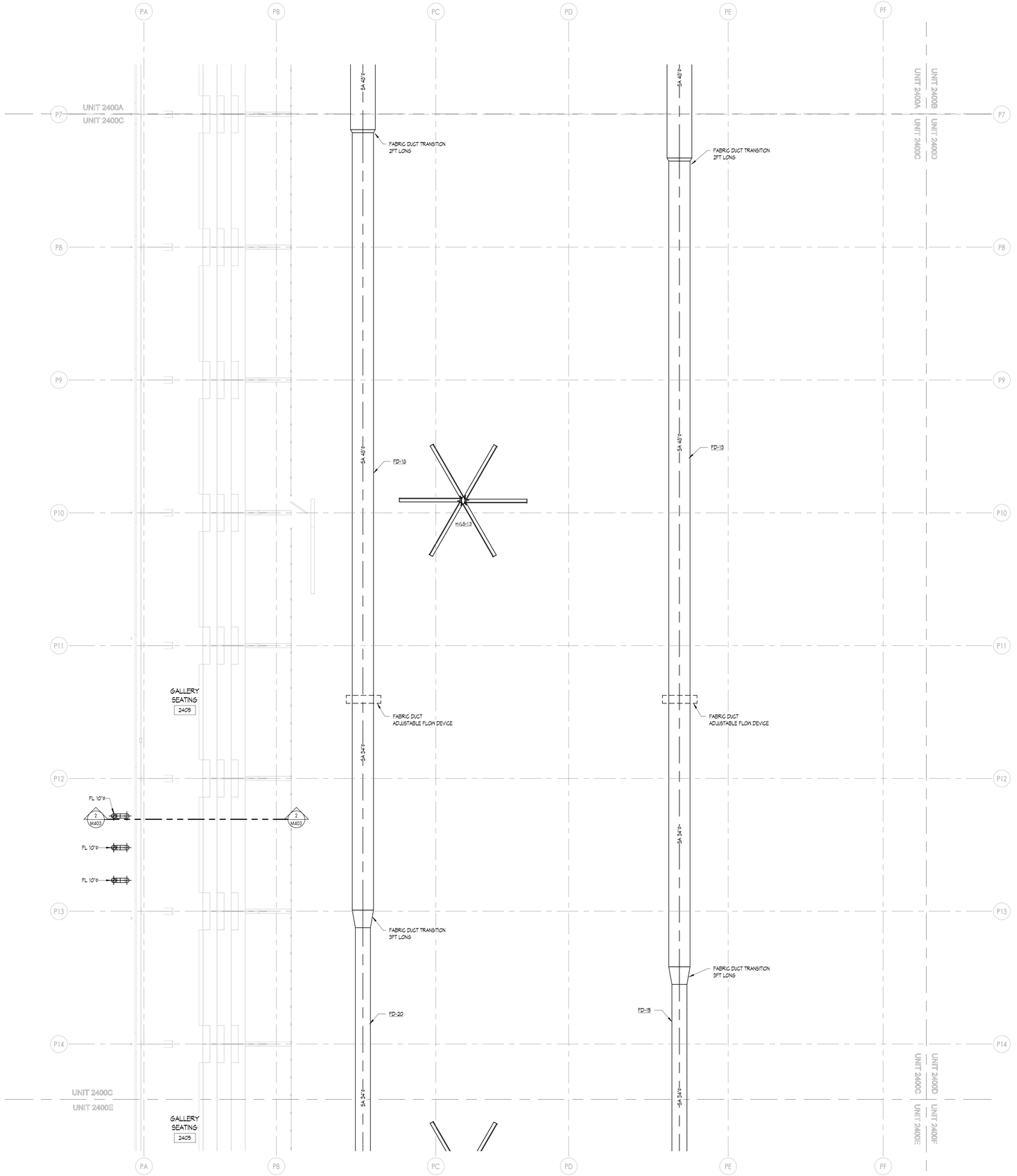

1 SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400C
1/8" = 1'-0"

MECHANICAL HVAC GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. VERIFY ALL EQUIPMENT CONNECTIONS WITH THE MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF WORK. PROVIDE TRANSITIONS AND MAKE FINAL CONNECTIONS TO EQUIPMENT, UNLESS OTHERWISE INDICATED.
5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE, AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
14. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
15. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
16. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
17. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE (WHERE NO DUCT SIZE IS INDICATED ON PLAN.
18. DUCTWORK PENETRATIONS OF ALL FIRE RATED AND SMOKE RESISTIVE CONSTRUCTION SHALL BE COORDINATED WITH LIFE SAFETY PLANS. PROVIDE CODE REQUIRED DAMPERS (WHERE APPLICABLE. PENETRATION ASSEMBLY TO BE U.L. LISTED.
19. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN OR EXHAUST SYSTEMS, UNLESS OTHERWISE NOTED. FLEXIBLE DUCTWORK MAY BE USED IN SUPPLY SYSTEMS PROVIDED THE LENGTH IS LIMITED TO A TOTAL LENGTH OF FIVE (5) FEET.
20. ALL EXISTING DUCTWORK BEING REUSED IN WORK SCOPE SHALL BE CLEANED BACK TO AIR-HANDLING UNIT.
21. REPLACE ALL RTU FILTERS AT CLOSEOUT, AFTER CLEANING AND CONSTRUCTION HAS CONCLUDED.
22. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED. EQUIPMENT ABOVE CEILINGS SHALL BE INSTALLED NO MORE THAN 3'-0" ABOVE CEILING.
23. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN PEMB WALLS.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND GM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

HVAC KEYNOTES

H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK COLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.

H2 CLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS; VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.

H3 DOAS UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS). GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO CIVIL PLANS). UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.

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H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

H6 TERMINATE NEW EXHAUST INTAKE 16" AFF. PROVIDE WITH INSECT SCREEN.

H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.

H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

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H11 8"X6" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

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H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MEWS 2304) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR-VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400C

SHEET NO.
M212.h

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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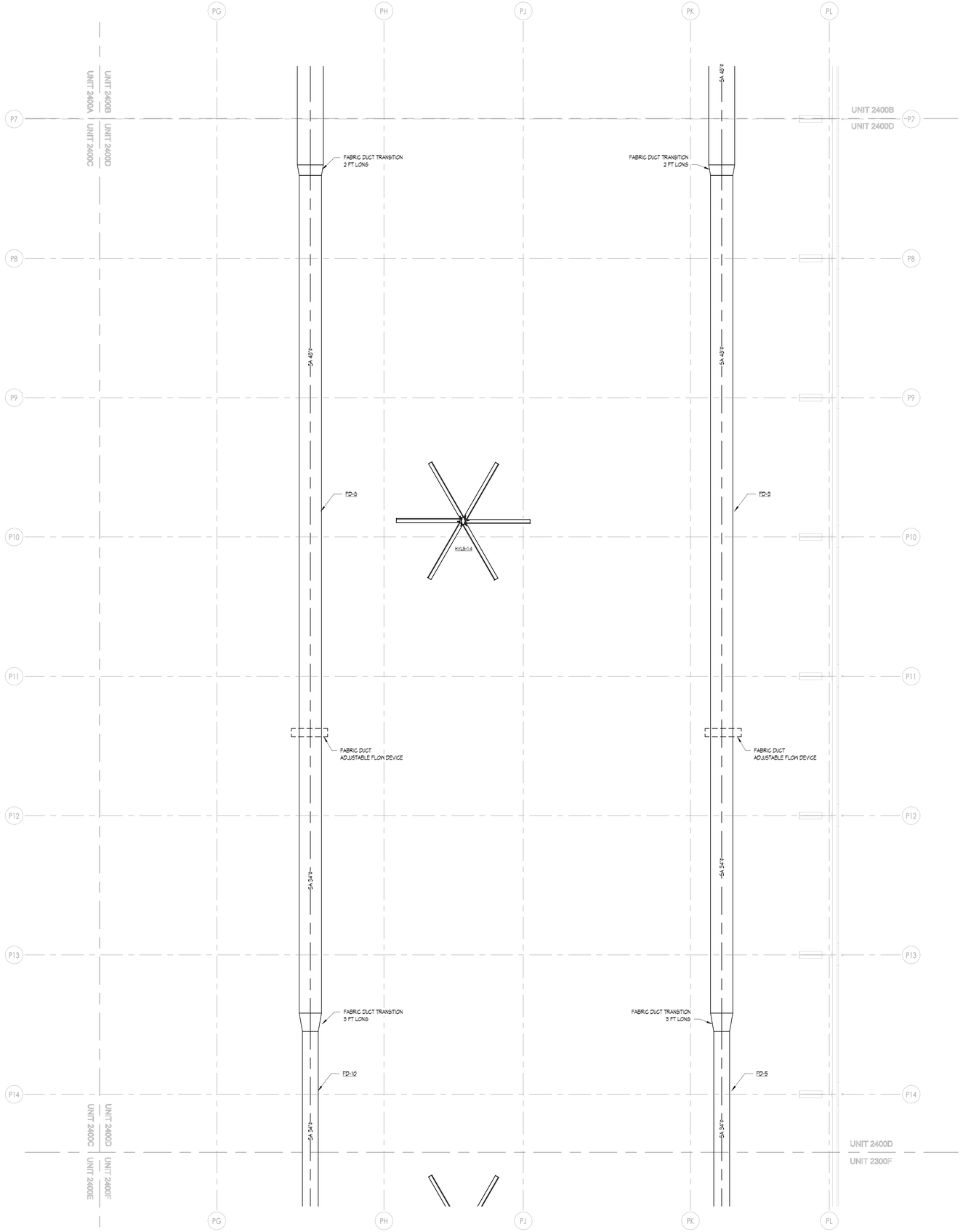

1 SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400D

1/8" = 1'-0"

MECHANICAL HVAC GENERAL NOTES

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3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. VERIFY ALL EQUIPMENT CONNECTIONS WITH THE MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF WORK. PROVIDE TRANSITIONS AND MAKE FINAL CONNECTIONS TO EQUIPMENT, UNLESS OTHERWISE INDICATED.
5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE AND/OR WHERE INDICATED.
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12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
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H6 TERMINATE NEW EXHAUST INTAKE 18" AFF. PROVIDE WITH INSECT SCREEN.

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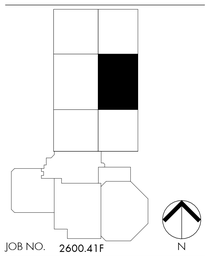
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE

SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400D

SHEET NO.

M212.j

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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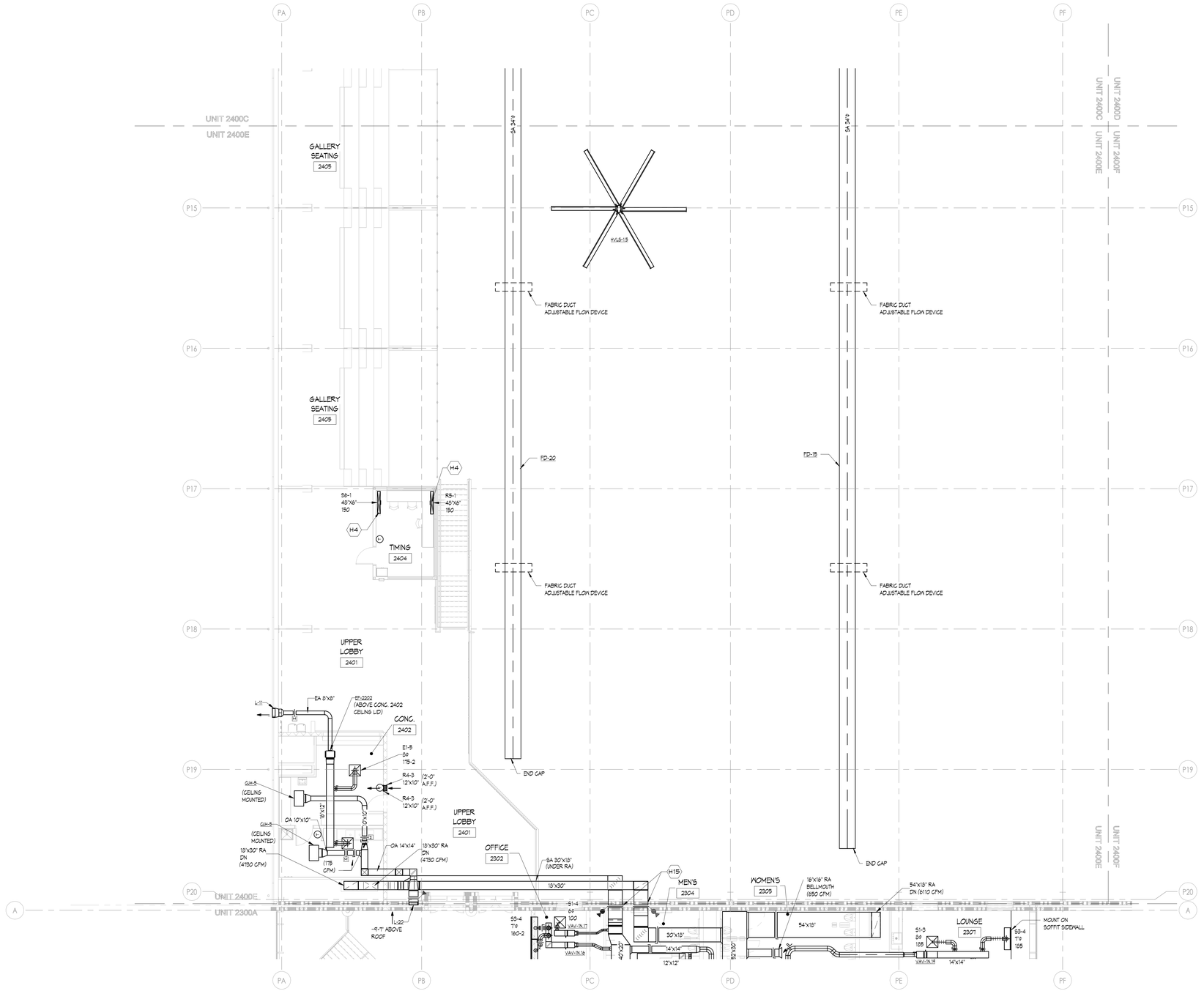

1 SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400E

1/8" = 1'-0"

MECHANICAL HVAC GENERAL NOTES

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3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. VERIFY ALL EQUIPMENT CONNECTIONS WITH THE MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF WORK. PROVIDE TRANSITIONS AND MAKE FINAL CONNECTIONS TO EQUIPMENT, UNLESS OTHERWISE INDICATED.
5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
14. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
15. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
16. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
17. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE (WHERE NO DUCT SIZE IS INDICATED ON PLAN.
18. DUCTWORK PENETRATIONS OF ALL FIRE RATED AND SMOKE RESISTIVE CONSTRUCTION SHALL BE COORDINATED WITH LIFE SAFETY PLANS. PROVIDE CODE REQUIRED DAMPERS WHERE APPLICABLE. PENETRATION ASSEMBLY TO BE U.L. LISTED.
19. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN OR EXHAUST SYSTEMS, UNLESS OTHERWISE NOTED. FLEXIBLE DUCTWORK MAY BE USED IN SUPPLY SYSTEMS PROVIDED THE LENGTH IS LIMITED TO A TOTAL LENGTH OF FIVE (5) FEET.
20. ALL EXISTING DUCTWORK BEING REUSED IN WORK SCOPE SHALL BE CLEANED BACK TO AIR-HANDLING UNIT.
21. REPLACE ALL RTU FILTERS AT CLOSEOUT, AFTER CLEANING AND CONSTRUCTION HAS CONCLUDED.
22. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED. EQUIPMENT ABOVE CEILINGS SHALL BE INSTALLED NO MORE THAN 3'-0" ABOVE CEILING.
23. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN PEMB WALLS.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND CM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 8" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

HVAC KEYNOTES

H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK COLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.

H2 CLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS; VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.

H3 DOAS UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS.) GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO CIVIL PLANS). UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.

H4 FLOOR GRILLE IN 2-HR RATED FLOOR. PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENHECK DFD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.

H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

H6 TERMINATE NEW EXHAUST INTAKE 16" AFF. PROVIDE WITH INSECT SCREEN.

H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.

H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H9 30"X12" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H10 30"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H11 8"X8" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H12 18"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.

H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.

H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MEN'S 2304) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR/VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.

H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)

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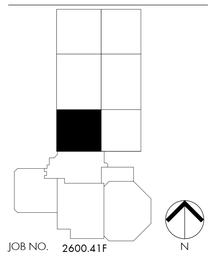
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE

SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400E

SHEET NO.

M212.k

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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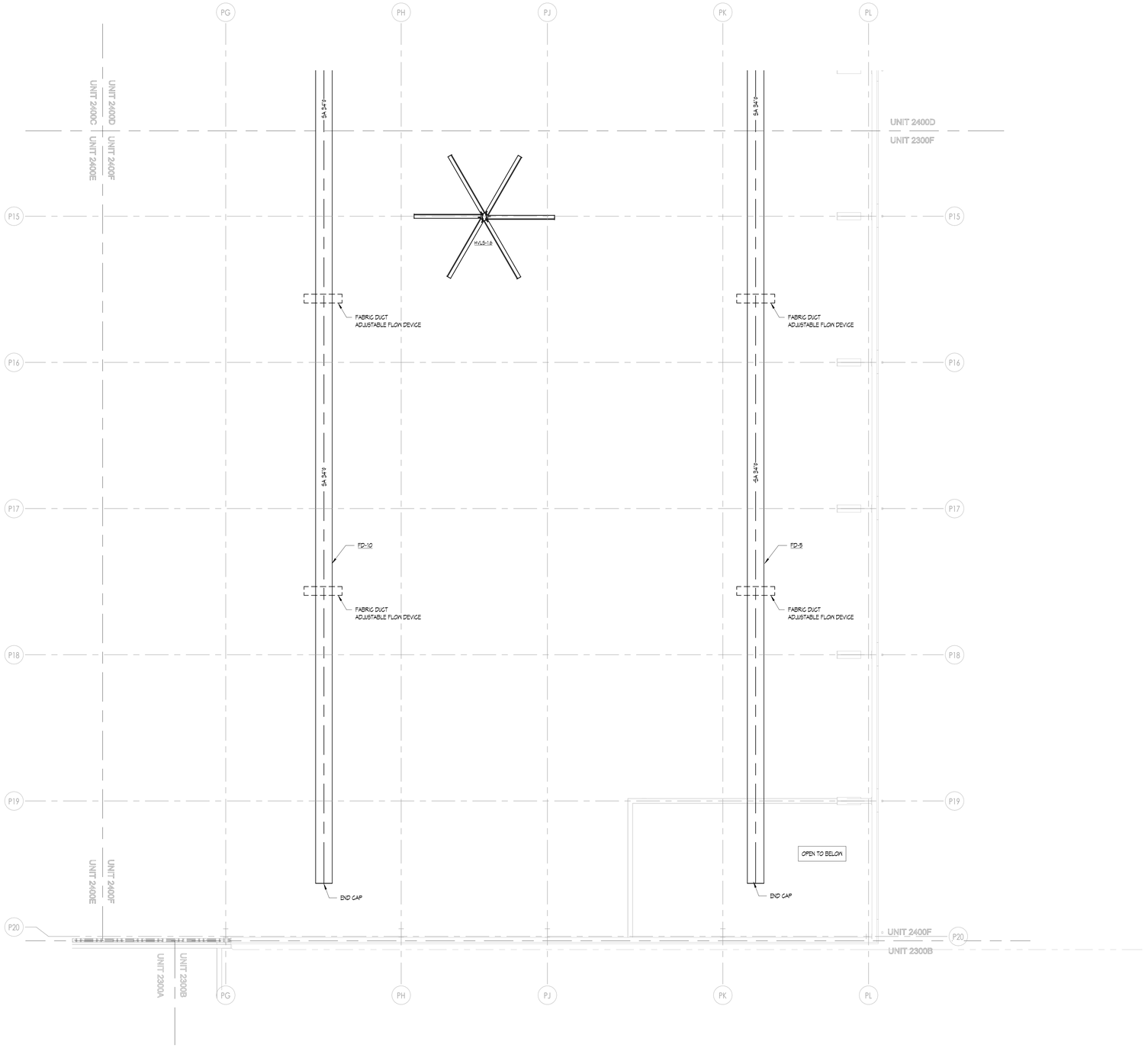

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Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
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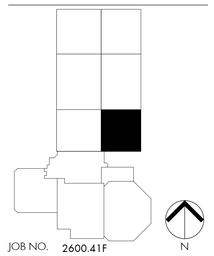

JOB NO. 2600.41F

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SHEET TITLE
SECOND FLOOR MECHANICAL HVAC PLAN - UNIT 2400F

SHEET NO.
M212.m

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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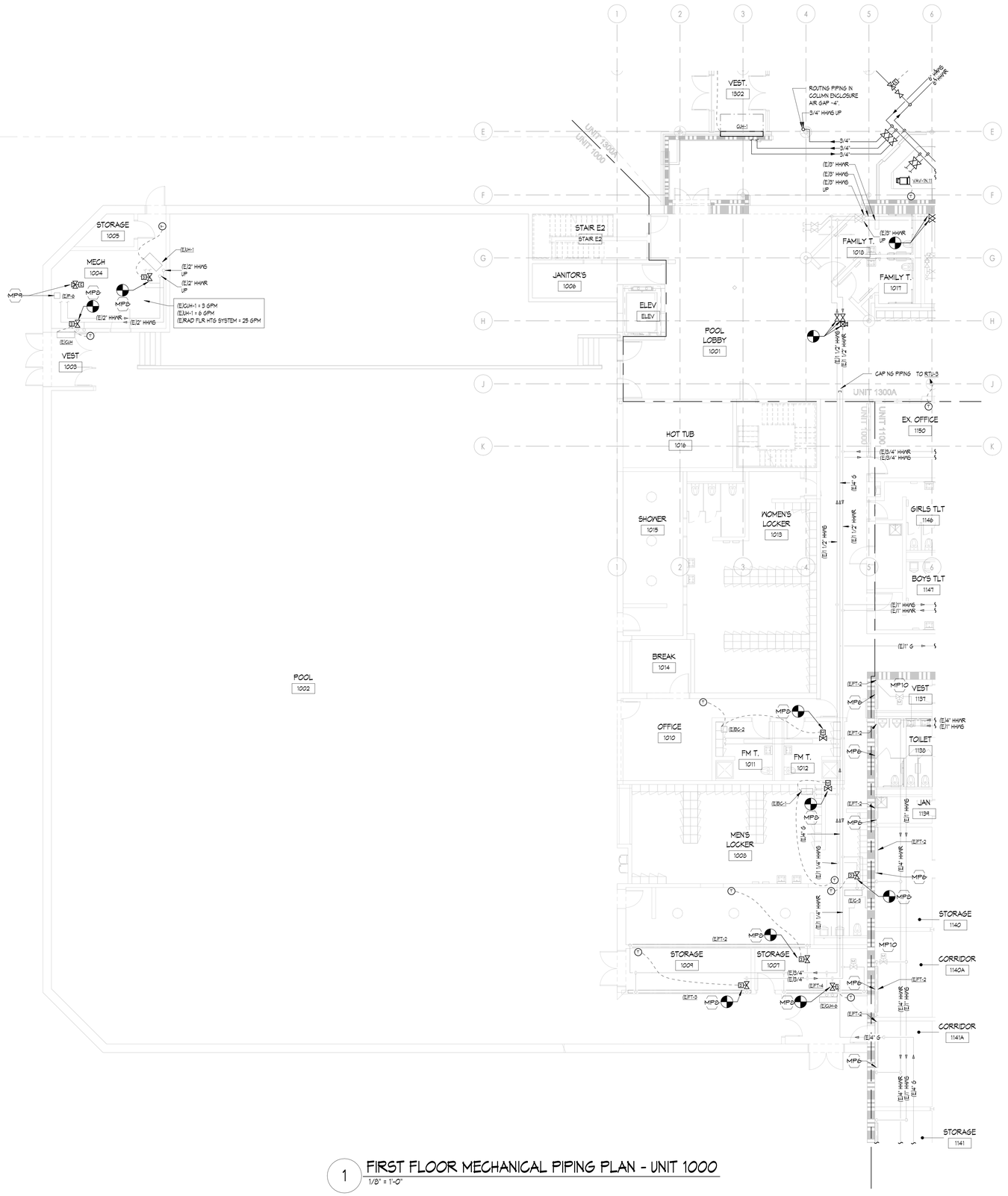

1 FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1000
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MECHANICAL PIPING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
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3. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC., SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
10. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
11. ALL BRANCH PIPING TO A SINGLE TERMINAL UNIT TEMPERING COIL OR RADIANT CEILING PANEL SHALL BE 3/4", UNLESS OTHERWISE NOTED.
12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
13. AIR VENTS AND DRAIN VALVES SHALL BE PROVIDED ON THE HIGH AND LOW POINTS THROUGHOUT THE SYSTEM.

MECHANICAL PIPING KEYNOTE

MP1 PROVIDE NEW FINNED TUBE WITH NEW ENCLOSURE. RECONNECT TO EXISTING PIPING.
MP2 EXISTING CEILING MOUNTED CABINET UNIT HEATER TO REMAIN. NEW CEILING WORK AROUND UNIT SHALL ADJUST TO EXISTING UNIT LOCATION.
MP3 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.
MP4 EXISTING SECONDARY PUMPS TO BE REBALANCED. EXISTING SECONDARY PUMPS HAVE A MIN. FLOW RATE OF 45 GPM AT 1800 RPM.
MP5 REBALANCE EXISTING HYDRONIC EQUIPMENT TO GPM SHOWN.
MP6 EXISTING EQUIPMENT TO BE ABANDONED IN PLACE. VALVE OFF UNIT, DRAIN IT AND REMOVE CONTROLS. UNIT SHALL NOT RECEIVE CONTROLS UPGRADES/SHALL NOT BE TIED INTO NEW BMS AND SHALL NOT BE REBALANCED. PROVIDE EQUIPMENT TAG STATING UNIT IS 'ABANDONED'.
MP7 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR HWS, HWR, NS.
MP8 PROVIDE NEW CONTROL VALVE AND THERMOSTAT FOR EXISTING TO REMAIN EQUIPMENT. REFER TO CONTROLS DRAWINGS FOR ADDITIONAL DETAIL AND SCOPE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS.
MP9 PROVIDE NEW CONTROLLER FOR EXISTING RADIANT FLOOR SYSTEM. SYSTEM TO MATCH EXISTING SEQUENCE AND CONTROL (E)PUMP P-8 AND NEW 3-WAY CONTROL VALVE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS. REFER TO DIAGRAM ON M3 SERIES SHEETS.
MP10 ABANDON CONTROL VALVE IN PLACE (CLOSED).
MP11 INTEGRATE EXISTING INNOVENT POOL UNIT INTO THE NEW BMS. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS GRAPHICS. REPLACE EXISTING 3-WAY VALVE. REFER TO DIAGRAM ON M3 SERIES SHEETS.
MP12 PIPING SHALL HAVE ADDITIONAL ISOLATION VALVE ON SUPPLY AND RETURN AT ABOUT 7FT AFF.
MP13 PROVIDE NEW TEMPERATURE SENSORS AND CONTROLS FOR NEW RECIRC PUMP RCP-25.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1000

SHEET NO.
M221.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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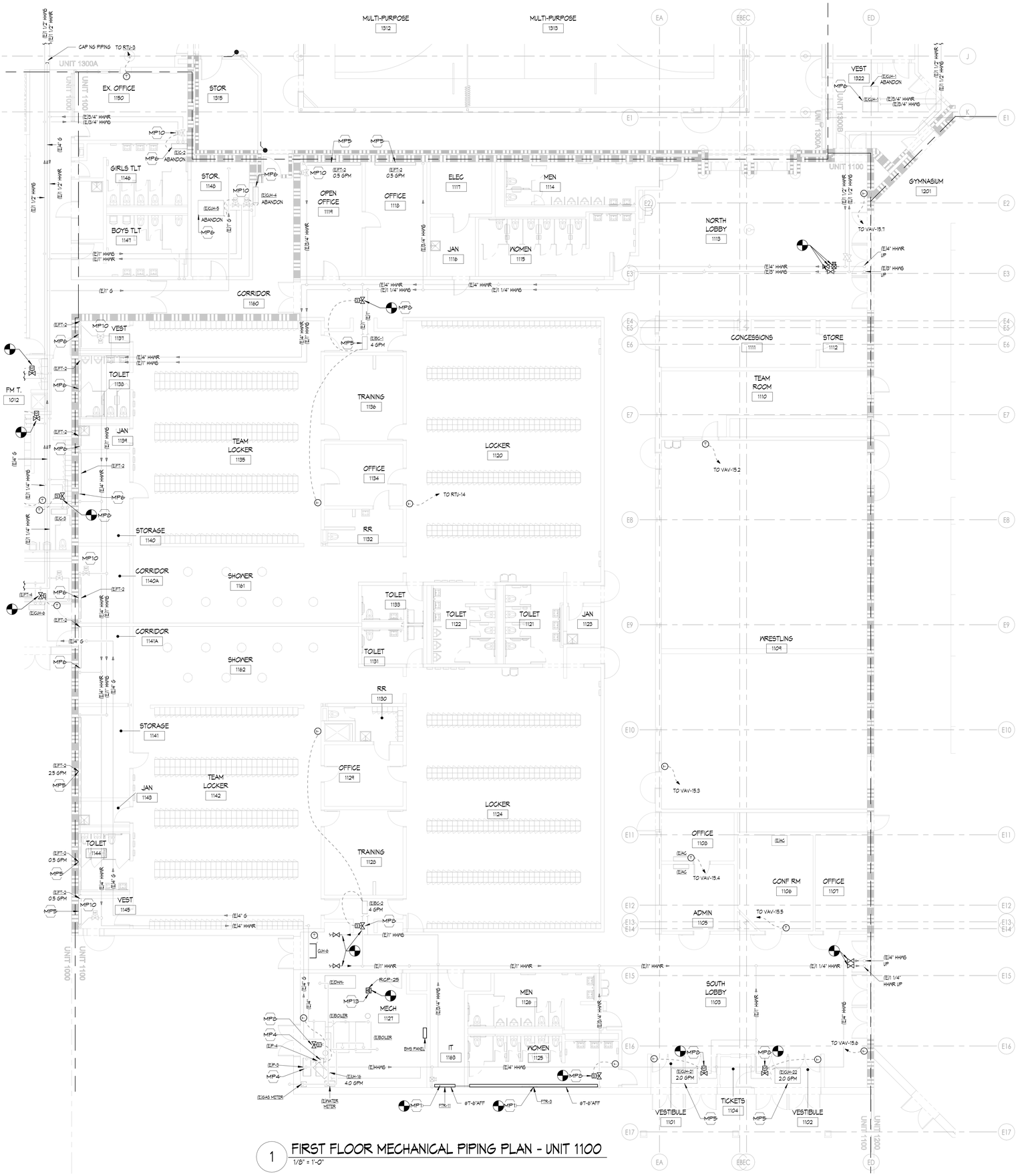
MULTI-PURPOSE 1312
MULTI-PURPOSE 1313
UNIT 1300A
UNIT 1100
UNIT 1000
UNIT 1300B
UNIT 1200
EX. OFFICE 1150
STOR 1315
GIRLS TLT 1146
STOR. 1148
BOYS TLT 1147
OPEN OFFICE 1119
OFFICE 1118
ELEC 1117
MEN 1114
JAN 1116
WOMEN 1115
NORTH LOBBY 1113
VEST 1322
GYMNASIUM 1201
TO VAV-15.7
CORRIDOR 1160
VEST 1131
TOILET 1138
JAN 1139
FM T. 1012
TRAINING 1136
TEAM LOCKER 1135
OFFICE 1134
LOCKER 1120
CONCESSIONS 1111
STORE 1112
TEAM ROOM 1110
TO VAV-15.2
TO RTU-14
RR 1132
STORAGE 1140
CORRIDOR 1140A
SHOWER 1161
TOILET 1133
TOILET 1122
TOILET 1121
JAN 1123
CORRIDOR 1141A
SHOWER 1162
TOILET 1131
WRESTLING 1104
RR 1130
STORAGE 1141
OFFICE 1129
TEAM LOCKER 1142
JAN 1143
LOCKER 1124
TOILET 1144
VEST 1145
TRAINING 1128
TO VAV-15.3
OFFICE 1109
CONF RM 1106
OFFICE 1107
ADMIN 1105
TO VAV-15.5
TO VAV-15.4
MEN 1126
MECH 1127
SOUTH LOBBY 1103
IT 1163
WOMEN 1125
TICKETS 1104
VESTIBULE 1101
VESTIBULE 1102
TO VAV-15.6
(E) 1 1/2" HWG
CAP NS PIPING TO RTU-3
(E)3/4" HWHR
(E)3/4" HWHR
(E)1" G
(E)1" HWHR
(E)1" HWHR
(E)1" G
(E)1" HWHR
(E)1" HWHR
(E)1" G
(E)1 1/4" HWHR
(E)1 1/4" HWHR
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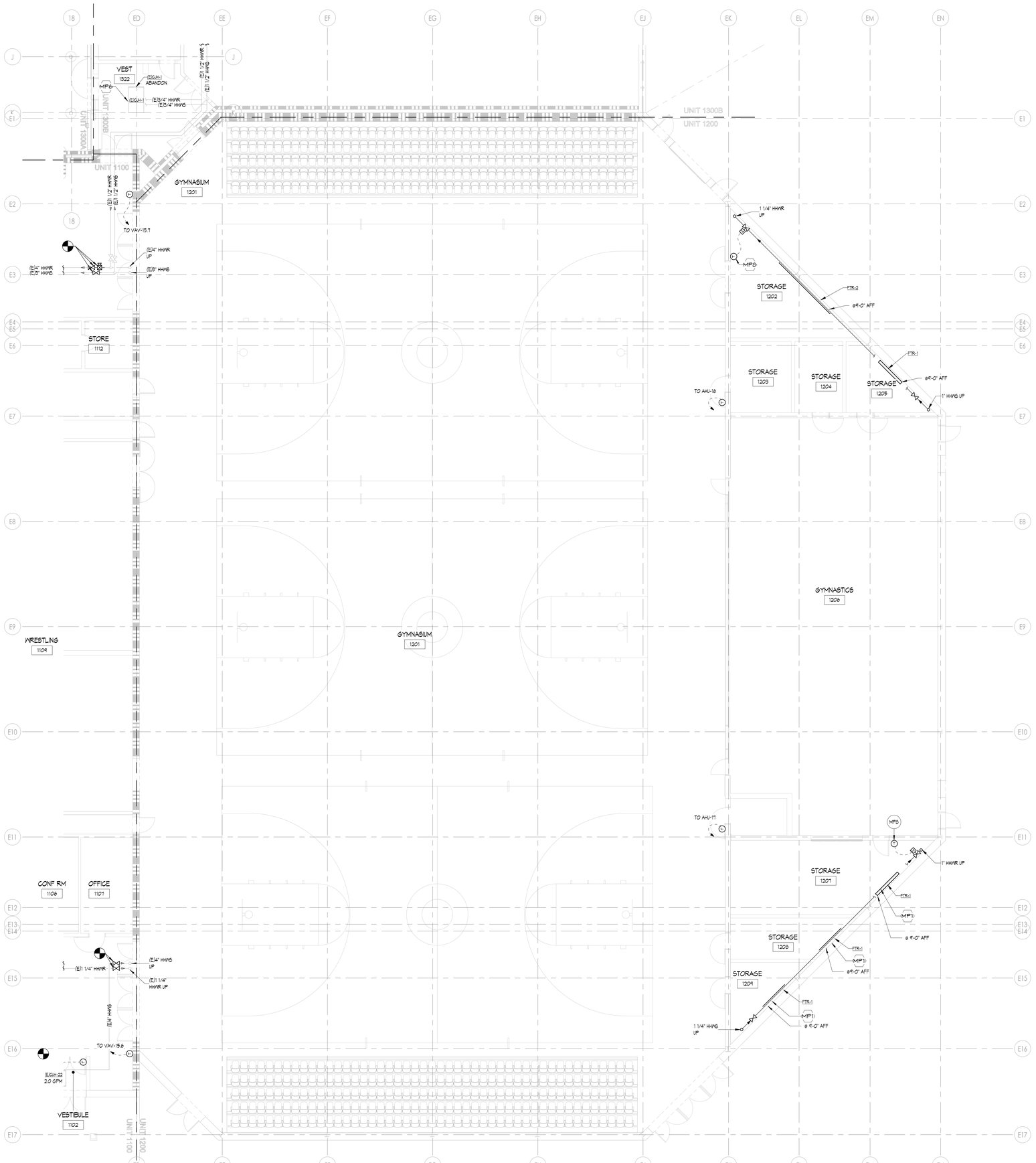
(E)1 1/4" G



1 FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1200
1/8" = 1'-0"

MECHANICAL PIPING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
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3. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
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MP4 EXISTING SECONDARY PUMPS TO BE REBALANCED. EXISTING SECONDARY PUMPS HAVE A MIN. FLOW RATE OF 45 GPM AT 1500 RPM.
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MP7 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR HWHS, HWHR, NS.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1200

SHEET NO.
M221.c

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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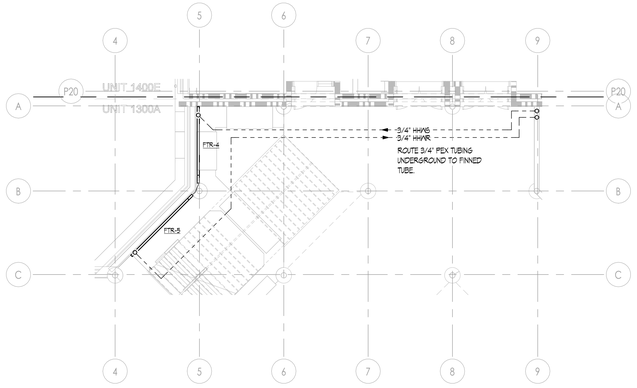
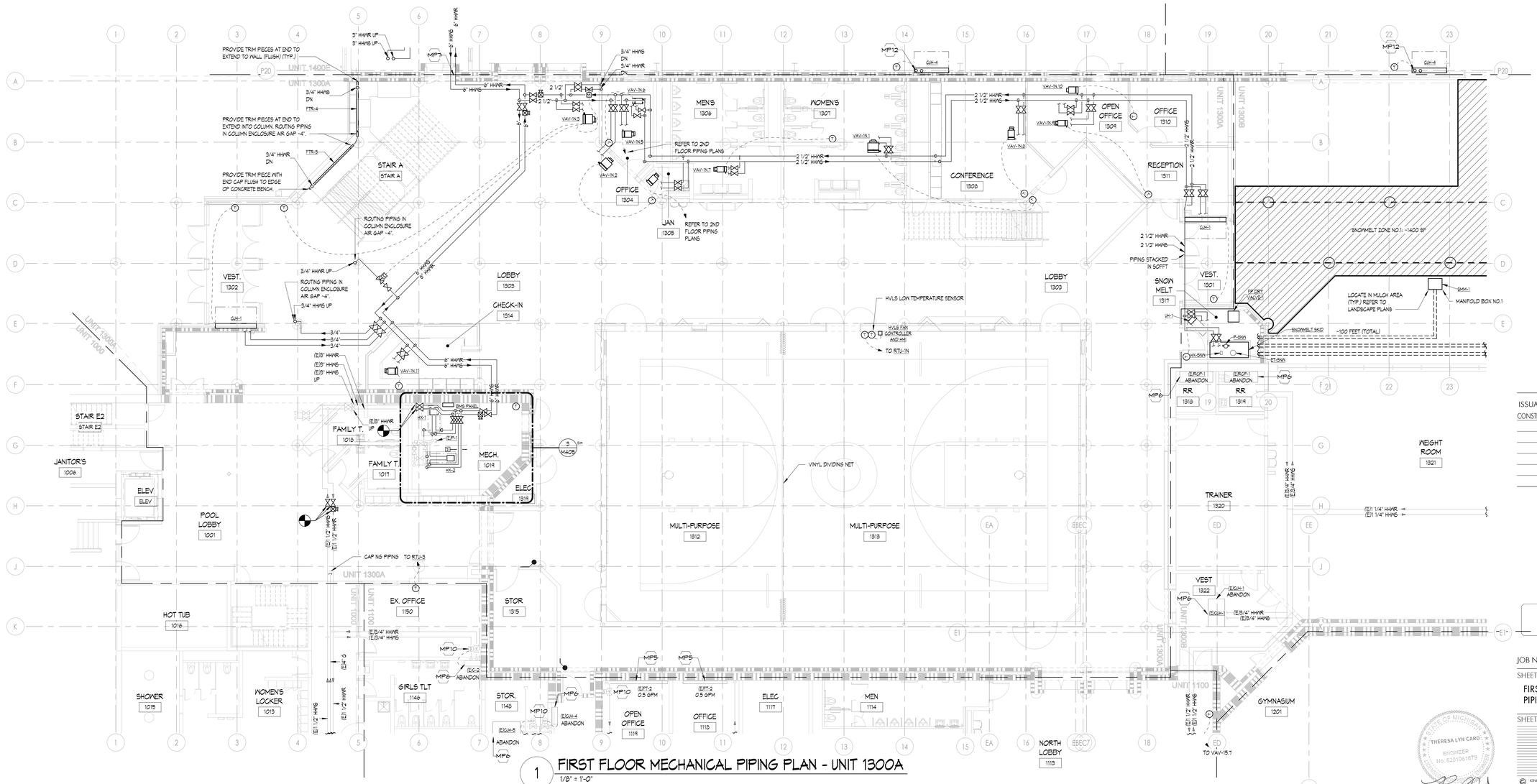
MP13 PROVIDE NEW TEMPERATURE SENSORS AND CONTROLS FOR NEW RECIRC PUMP RCP-25.



2 UNDERGROUND MECHANICAL PIPING PLAN - UNIT 0300A
1/8" = 1'-0"



1 FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1300A
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1300A

SHEET NO.
M221.d

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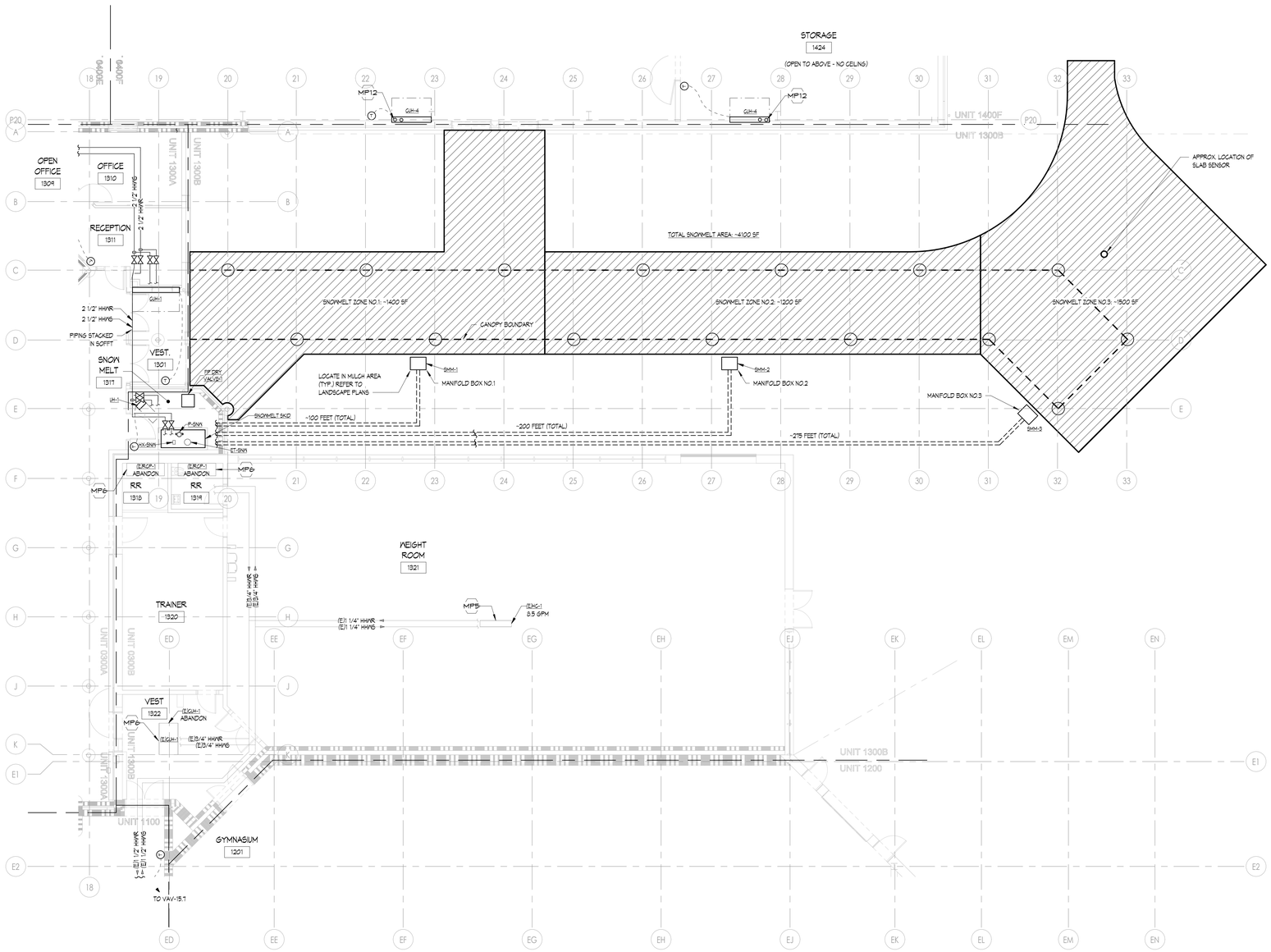
STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061673
07/30/2026



1 FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1300B

1/8" = 1'-0"

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1300B

SHEET NO.
M221.e

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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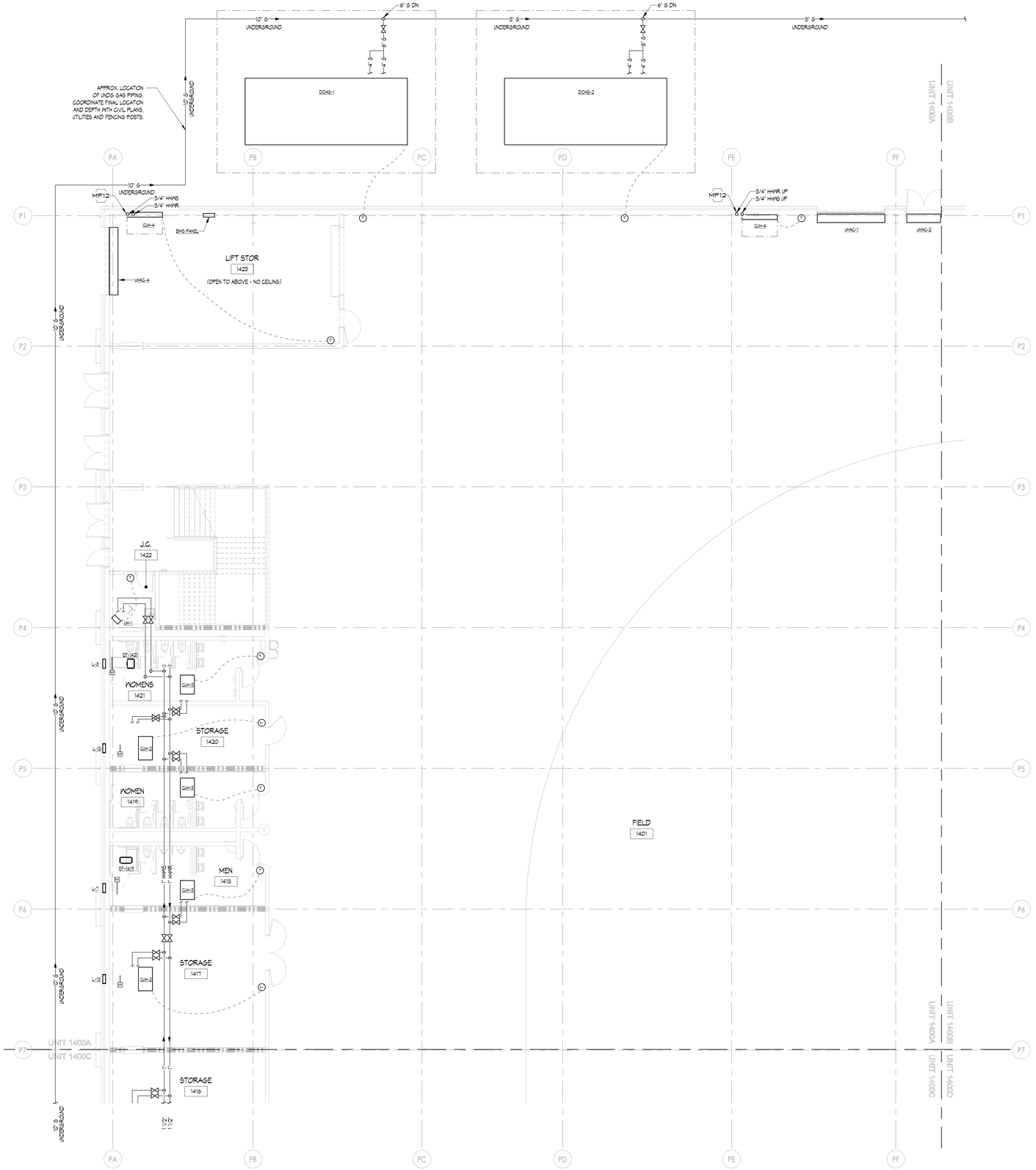

1 FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400A
1/8" = 1'-0"

MECHANICAL PIPING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
10. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
11. ALL BRANCH PIPING TO A SINGLE TERMINAL UNIT TEMPERING COIL OR RADIANT CEILING PANEL SHALL BE 3/4", UNLESS OTHERWISE NOTED.
12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
13. AIR VENTS AND DRAIN VALVES SHALL BE PROVIDED ON THE HIGH AND LOW POINTS THROUGHOUT THE SYSTEM.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND CM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 8" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

MPFP PRECAST SYSTEM GENERAL NOTES

1. PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF PIPING, DUCTWORK, ETC. CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC.
2. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

MECHANICAL PIPING KEYNOTE

MP1 PROVIDE NEW FINNED TUBE WITH NEW ENCLOSURE. RECONNECT TO EXISTING PIPING.
MP2 EXISTING CEILING MOUNTED CABINET UNIT HEATER TO REMAIN. NEW CEILING WORK AROUND UNIT SHALL ADJUST TO EXISTING UNIT LOCATION.
MP3 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.
MP4 EXISTING SECONDARY PUMPS TO BE REBALANCED. EXISTING SECONDARY PUMPS HAVE A MIN. FLOW RATE OF 45 GPM AT 1800 RPM.
MP5 REBALANCE EXISTING HYDRONIC EQUIPMENT TO GPM SHOWN.
MP6 EXISTING EQUIPMENT TO BE ABANDONED IN PLACE. VALVE OFF UNIT, DRAIN IT AND REMOVE CONTROLS. UNIT SHALL NOT RECEIVE CONTROLS UPGRADES. SHALL NOT BE TIED INTO NEW BMS AND SHALL NOT BE REBALANCED. PROVIDE EQUIPMENT TAG STATING UNIT IS "ABANDONED".
MP7 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR HWHS, HWHR, NG.
MP8 PROVIDE NEW CONTROL VALVE AND THERMOSTAT FOR EXISTING TO REMAIN EQUIPMENT. REFER TO CONTROLS DRAWINGS FOR ADDITIONAL DETAIL AND SCOPE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS.
MP9 PROVIDE NEW CONTROLLER FOR EXISTING RADIANT FLOOR SYSTEM. SYSTEM TO MATCH EXISTING SEQUENCE AND CONTROL (EP/UMP P-6 AND NEW 3-WAY CONTROL VALVE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS. REFER TO DIAGRAM ON M3 SERIES SHEETS.
MP10 ABANDON CONTROL VALVE IN PLACE (CLOSED).
MP11 INTEGRATE EXISTING INNOVENT POOL UNIT INTO THE NEW BMS. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS GRAPHICS. REPLACE EXISTING 3-WAY VALVE. REFER TO DIAGRAM ON M3 SERIES SHEETS.
MP12 PIPING SHALL HAVE ADDITIONAL ISOLATION VALVE ON SUPPLY AND RETURN AT ABOUT 11FT AFF.
MP13 PROVIDE NEW TEMPERATURE SENSORS AND CONTROLS FOR NEW REGIRG PUMP RGP-25.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400A

SHEET NO.
M221.f

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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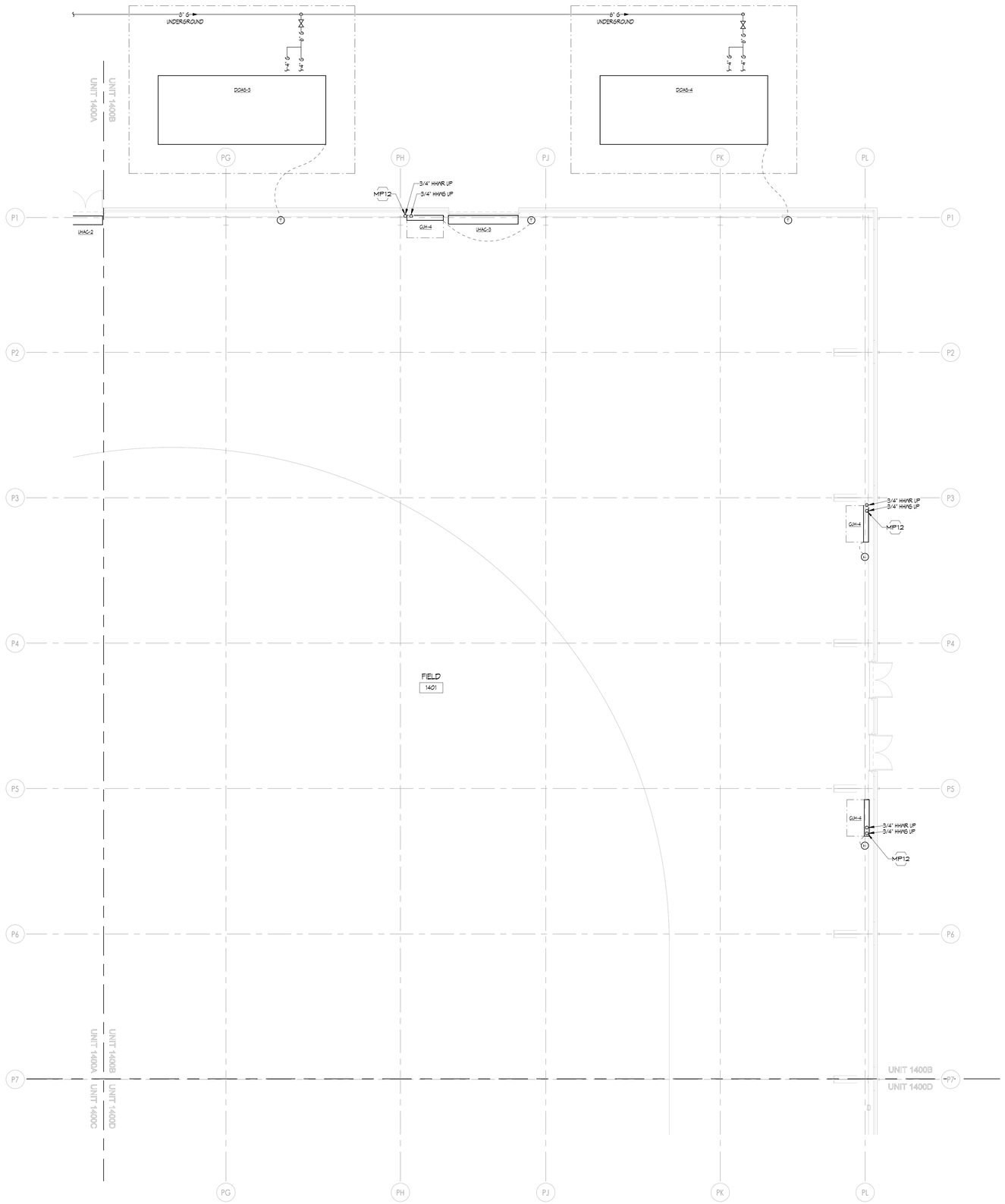

1 FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400B
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4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
10. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
11. ALL BRANCH PIPING TO A SINGLE TERMINAL UNIT TEMPERING COIL OR RADIANT CEILING PANEL SHALL BE 3/4", UNLESS OTHERWISE NOTED.
12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
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3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
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5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
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MECHANICAL PIPING KEYNOTE

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MP7 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR HWS, HWR, NG.
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MP9 PROVIDE NEW CONTROLLER FOR EXISTING RADIANT FLOOR SYSTEM. SYSTEM TO MATCH EXISTING SEQUENCE AND CONTROL (E)PUMP P-6 AND NEW 3-WAY CONTROL VALVE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS. REFER TO DIAGRAM ON M3 SERIES SHEETS.
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MP12 PIPING SHALL HAVE ADDITIONAL ISOLATION VALVE ON SUPPLY AND RETURN AT ABOUT 1FT AFF.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400B

SHEET NO.
M221.g

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201081679
07/30/2026

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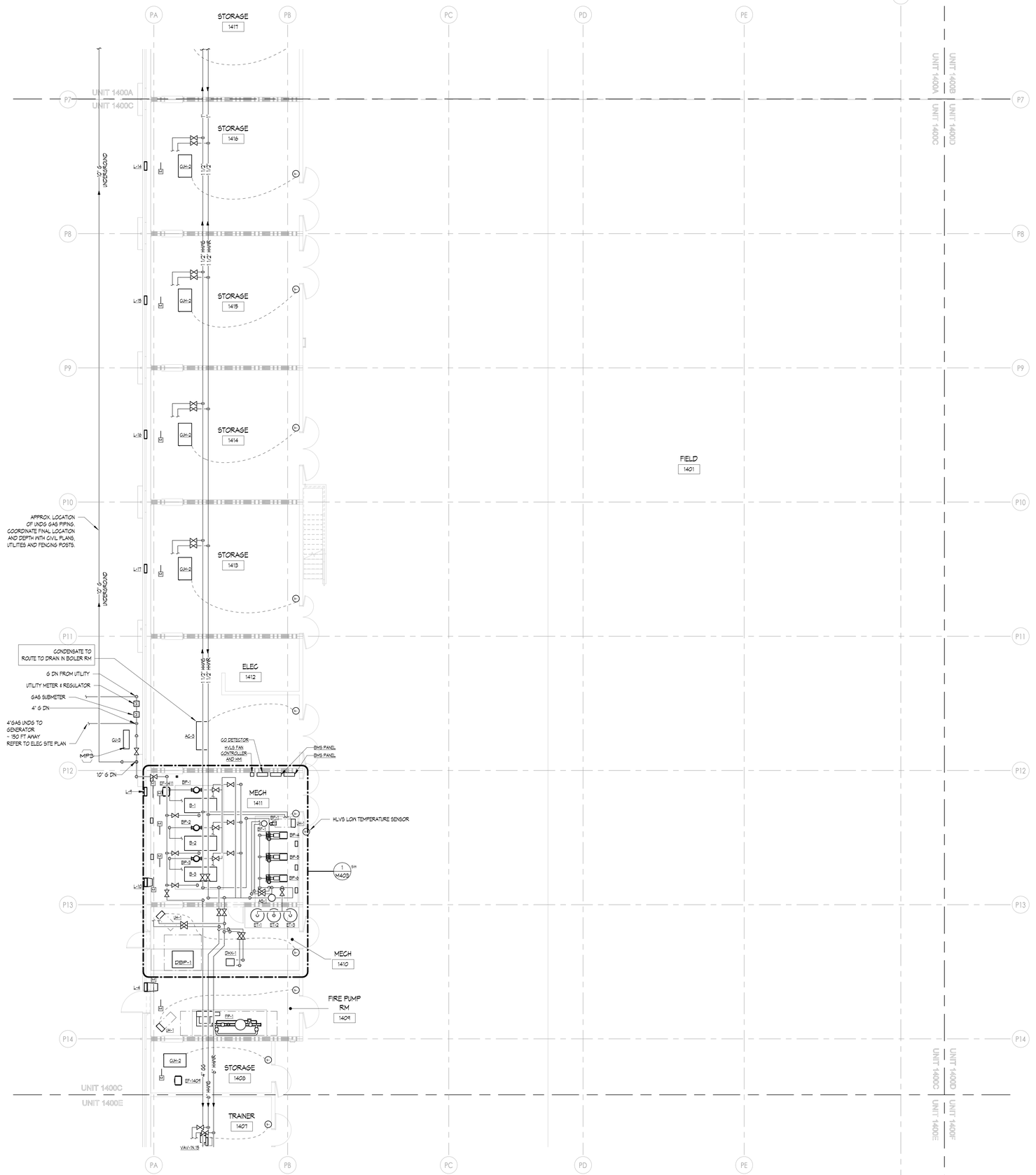

1 FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400C
1/8" = 1'-0"

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MPFP PRECAST SYSTEM GENERAL NOTES

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400C

SHEET NO.
M221.h

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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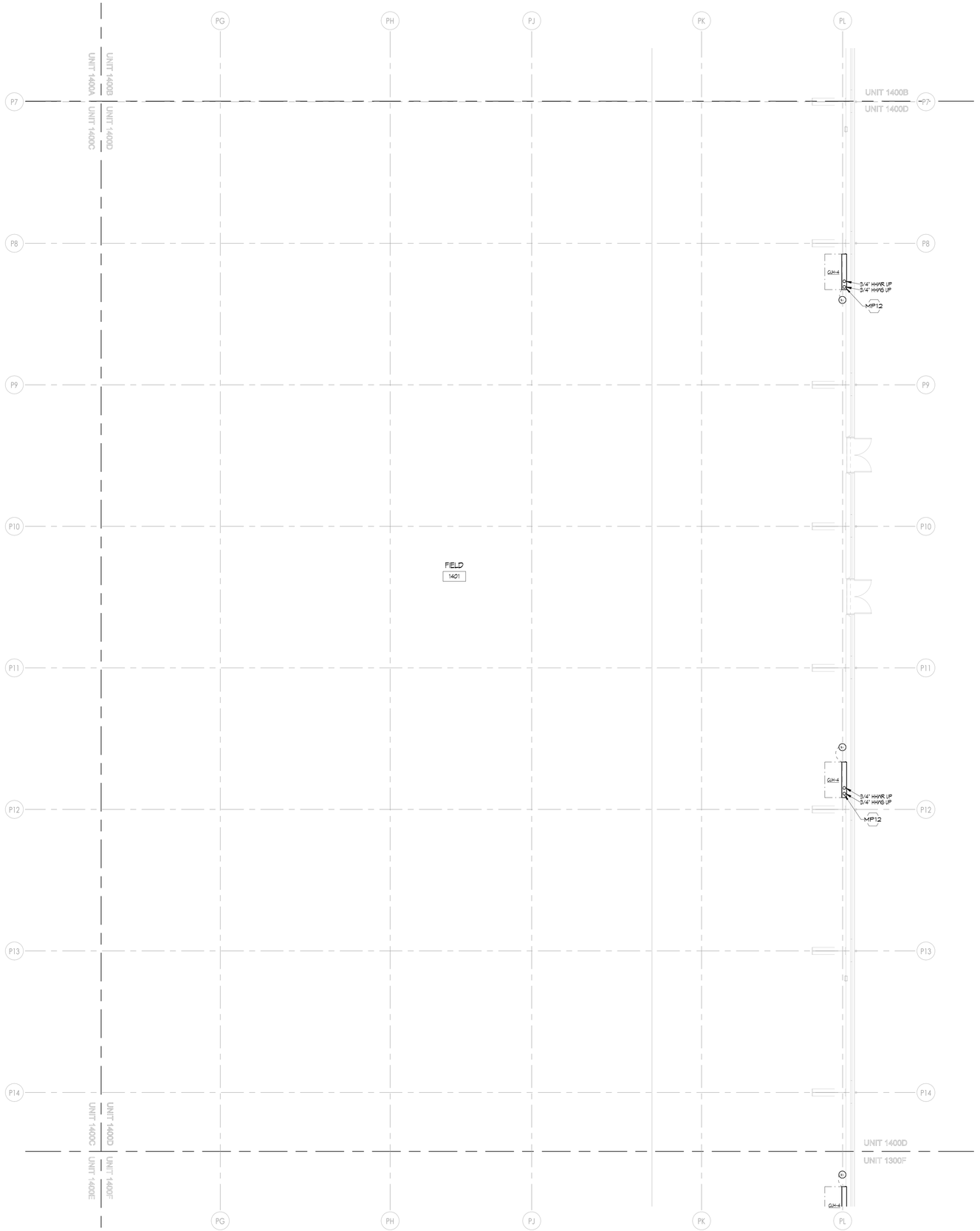

1 FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400D
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6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
10. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
11. ALL BRANCH PIPING TO A SINGLE TERMINAL UNIT TEMPERING COIL OR RADIANT CEILING PANEL SHALL BE 3/4", UNLESS OTHERWISE NOTED.
12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
13. AIR VENTS AND DRAIN VALVES SHALL BE PROVIDED ON THE HIGH AND LOW POINTS THROUGHOUT THE SYSTEM.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND GM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

MECHANICAL PIPING KEYNOTE

MP1 PROVIDE NEW FINNED TUBE WITH NEW ENCLOSURE. RECONNECT TO EXISTING PIPING.
MP2 EXISTING CEILING MOUNTED CABINET UNIT HEATER TO REMAIN. NEW CEILING WORK AROUND UNIT SHALL ADJUST TO EXISTING UNIT LOCATION.
MP3 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.
MP4 EXISTING SECONDARY PUMPS TO BE REBALANCED. EXISTING SECONDARY PUMPS HAVE A MIN. FLOW RATE OF 45 GPM AT 1800 RPM.
MP5 REBALANCE EXISTING HYDRONIC EQUIPMENT TO GPM SHOWN.
MP6 EXISTING EQUIPMENT TO BE ABANDONED IN PLACE. VALVE OFF UNIT, DRAIN IT AND REMOVE CONTROLS. UNIT SHALL NOT RECEIVE CONTROLS UPGRADES/SHALL NOT BE TIED INTO NEW BMS AND SHALL NOT BE REBALANCED. PROVIDE EQUIPMENT TAG STATING UNIT IS "ABANDONED".
MP7 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR HWHS, HWHR, NG.
MP8 PROVIDE NEW CONTROL VALVE AND THERMOSTAT FOR EXISTING TO REMAIN EQUIPMENT. REFER TO CONTROLS DRAWINGS FOR ADDITIONAL DETAIL AND SCOPE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS.
MP9 PROVIDE NEW CONTROLLER FOR EXISTING RADIANT FLOOR SYSTEM. SYSTEM TO MATCH EXISTING SEQUENCE AND CONTROL (E)PUMP P-6 AND NEW 3-WAY CONTROL VALVE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS. REFER TO DIAGRAM ON M3 SERIES SHEETS.
MP10 ABANDON CONTROL VALVE IN PLACE (CLOSED).
MP11 INTEGRATE EXISTING INNOVENT POOL UNIT INTO THE NEW BMS. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS GRAPHICS. REPLACE EXISTING 3-WAY VALVE. REFER TO DIAGRAM ON M3 SERIES SHEETS.
MP12 PIPING SHALL HAVE ADDITIONAL ISOLATION VALVE ON SUPPLY AND RETURN AT ABOUT 7FT AFF.
MP13 PROVIDE NEW TEMPERATURE SENSORS AND CONTROLS FOR NEW RECIRC PUMP RCP-25.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE
FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400D

SHEET NO.
M221.j

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201081679
07/30/2026

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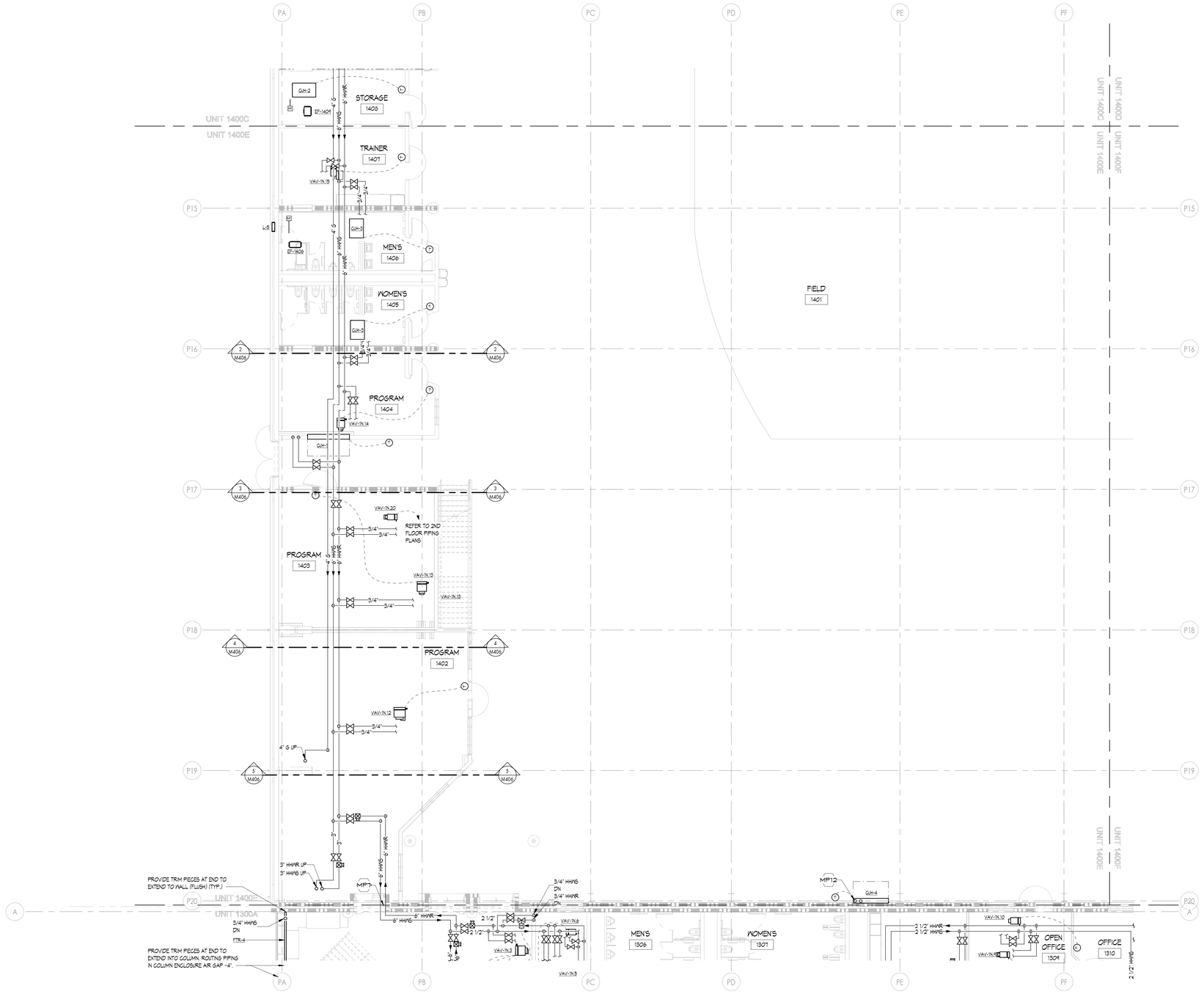

1 FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400E
1/8" = 1'-0"

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3. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
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8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
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MPFP PEMB/IMP GENERAL NOTES

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5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 8" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

MPFP PRECAST SYSTEM GENERAL NOTES

1. PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF PIPING, DUCTWORK, ETC. CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC.
2. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

MECHANICAL PIPING KEYNOTE

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400E

SHEET NO.
M221.k

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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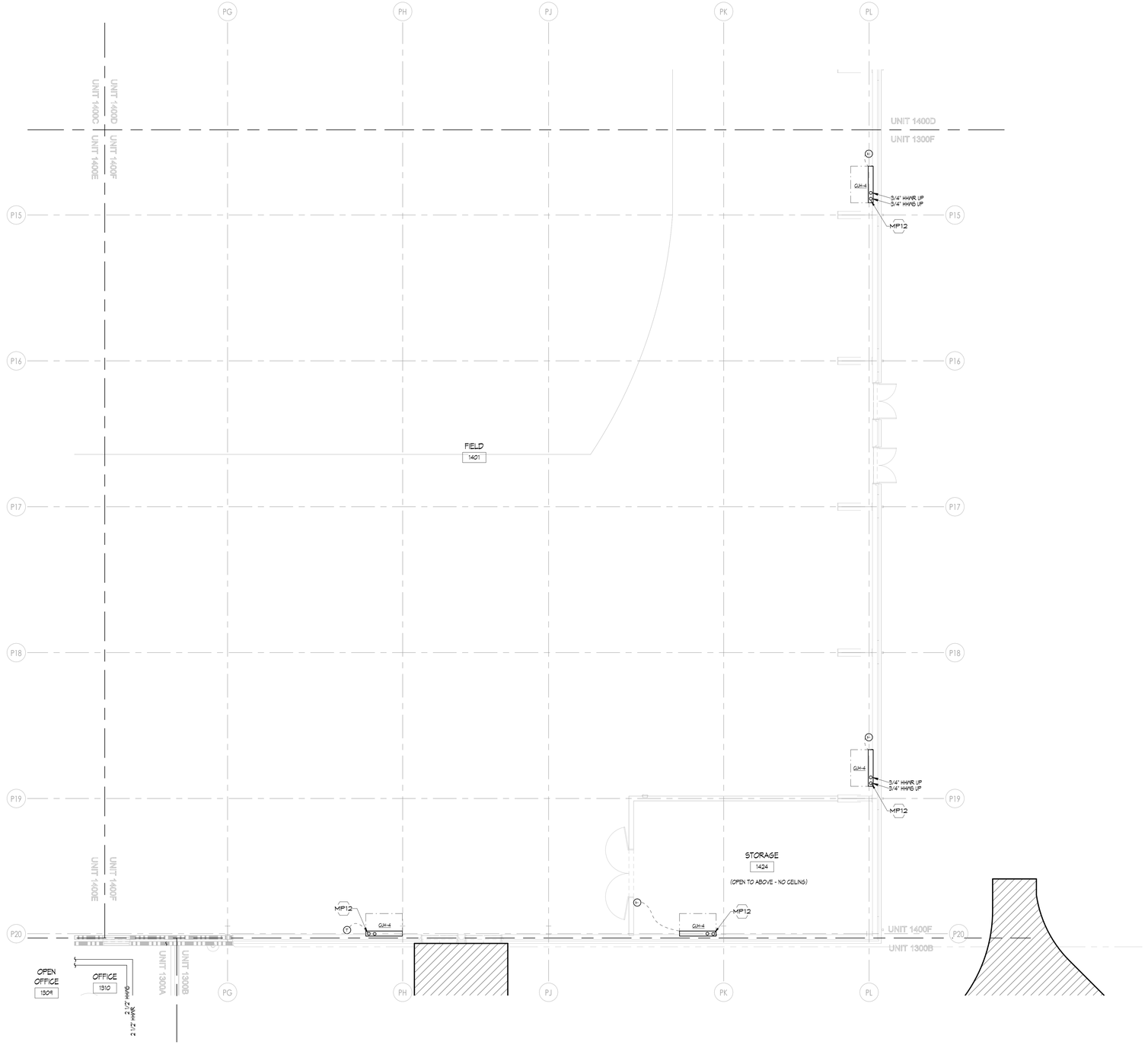

1 FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400F

1/8" = 1'-0"

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MP5 REBALANCE EXISTING HYDRONIC EQUIPMENT TO GPM SHOWN.
MP6 EXISTING EQUIPMENT TO BE ABANDONED IN PLACE. VALVE OFF UNIT, DRAIN IT AND REMOVE CONTROLS. UNIT SHALL NOT RECEIVE CONTROLS UPGRADES. SHALL NOT BE TIED INTO NEW BMS AND SHALL NOT BE REBALANCED. PROVIDE EQUIPMENT TAG STATING UNIT IS "ABANDONED".
MP7 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR HWS, HWR, NG.
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MP9 PROVIDE NEW CONTROLLER FOR EXISTING RADIANT FLOOR SYSTEM. SYSTEM TO MATCH EXISTING SEQUENCE AND CONTROL (EP)UMP P-6 AND NEW 3-WAY CONTROL VALVE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS. REFER TO DIAGRAM ON M5 SERIES SHEETS.
MP10 ABANDON CONTROL VALVE IN PLACE (CLOSED).
MP11 INTEGRATE EXISTING INNOVENT POOL UNIT INTO THE NEW BMS. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS GRAPHICS. REPLACE EXISTING 3-WAY VALVE. REFER TO DIAGRAM ON M5 SERIES SHEETS.
MP12 PIPING SHALL HAVE ADDITIONAL ISOLATION VALVE ON SUPPLY AND RETURN AT ABOUT 1FT AFF.
MP13 PROVIDE NEW TEMPERATURE SENSORS AND CONTROLS FOR NEW REQ/RQ PUMP RQP-25.

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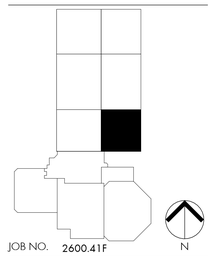
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE

FIRST FLOOR MECHANICAL PIPING PLAN - UNIT 1400F

SHEET NO.

M221.m

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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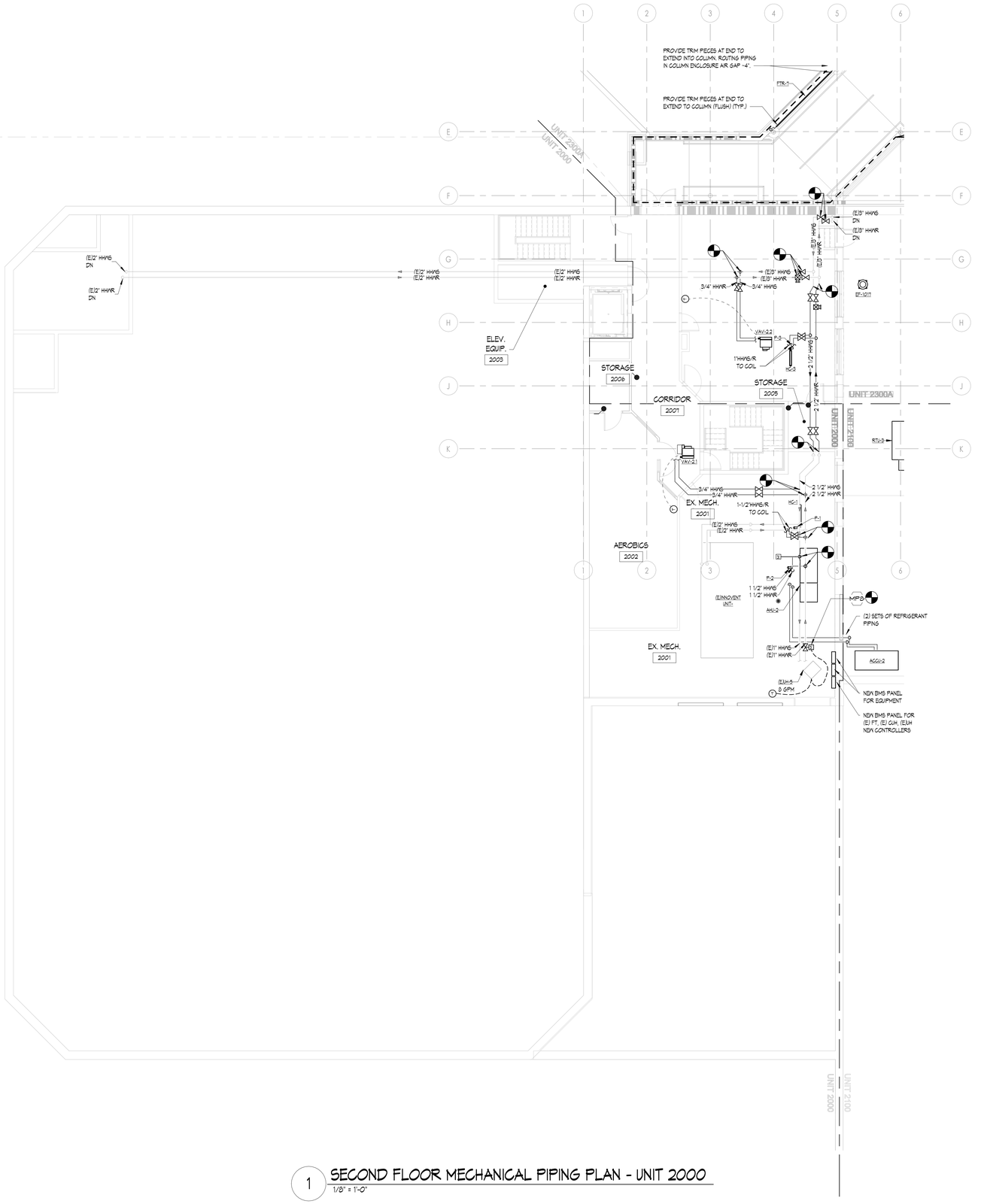

1 SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2000
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MECHANICAL PIPING GENERAL NOTES

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MP8 PROVIDE NEW CONTROL VALVE AND THERMOSTAT FOR EXISTING TO REMAIN EQUIPMENT. REFER TO CONTROLS DRAWINGS FOR ADDITIONAL DETAIL AND SCOPE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS.
MP9 PROVIDE NEW CONTROLLER FOR EXISTING RADIANT FLOOR SYSTEM. SYSTEM TO MATCH EXISTING SEQUENCE AND CONTROL (E)PUMP P-8 AND NEW 3-WAY CONTROL VALVE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS. REFER TO DIAGRAM ON M3 SERIES SHEETS.
MP10 ABANDON CONTROL VALVE IN PLACE (CLOSED).
MP11 INTEGRATE EXISTING INNOVENT POOL UNIT INTO THE NEW BMS. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS GRAPHICS. REPLACE EXISTING 3-WAY VALVE. REFER TO DIAGRAM ON M3 SERIES SHEETS.
MP12 PIPING SHALL HAVE ADDITIONAL ISOLATION VALVE ON SUPPLY AND RETURN AT ABOUT 7FT AFF.
MP13 PROVIDE NEW TEMPERATURE SENSORS AND CONTROLS FOR NEW RECIRC PUMP RCP-2B.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2000

SHEET NO.
M222.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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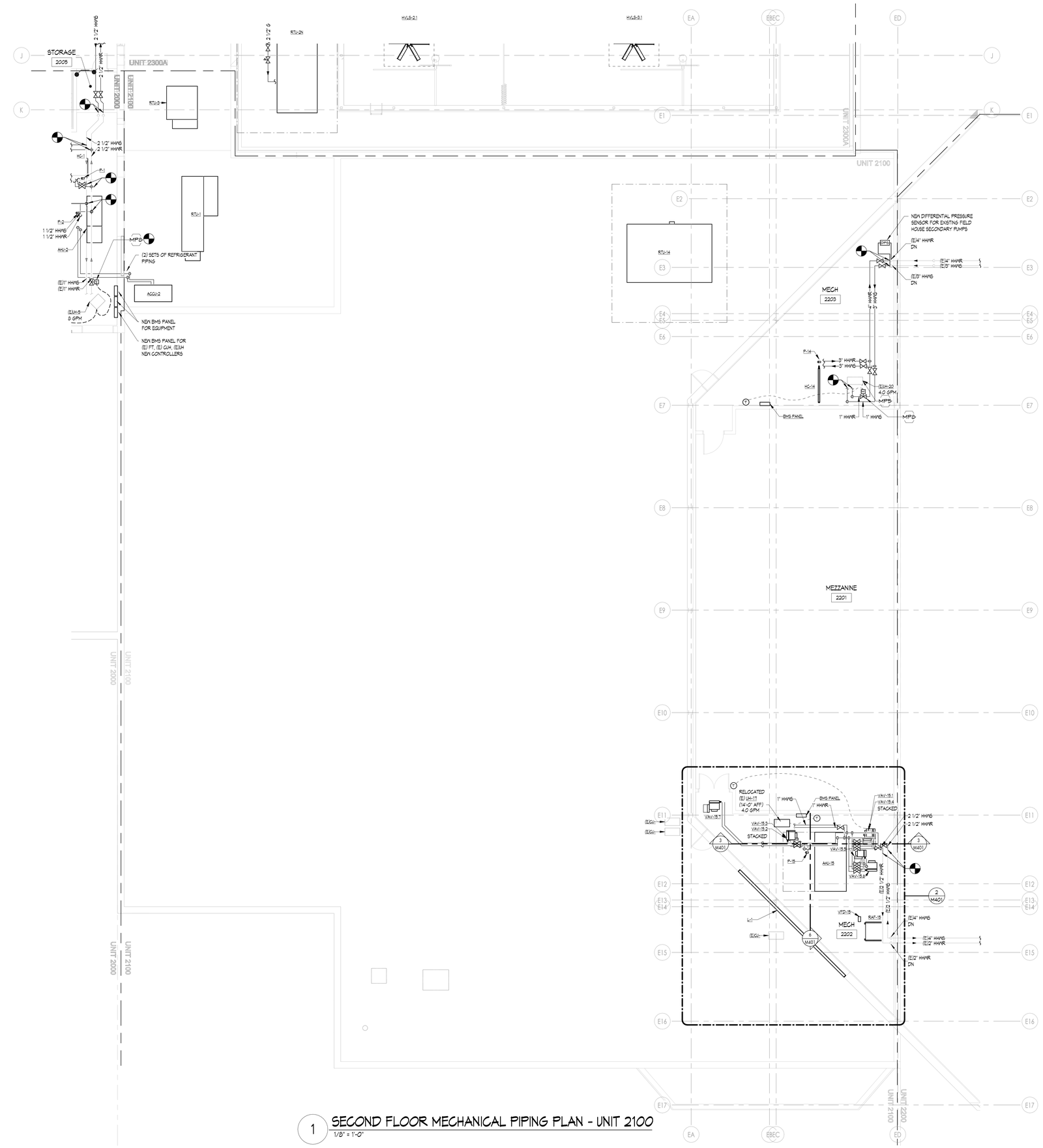

1 SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2100
1/8" = 1'-0"

MECHANICAL PIPING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
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3. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
10. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
11. ALL BRANCH PIPING TO A SINGLE TERMINAL UNIT TEMPERING COIL OR RADIANT CEILING PANEL SHALL BE 3/4", UNLESS OTHERWISE NOTED.
12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
13. AIR VENTS AND DRAIN VALVES SHALL BE PROVIDED ON THE HIGH AND LOW POINTS THROUGHOUT THE SYSTEM.

MECHANICAL PIPING KEYNOTE

MP1 PROVIDE NEW FINNED TUBE WITH NEW ENCLOSURE. RECONNECT TO EXISTING PIPING.
MP2 EXISTING CEILING MOUNTED CABINET UNIT HEATER TO REMAIN. NEW CEILING WORK AROUND UNIT SHALL ADJUST TO EXISTING UNIT LOCATION.
MP3 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.
MP4 EXISTING SECONDARY PUMPS TO BE REBALANCED. EXISTING SECONDARY PUMPS HAVE A MIN. FLOW RATE OF 45 GPM AT 1800 RPM.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2100

SHEET NO.
M222.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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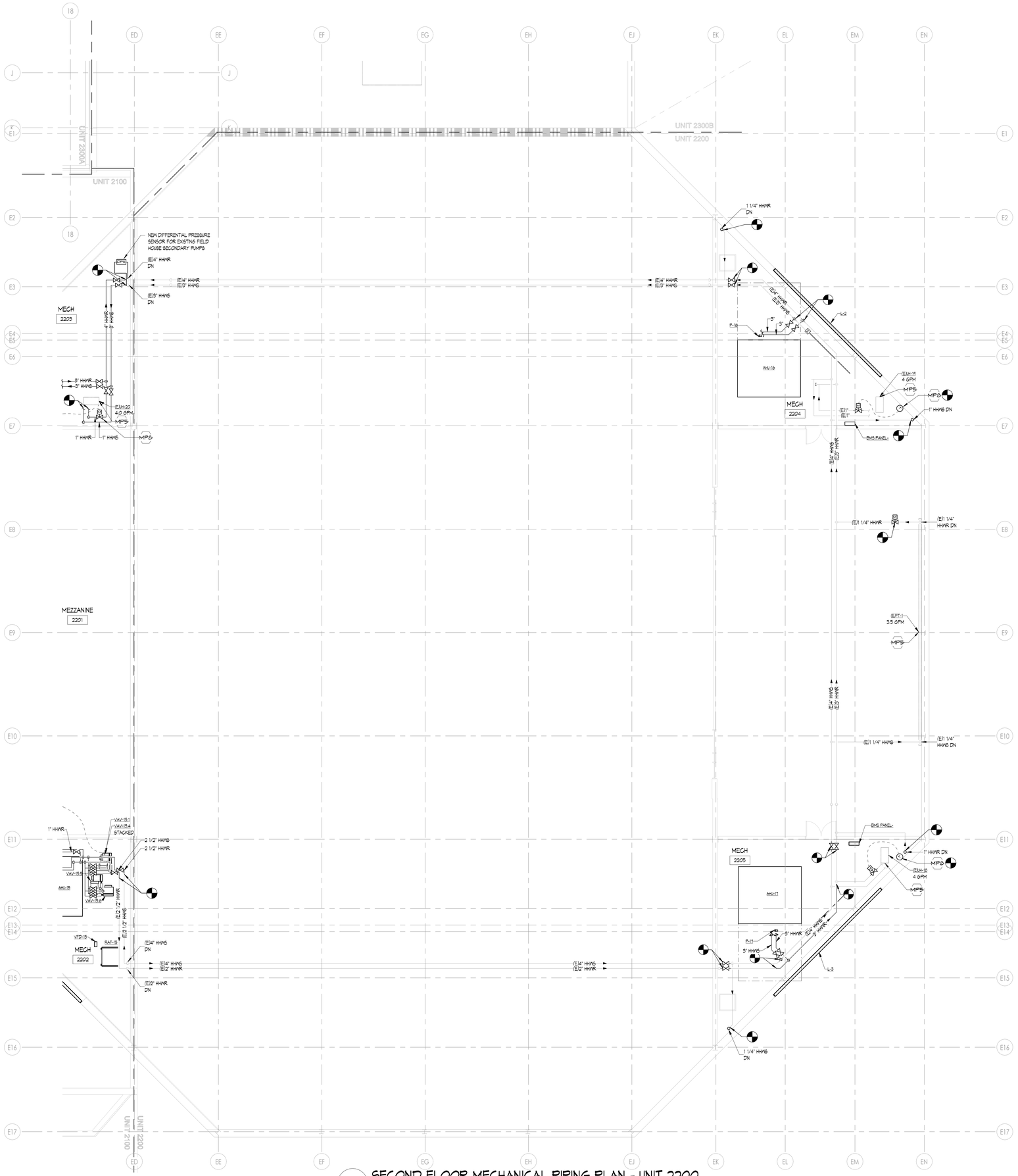

1 SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2200
1/8" = 1'-0"

MECHANICAL PIPING GENERAL NOTES

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8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE
SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2200

SHEET NO.
M222.c

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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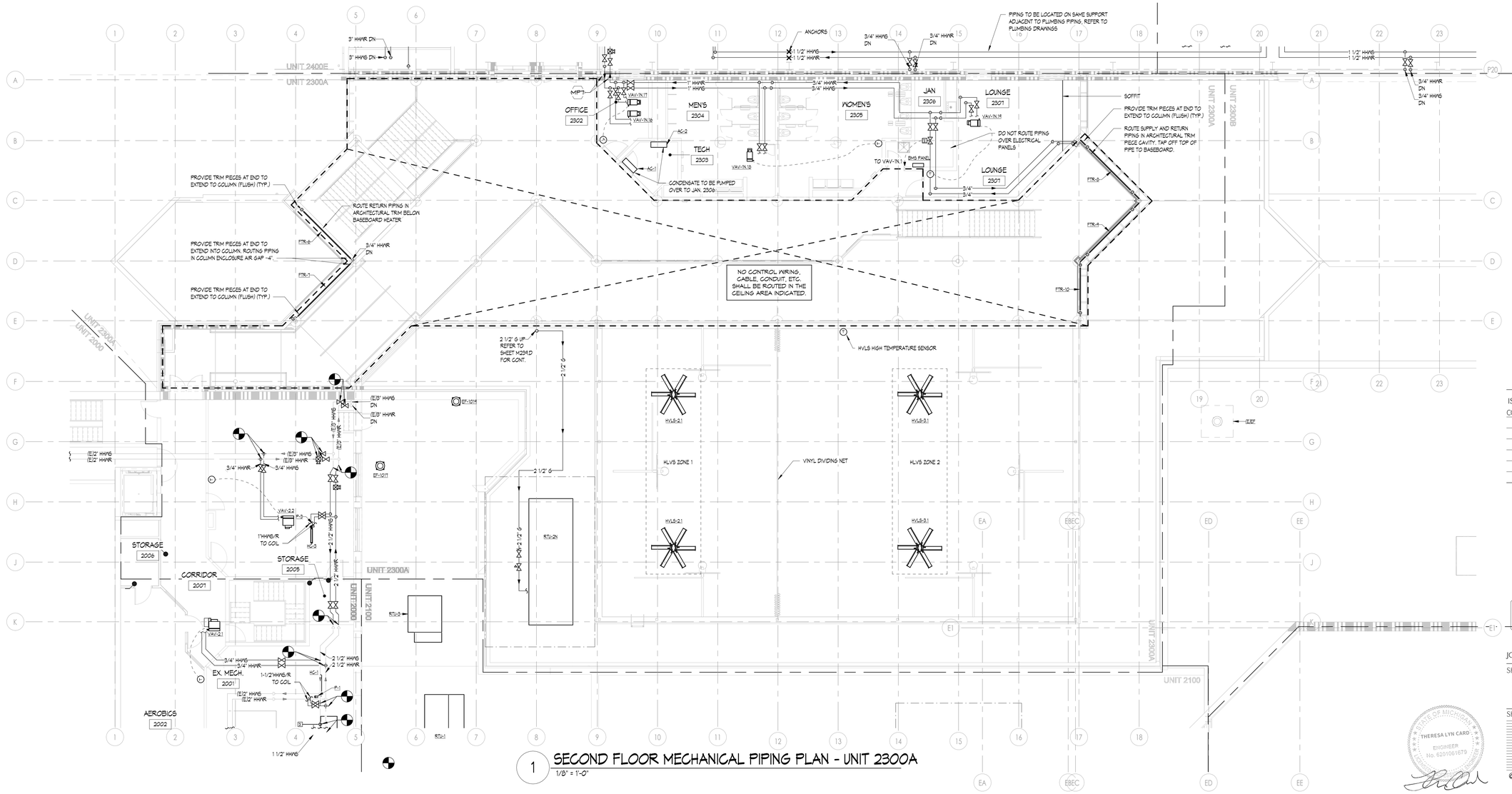

1 SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2300A
1/8" = 1'-0"

Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2300A

SHEET NO.
M222.d

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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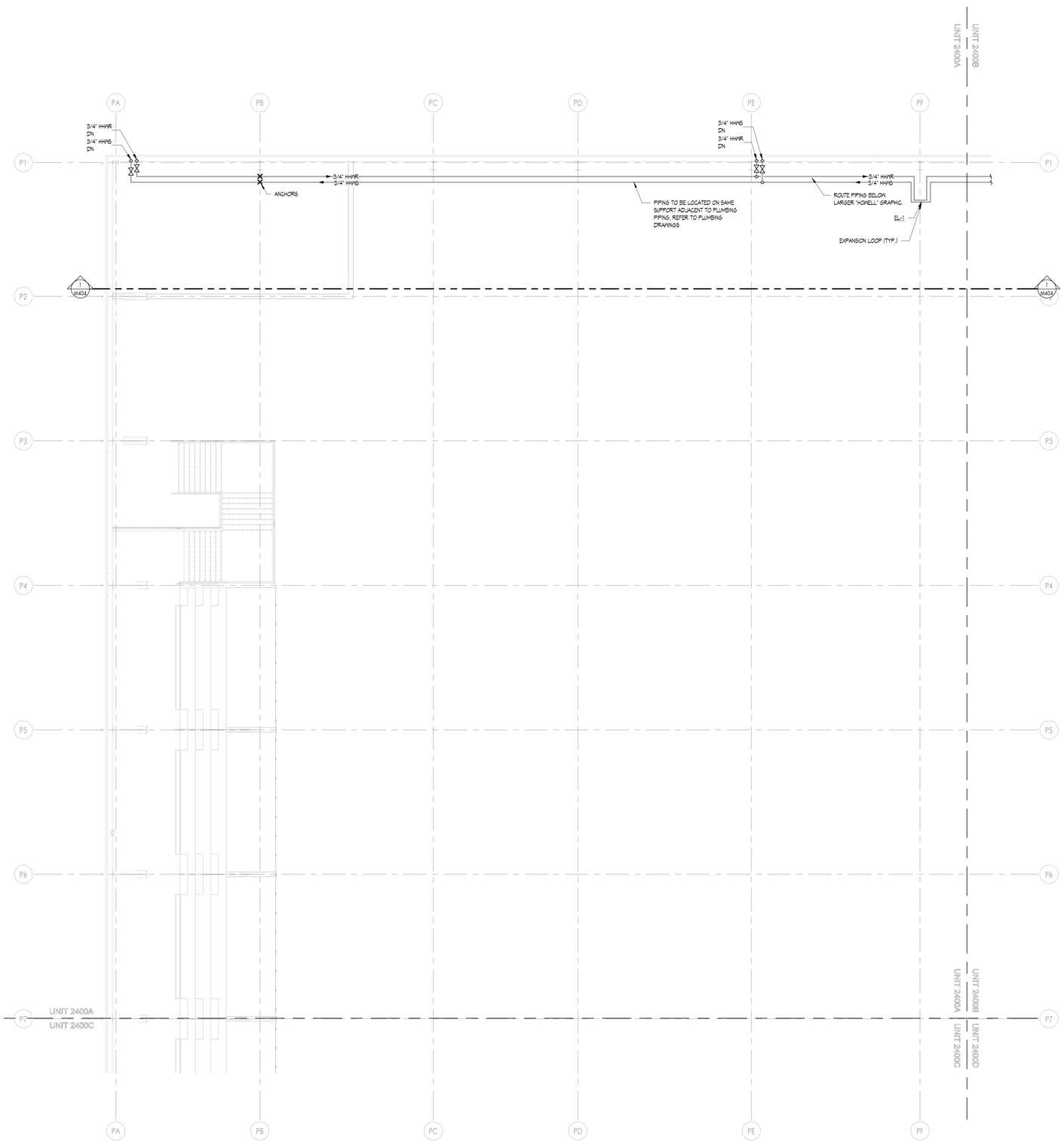

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MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND CM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

MECHANICAL PIPING KEYNOTE

MP1 PROVIDE NEW FINNED TUBE WITH NEW ENCLOSURE. RECONNECT TO EXISTING PIPING.
MP2 EXISTING CEILING MOUNTED CABINET UNIT HEATER TO REMAIN. NEW CEILING WORK AROUND UNIT SHALL ADJUST TO EXISTING UNIT LOCATION.
MP3 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.
MP4 EXISTING SECONDARY PUMPS TO BE REBALANCED. EXISTING SECONDARY PUMPS HAVE A MIN. FLOW RATE OF 45 GPM AT 1800 RPM.
MP5 REBALANCE EXISTING HYDRONIC EQUIPMENT TO GPM SHOWN.
MP6 EXISTING EQUIPMENT TO BE ABANDONED IN PLACE. VALVE OFF UNIT, DRAIN IT AND REMOVE CONTROLS. UNIT SHALL NOT RECEIVE CONTROLS UPGRADES/SHALL NOT BE TIED INTO NEW BMS AND SHALL NOT BE REBALANCED. PROVIDE EQUIPMENT TAG STATING UNIT IS "ABANDONED".
MP7 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR HWHS, HWRR, NG.
MP8 PROVIDE NEW CONTROL VALVE AND THERMOSTAT FOR EXISTING TO REMAIN EQUIPMENT. REFER TO CONTROLS DRAWINGS FOR ADDITIONAL DETAIL AND SCOPE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS.
MP9 PROVIDE NEW CONTROLLER FOR EXISTING RADIANT FLOOR SYSTEM. SYSTEM TO MATCH EXISTING SEQUENCE AND CONTROL (E)PUMP P-9 AND NEW 3-WAY CONTROL VALVE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS. REFER TO DIAGRAM ON M3 SERIES SHEETS.
MP10 ABANDON CONTROL VALVE IN PLACE (CLOSED).
MP11 INTEGRATE EXISTING INNOVENT POOL UNIT INTO THE NEW BMS. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS GRAPHICS. REPLACE EXISTING 3-WAY VALVE. REFER TO DIAGRAM ON M3 SERIES SHEETS.
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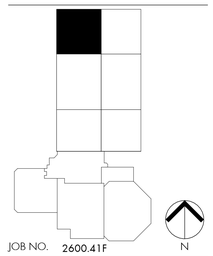
Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE
SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400A

SHEET NO.
M222.f

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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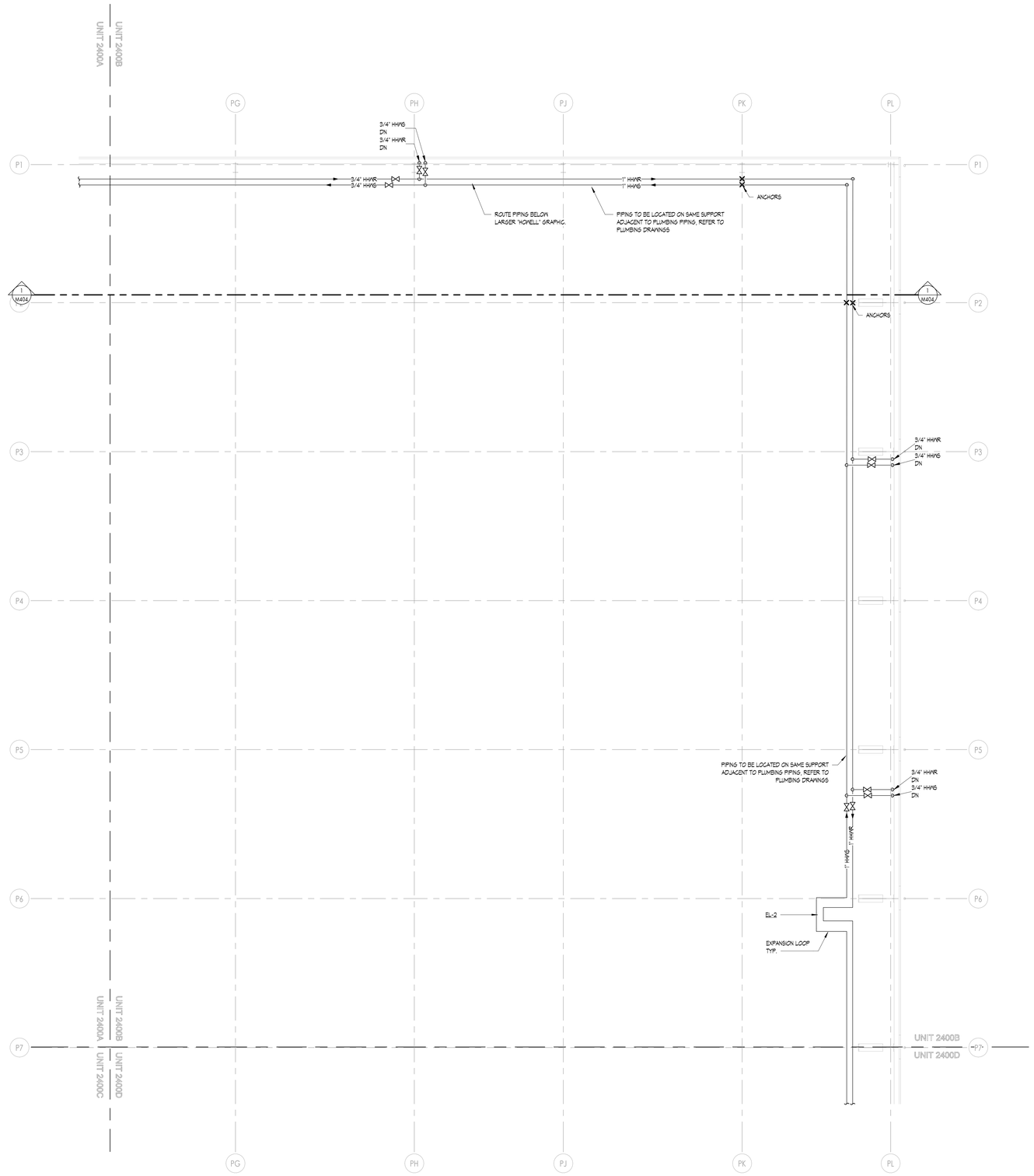

1 SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400B
1/8" = 1'-0"

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3. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC., SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
10. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
11. ALL BRANCH PIPING TO A SINGLE TERMINAL UNIT TEMPERING COIL OR RADIANT CEILING PANEL SHALL BE 3/4", UNLESS OTHERWISE NOTED.
12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
13. AIR VENTS AND DRAIN VALVES SHALL BE PROVIDED ON THE HIGH AND LOW POINTS THROUGHOUT THE SYSTEM.

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1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
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3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND GM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 8" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
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Howell Community Center

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400B

SHEET NO.
M222.g

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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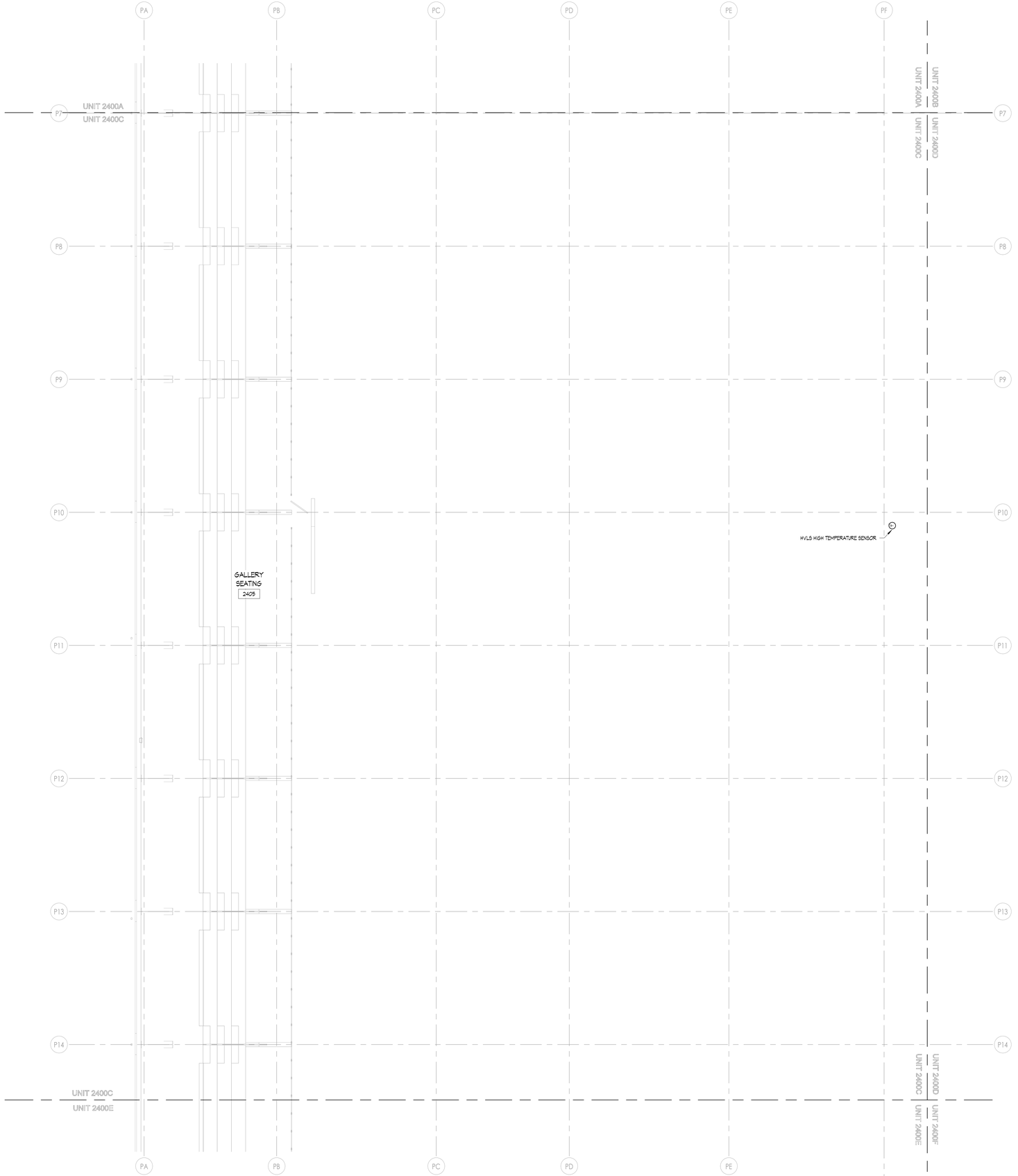

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HOWELL
PUBLIC SCHOOLS

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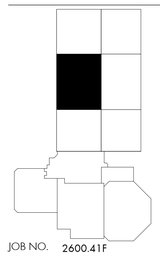

JOB NO. 2600.41F

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SHEET TITLE
SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400C

SHEET NO.
M222.h

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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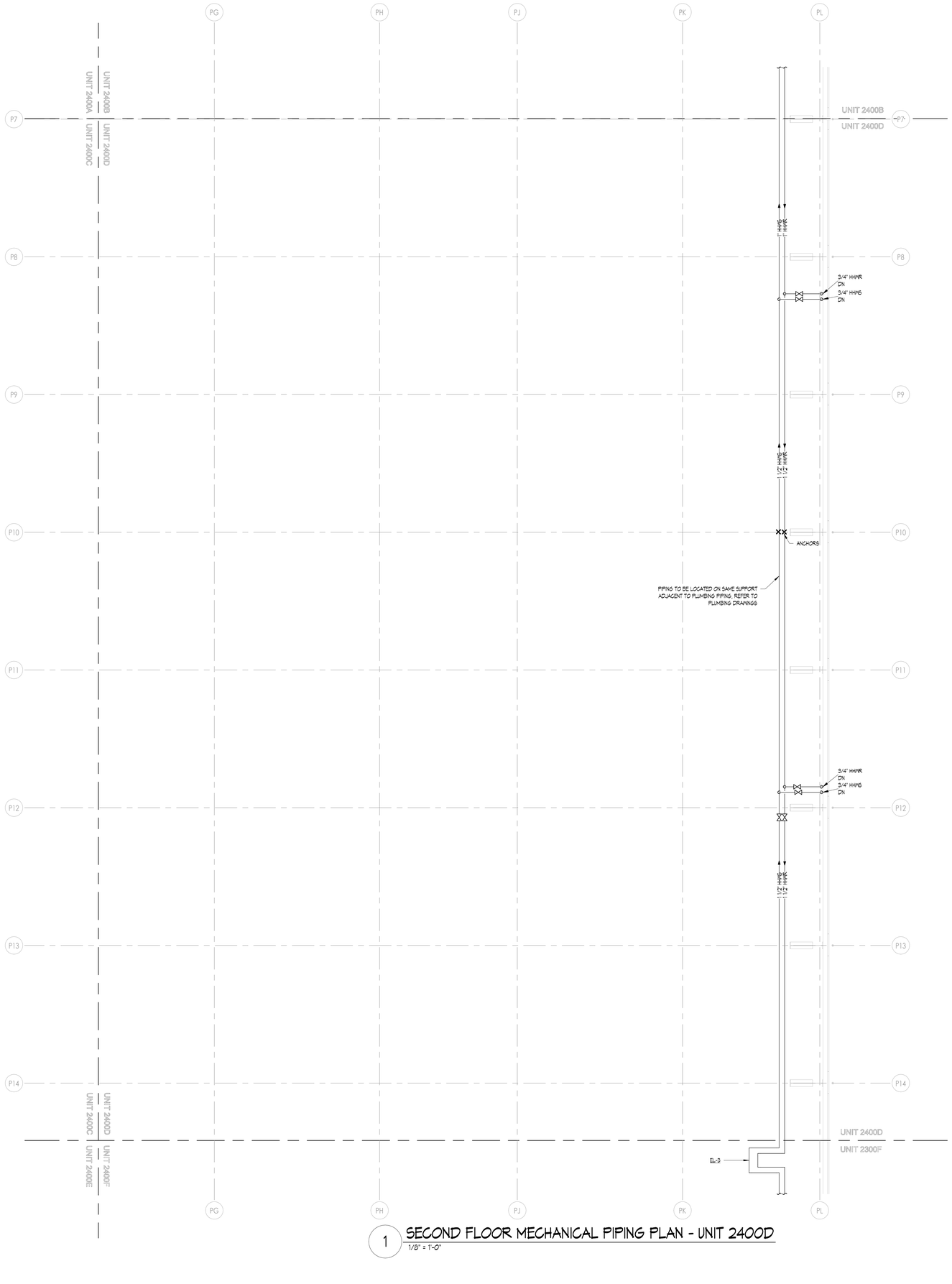

1 SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400D
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1661 N Latson Rd, Howell, MI 48843

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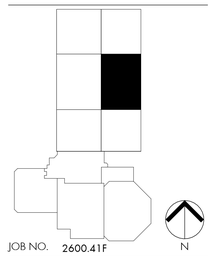
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE

SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400D

SHEET NO.

M222.i

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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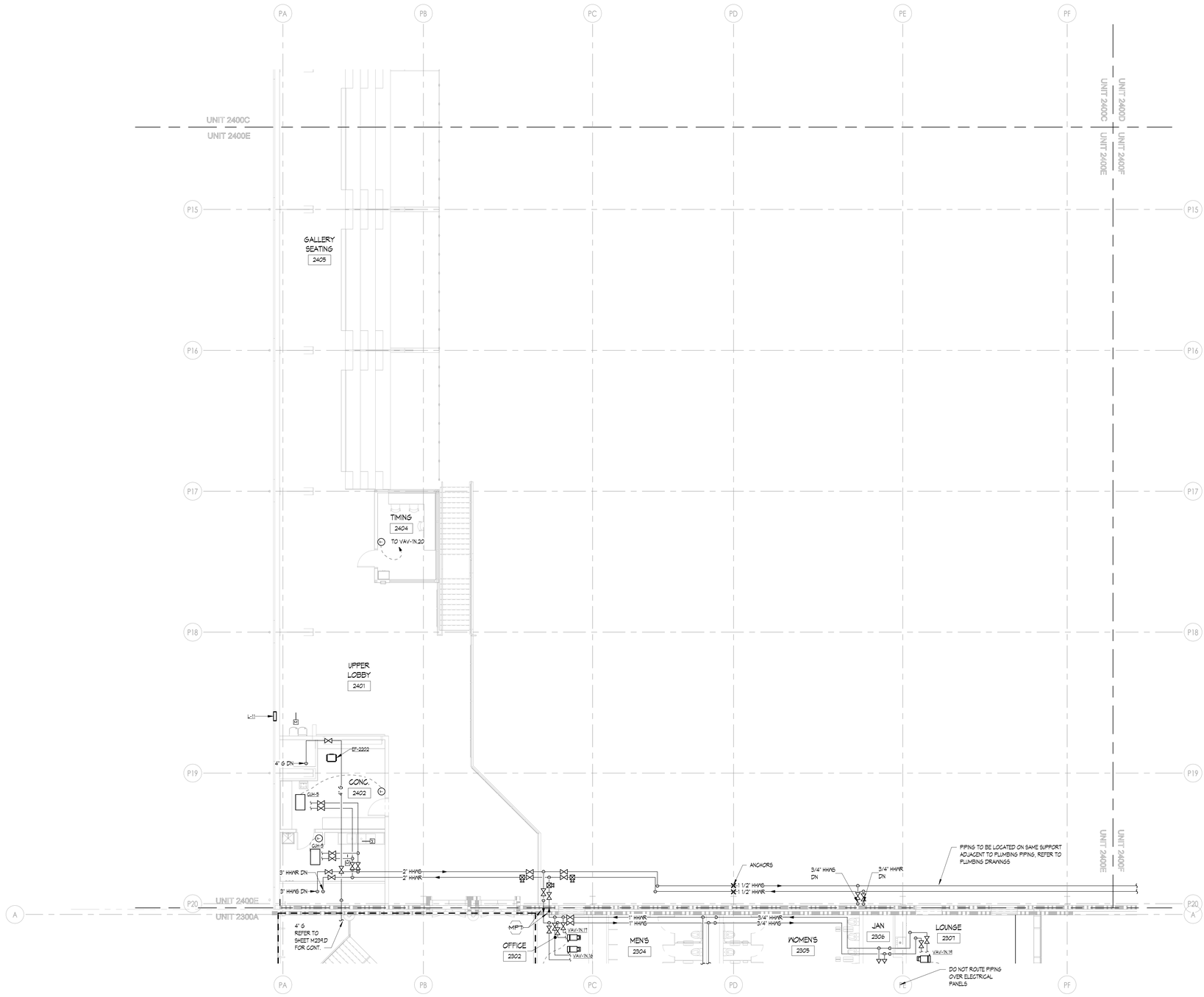

1 SECOND FLOOR MECHANICAL PIPING PLAN - UNIT 2400E

1/8" = 1'-0"

MECHANICAL PIPING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
10. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
11. ALL BRANCH PIPING TO A SINGLE TERMINAL UNIT TEMPERING COIL OR RADIANT CEILING PANEL SHALL BE 3/4", UNLESS OTHERWISE NOTED.
12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
13. AIR VENTS AND DRAIN VALVES SHALL BE PROVIDED ON THE HIGH AND LOW POINTS THROUGHOUT THE SYSTEM.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND CM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

MECHANICAL PIPING KEYNOTE

MP1 PROVIDE NEW FINNED TUBE WITH NEW ENCLOSURE. RECONNECT TO EXISTING PIPING.
MP2 EXISTING CEILING MOUNTED CABINET UNIT HEATER TO REMAIN. NEW CEILING WORK AROUND UNIT SHALL ADJUST TO EXISTING UNIT LOCATION.
MP3 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.
MP4 EXISTING SECONDARY PUMPS TO BE REBALANCED. EXISTING SECONDARY PUMPS HAVE A MIN. FLOW RATE OF 45 GPM AT 1800 RPM.
MP5 REBALANCE EXISTING HYDRONIC EQUIPMENT TO GPM SHOWN.
MP6 EXISTING EQUIPMENT TO BE ABANDONED IN PLACE. VALVE OFF UNIT, DRAIN IT AND REMOVE CONTROLS. UNIT SHALL NOT RECEIVE CONTROLS UPGRADES-SHALL NOT BE TIED INTO NEW BMS AND SHALL NOT BE REBALANCED. PROVIDE EQUIPMENT TAG STATING UNIT IS "ABANDONED".
MP7 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR HWS, HWR, NG.
MP8 PROVIDE NEW CONTROL VALVE AND THERMOSTAT FOR EXISTING TO REMAIN EQUIPMENT. REFER TO CONTROLS DRAWINGS FOR ADDITIONAL DETAIL AND SCOPE. INTEGRATE SYSTEM AND EQUIPMENT INTO NEW BMS.
MP9 PROVIDE NEW CONTROLLER FOR EXISTING RADIANT FLOOR SYSTEM. SYSTEM TO MATCH EXISTING SEQUENCE AND CONTROL (EP)MP P-6 AND NEW 3-WAY CONTROL VALVE.
MP10 ABANDON CONTROL VALVE IN PLACE (CLOSED).
MP11 INTEGRATE EXISTING INNOVENT POOL UNIT INTO THE NEW BMS. INTEGRATE CONTROLLER AND COMPONENTS INTO NEW BMS GRAPHICS. REPLACE EXISTING 3-WAY VALVE. REFER TO DIAGRAM ON M3 SERIES SHEETS.
MP12 PIPING SHALL HAVE ADDITIONAL ISOLATION VALVE ON SUPPLY AND RETURN AT ABOUT 11FT AFF.
MP13 PROVIDE NEW TEMPERATURE SENSORS AND CONTROLS FOR NEW REQ'RD PUMP RCP-25.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

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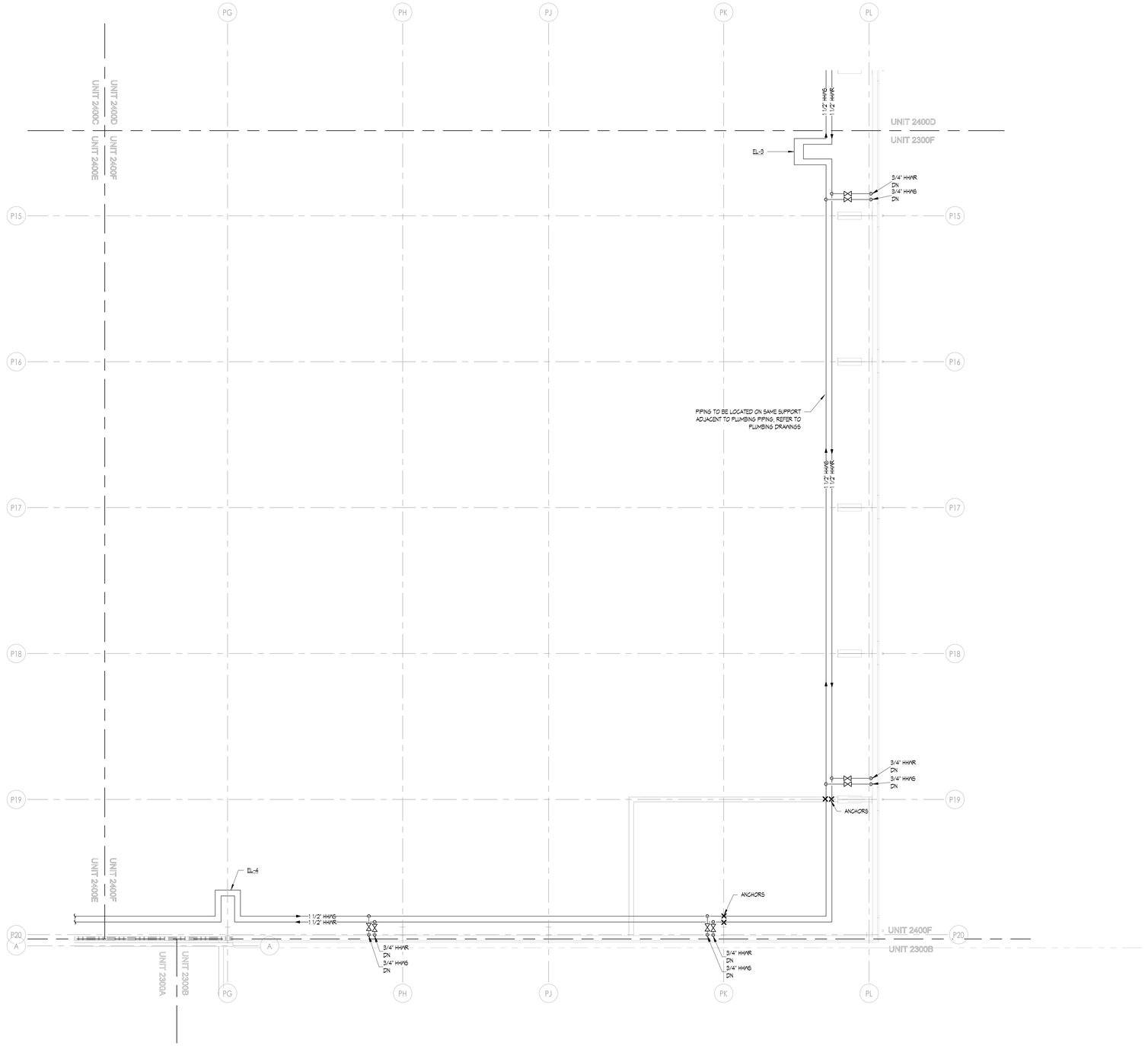

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

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STATE OF MICHIGAN
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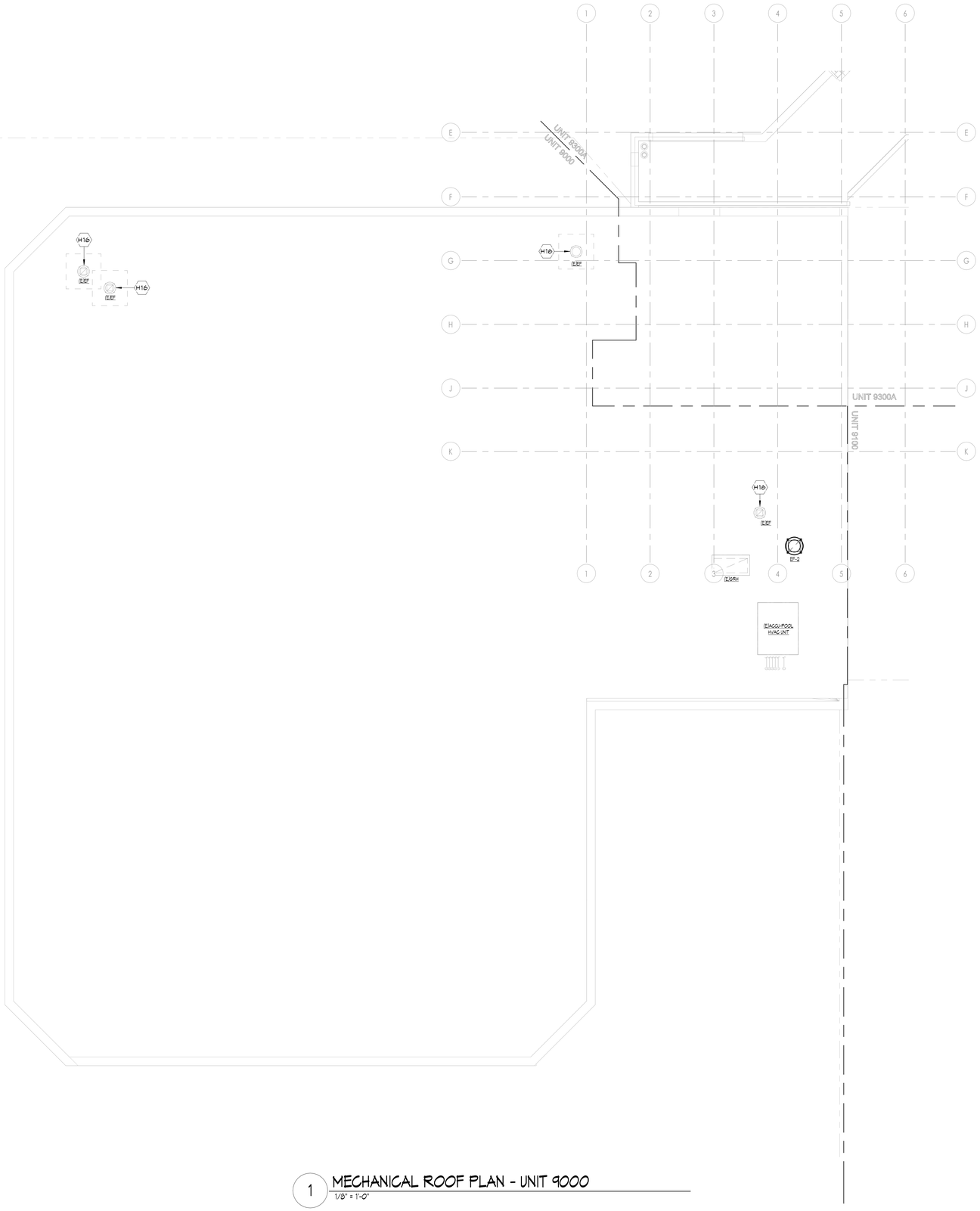

1 MECHANICAL ROOF PLAN - UNIT 9000
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MECHANICAL HVAC GENERAL NOTES

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3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. VERIFY ALL EQUIPMENT CONNECTIONS WITH THE MANUFACTURER'S CERTIFIED DRAWINGS. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION OF WORK. PROVIDE TRANSITIONS AND MAKE FINAL CONNECTIONS TO EQUIPMENT, UNLESS OTHERWISE INDICATED.
5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
14. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
15. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
16. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
17. BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE (WHERE NO DUCT SIZE IS INDICATED ON PLAN.
18. DUCTWORK PENETRATIONS OF ALL FIRE RATED AND SMOKE RESISTIVE CONSTRUCTION SHALL BE COORDINATED WITH LIFE SAFETY PLANS. PROVIDE CODE REQUIRED DAMPERS (WHERE APPLICABLE. PENETRATION ASSEMBLY TO BE U.L. LISTED.
19. FLEXIBLE DUCTWORK SHALL NOT BE USED IN RETURN OR EXHAUST SYSTEMS, UNLESS OTHERWISE NOTED. FLEXIBLE DUCTWORK MAY BE USED IN SUPPLY SYSTEMS PROVIDED THE LENGTH IS LIMITED TO A TOTAL LENGTH OF FIVE (5) FEET.
20. ALL EXISTING DUCTWORK BEING REUSED IN NEW WORK SCOPE SHALL BE CLEANED BACK TO AIR-HANDLING UNIT.
21. REPLACE ALL RTU FILTERS AT CLOSEOUT, AFTER CLEANING AND CONSTRUCTION HAS CONCLUDED.
22. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED. EQUIPMENT ABOVE CEILINGS SHALL BE INSTALLED NO MORE THAN 9'-0" ABOVE CEILING.
23. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN PEMB WALLS.

HVAC KEYNOTES

H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK. COLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.

H2 CLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS; VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.

H3 DOAS UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS). GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO CIVIL PLANS.) UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.

H4 FLOOR GRILLE IN 2-HR RATED FLOOR. PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENHECK DFD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.

H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

H6 TERMINATE NEW EXHAUST INTAKE 16" AFF. PROVIDE WITH INSECT SCREEN.

H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.

H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H9 30"X12" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H10 30"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H11 8"X8" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H12 18"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.

H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.

H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MENS 2304) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR/VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.

H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)

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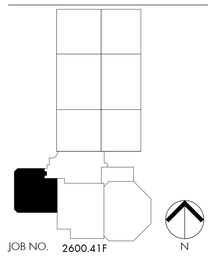

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MECHANICAL ROOF PLAN - UNIT 9000

SHEET NO.

M239.a



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MECHANICAL HVAC GENERAL NOTES

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5. DUCT CONSTRUCTION SHALL COMPLY WITH THE LATEST VERSION OF SMACNA CONSTRUCTION STANDARDS FOR THE SPECIFIC PRESSURE CLASSIFICATIONS INDICATED IN THE SPECIFICATIONS. REFER TO DETAILS FOR ADDITIONAL REQUIREMENTS.
6. INSTALL DUCTWORK AS CLOSE AS POSSIBLE TO THE UNDERSIDE OF BEAMS AND/OR JOISTS.
7. ALL DUCTWORK SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS, INCLUDING LINED DUCTWORK.
8. PAINT FLAT BLACK THE INSIDE OF ALL DUCTWORK VISIBLE THROUGH DIFFUSERS, GRILLES AND REGISTERS.
9. FURNISH AND INSTALL ALL MANUALLY OPERATED VOLUME CONTROL (BALANCING) DAMPERS NECESSARY TO PERFORM THE BALANCING WORK, AT EACH BRANCH TAKEOFF, AT EACH AIR TERMINAL DEVICE, AND/OR WHERE INDICATED.
10. COORDINATE EXACT LOCATION OF DIFFUSERS, GRILLES AND REGISTERS WITH THE REFLECTED CEILING PLANS BEFORE INSTALLATION. COORDINATE WITH ALL OTHER CEILING DEVICES (E.G. SPRINKLER HEADS, FIRE ALARM DEVICES, LIGHTING FIXTURES, ETC.)
11. PROVIDE ACCESS DOORS AND/OR PANELS IN HARD CEILINGS AND WALLS TO PERMIT SERVICE TO DAMPERS, VALVES, AND CONCEALED EQUIPMENT. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
12. REFER TO ARCHITECTURAL GENERAL INFORMATION SHEETS FOR MOUNTING HEIGHTS OF DEVICES. COORDINATE ALL WALL MOUNTED DEVICES (THERMOSTATS, CONTROL PANELS, ETC.) WITH ARCHITECTURAL INTERIOR ELEVATIONS, ELECTRICAL DEVICES, SWITCHES, ETC. ALIGN DEVICES FOR A COHESIVE LOOK.
13. WHERE SIZE OF MOTORIZED DAMPER EXCEEDS THE LIMITS OF A SINGLE OPERATOR, PROVIDE MULTIPLE OPERATORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
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23. CENTER LOUVERS AND OTHER WALL PENETRATIONS BETWEEN RIBS IN PEMB WALLS.

HVAC KEYNOTES

H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK GOLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.

H2 CLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS; VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.

H3 DOAS UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS). GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO GIVIL PLANS). UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.

H4 FLOOR GRILLE IN 2-HR RATED FLOOR. PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENHECK DFD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.

H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

H6 TERMINATE NEW EXHAUST INTAKE 18" AFF. PROVIDE WITH INSECT SCREEN.

H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAL.

H9 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H8 30"X12" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H10 30"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H11 8"X8" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

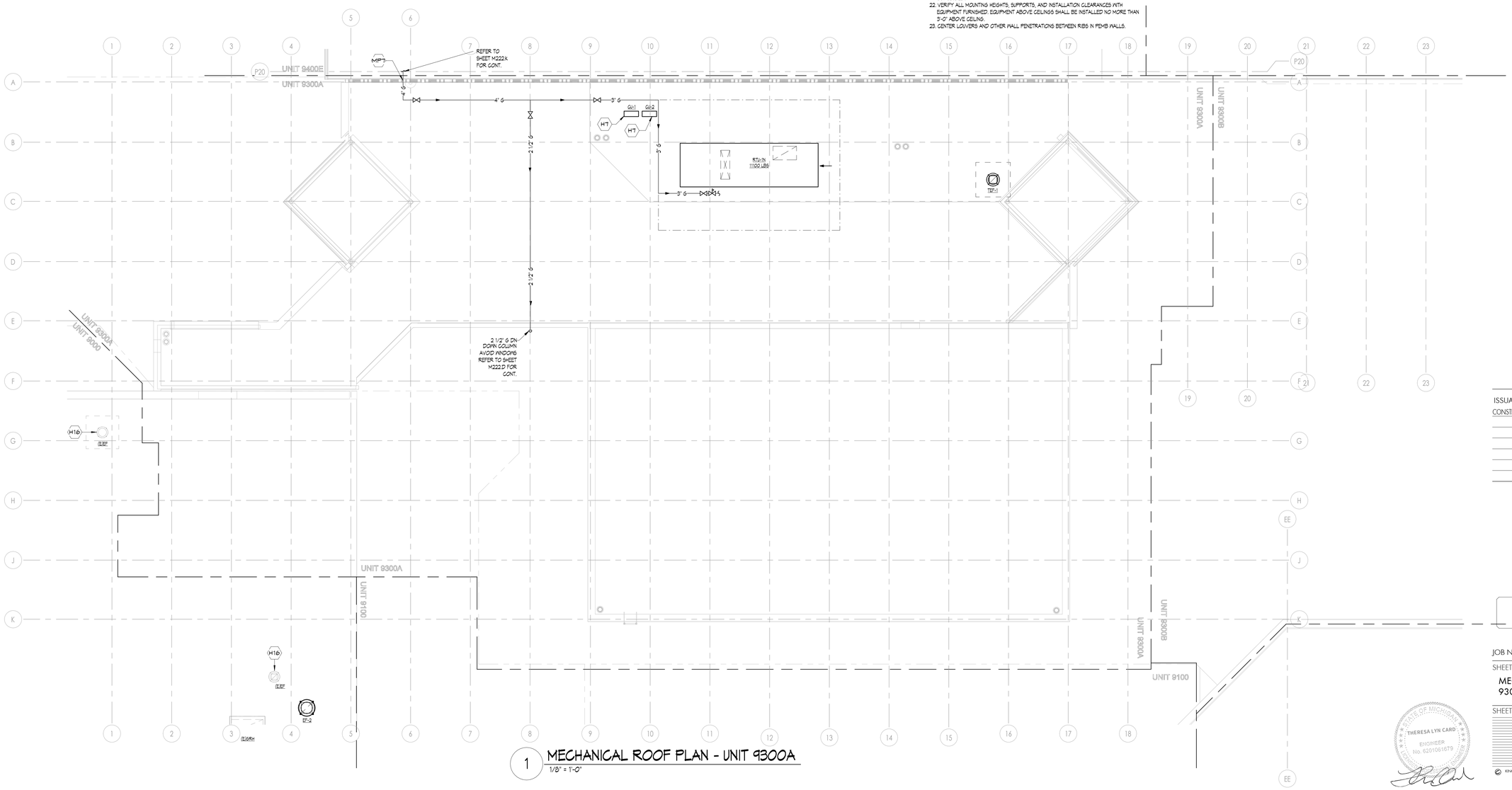
H12 18"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.

H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.

H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MEN'S 2304) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH DETAILS FOR AIR/VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.

H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)



1 MECHANICAL ROOF PLAN - UNIT 9300A
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL ROOF PLAN - UNIT 9300A

SHEET NO.
M239.d

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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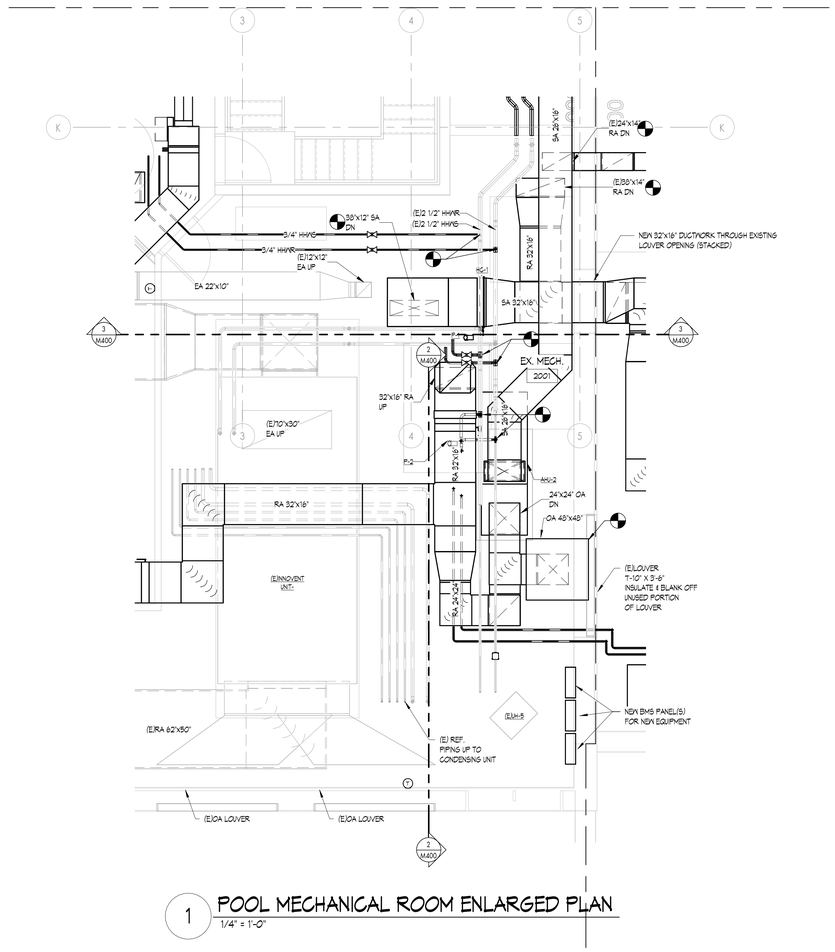
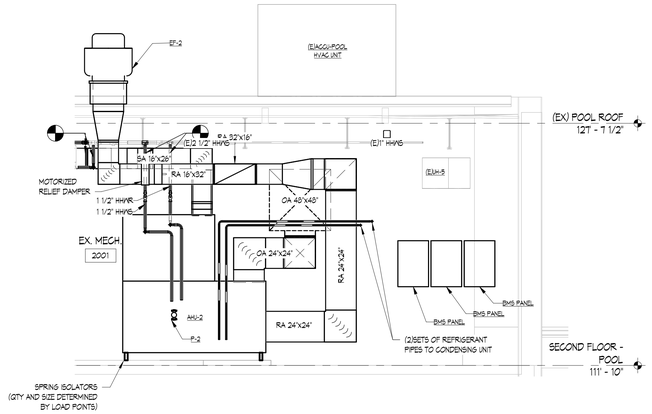


1 POOL MECHANICAL ROOM ENLARGED PLAN
1/4" = 1'-0"



2 POOL MECHANICAL ROOM SECTION LOOKING EAST
1/4" = 1'-0"

3 POOL MECHANICAL ROOM SECTION LOOKING NORTH
1/4" = 1'-0"

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3. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
10. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
11. ALL BRANCH PIPING TO A SINGLE TERMINAL UNIT TEMPERING COIL OR RADIANT CEILING PANEL SHALL BE 3/4" UNLESS OTHERWISE NOTED.
12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
13. AIR VENTS AND DRAIN VALVES SHALL BE PROVIDED ON THE HIGH AND LOW POINTS THROUGHOUT THE SYSTEM.
14. CONTRACTOR SHALL COORDINATE THE WORK UNDER THIS SECTION WITH THAT OF ALL OTHER TRADES.
15. PROVIDE TRANSITIONS, OFFSETS, JOGS, ADDITIONAL PIPE FITTINGS, VALVES, ETC. TO AVOID INTERFERENCE WITH OTHER EQUIPMENT, DUCTWORK, PIPING, CONDUITS, ETC., INCLUDING CLEARANCE REQUIREMENTS.
16. COORDINATE WITH OTHER TRADES PRIOR TO FABRICATION TO AVOID INTERFERENCES.
17. PROVIDE SUPPORTING STEEL, PIPE HANGERS, BRACKETS, AND ALL REQUIRED MISCELLANEOUS IRON AND STEEL FOR THE PROPER INSTALLATION OF ALL SYSTEMS.
18. COORDINATE FINAL INSTALLATION REQUIREMENTS WITH EQUIPMENT FURNISHED BY OTHER TRADES.
19. COORDINATE ACCESS REQUIREMENTS OF ALL EQUIPMENT TO BE SERVICED, AND INSTALL WORK TO ALLOW ADEQUATE ACCESS CLEARANCE TO ALL EQUIPMENT.
20. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED.
21. MAINTAIN PROPER CLEARANCES AND ACCESS AROUND EQUIPMENT FOR OPERATION, MAINTENANCE, AND REPLACEMENT.
22. INSTALL WORK IN A NEAT AND WORKMANLIKE MANNER. PROVIDE PIPE SLEEVES, ESCUTCHEONS, INSULATION SHIELDS, ETC., AS REQUIRED FOR THE PROPER INSTALLATION OF THE WORK.
23. MAINTAIN PROPER SLOPES FOR ALL PIPING, INCLUDING PIPING TO EQUIPMENT FURNISHED BY OTHERS.
24. PROVIDE SUFFICIENT FLEXIBILITY IN ALL PIPING SYSTEMS TO ALLOW FOR THE EXPANSION AND CONTRACTION OF THE SYSTEMS WITHOUT STRAINING ANY VALVES, JOINTS, OR EQUIPMENT.
25. INSTALL ALL PIPING AND DUCTWORK WITH A MINIMUM OF 12" CLEARANCE FROM THE FINAL STRUCTURE. WHERE THIS CANNOT BE ACHIEVED, PROVIDE A WRITTEN VARIANCE TO THE ENGINEER.
26. PROVIDE ALL NECESSARY TRANSITIONS, OFFSETS, FITTINGS, AND COMPONENTS REQUIRED TO ENSURE THAT ALL PIPING AND DUCTWORK IS INSTALLED AT THE PROPER ELEVATION AND LOCATION.
27. WHERE PIPING, DUCTWORK, OR CONDUITS PASS THROUGH FIRE-RATED ASSEMBLIES, PROVIDE FIRESTOPPING TO MAINTAIN THE INTEGRITY OF THE FIRE RATING.
28. PROVIDE BALANCING VALVES IN ALL BRANCH PIPING AND AT ALL TERMINAL UNITS.
29. PROVIDE THERMOMETERS, PRESSURE GAUGES, AND TEST PORTS AS INDICATED ON THE DRAWINGS.
30. PROVIDE FLEXIBLE CONNECTIONS AT ALL EQUIPMENT WHERE VIBRATION IS A CONCERN.

ENLARGED MECHANICAL KEYNOTES

EM1 TCC TO PROVIDE NDN GO DETECTION AND ALARM PACKAGED SYSTEM FOR BOILER ROOM. SYSTEM SHALL BE POWERED BY 120V WIRING (BY ELECTRICAL) AND SHALL HAVE LOCAL ALARM AND STROBE AND DRY CONTACT FOR BMS ALARM CONNECTION. SIMILAR TO CRITICAL ENVIRONMENT TECHNOLOGIES CGAS-SC (CONTACT NICK BLAUVELT – BLUEFIELD ENGINEERED SYSTEMS – 913.414.3093).

EM2 NDN LOUVER SHALL BE COORDINATED IN FIELD TO BE ABOVE FLOOR BOND BEAM AND ~ 24" ABOVE COUNTER FLASHING.

EM3 (E)POOL AND SPA HEATING PLASTIC PIPING, VALVING, PUMPS, CONTROLS, ETC. TO REMAIN.

EM4 PROVIDE HVLS FAN CONTROLLER AND HM. FANS TO BE NETWORKED TOGETHER AND HAVE THE CAPABILITY TO BE INDIVIDUAL CONTROLLED OR SETUP IN SCENES/GROUPS. FANS TO HAVE FIRE RELAY. TWO TEMPERATURE AND HUMIDITY SENSORS (HIGH/LOW) TO INTEGRATE INTO SYSTEM FOR AUTOMATIC CONTROL. PROVIDE CAGE / SECURE HOUSING AROUND CONTROLLER AND SENSORS. CONTROLLER TO TIE (READ/WRITE) INTO OWNER BMS.

EM5 EXISTING STEEL THAT IS TO BE IN OUTDOOR AIR INTAKE PATH OF LOUVER SHALL BE WIRED BRUSHED AND PAINTED WITH A ZINC RICH COATING. REFER TO ARCHITECTURAL PLANS.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL ENLARGED PLANS & SECTIONS

SHEET NO.
M400

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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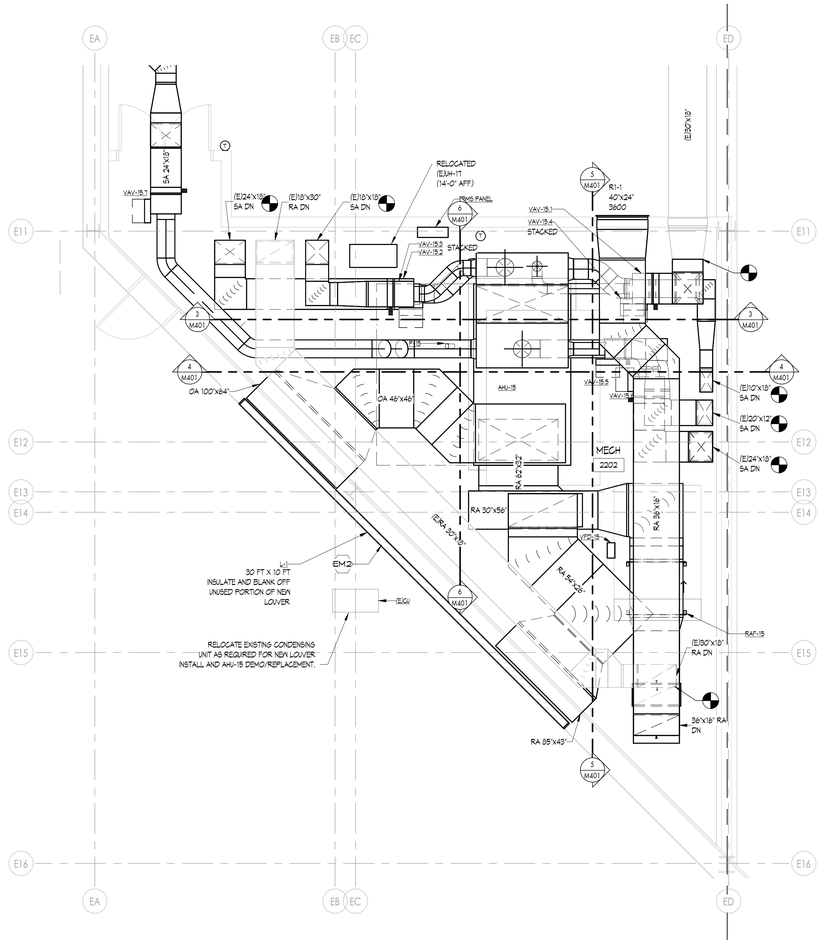
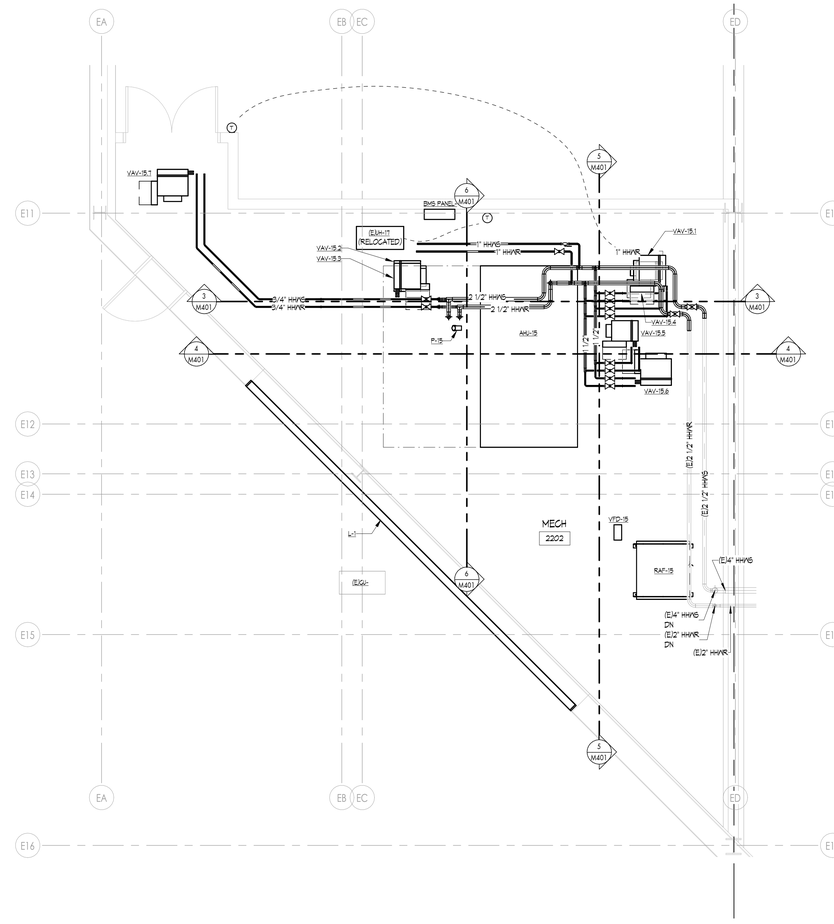


1 MECH RM 2202 ENLARGED HVAC PLAN
1/4" = 1'-0"



2 MECH RM 2202 ENLARGED PIPING PLAN
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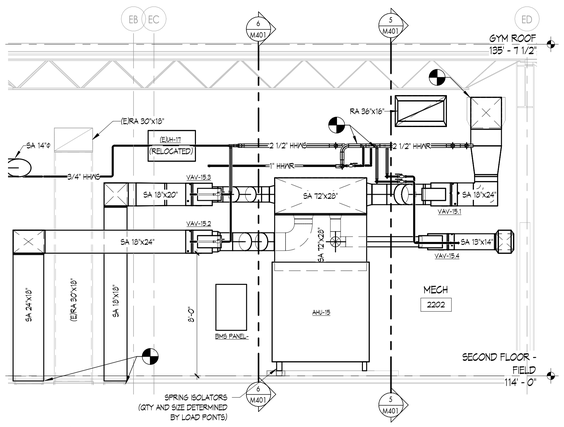
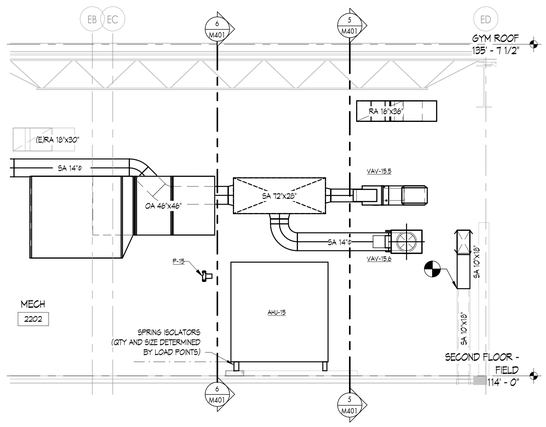
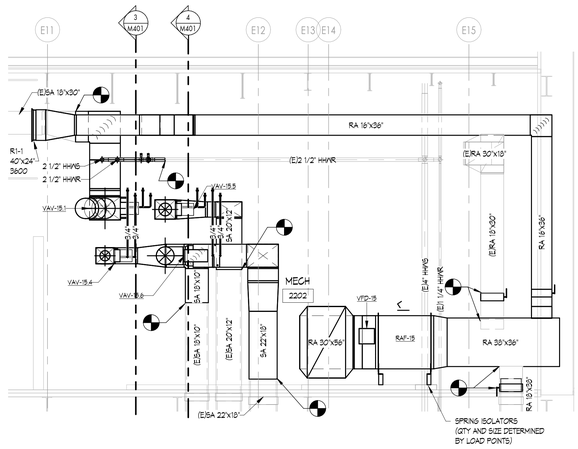


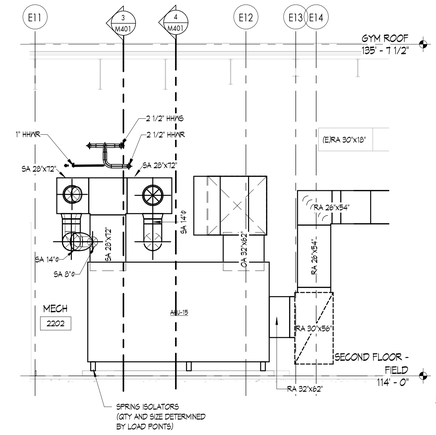
3 MECH RM 2202 SECTION LOOKING NORTH - 1
1/4" = 1'-0"



4 MECH RM 2202 SECTION LOOKING NORTH - 2
1/4" = 1'-0"



5 MECH RM 2202 SECTION LOOKING EAST -1
1/4" = 1'-0"



6 MECH RM 2202 SECTION LOOKING EAST - 2
1/4" = 1'-0"

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KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

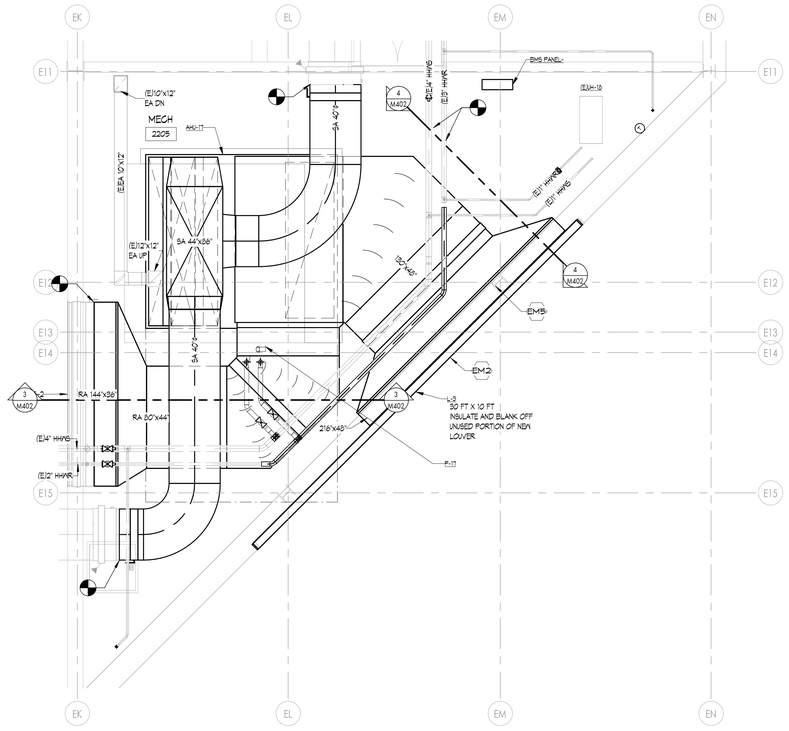
N

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL ENLARGED PLANS & SECTIONS

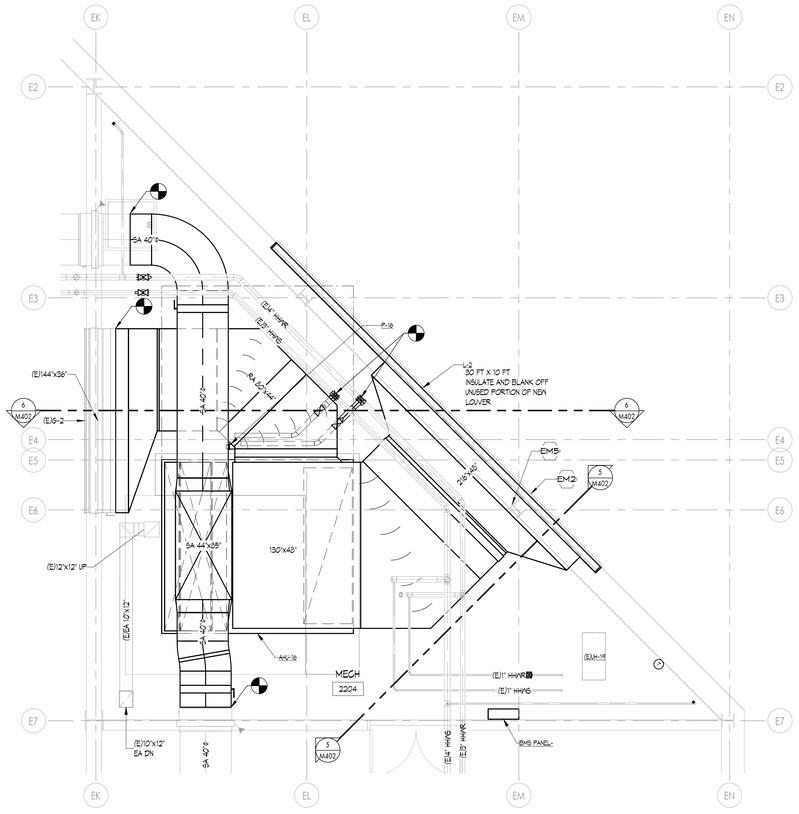
SHEET NO.
M401

KINGSCOTT ASSOCIATES INC. PORTAGE, MICHIGAN



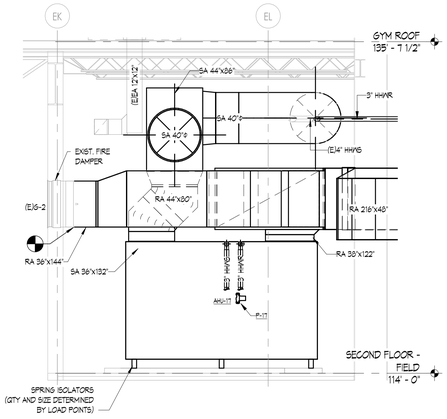
1 FIELD HOUSE SE MECHANICAL ROOM ENLAGRED PLAN

1/4" = 1'-0"



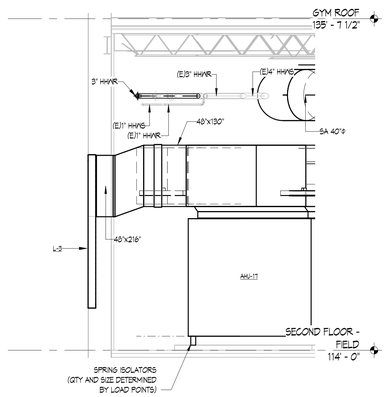
2 FIELD HOUSE NE MECHANICAL ROOM ENLARGED PLAN

1/4" = 1'-0"



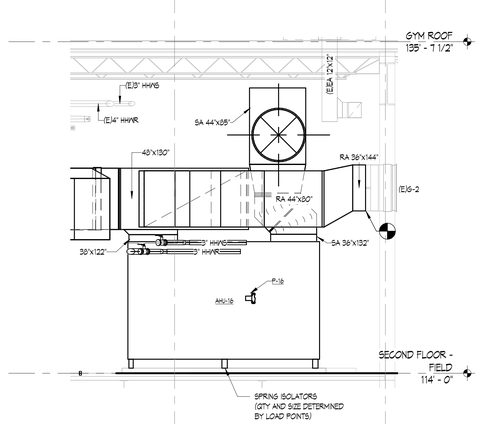
3 MECH RM 2205 SECTION LOOKING NORTH

1/4" = 1'-0"



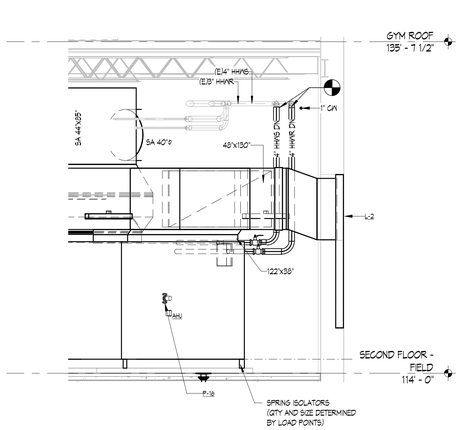
4 MECH RM 2205 SECTION LOOKING SOUTHWEST

1/4" = 1'-0"



6 MECH RM 2204 SECTION LOOKING SOUTH

1/4" = 1'-0"



5 MECH RM 2204 SECTION LOOKING NORTHWEST

1/4" = 1'-0"

MECHANICAL GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
10. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
11. ALL BRANCH PIPING TO A SINGLE TERMINAL UNIT TEMPERING COIL OR RADIANT CEILING PANEL SHALL BE 3/4" UNLESS OTHERWISE NOTED.
12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
13. AIR VENTS AND DRAIN VALVES SHALL BE PROVIDED ON THE HIGH AND LOW POINTS THROUGHOUT THE SYSTEM.
14. CONTRACTOR SHALL COORDINATE THE WORK UNDER THIS SECTION WITH THAT OF ALL OTHER TRADES.
15. PROVIDE TRANSITIONS, OFFSETS, JOGS, ADDITIONAL PIPE FITTINGS, VALVES, ETC. TO AVOID INTERFERENCE WITH OTHER EQUIPMENT, DUCTWORK, PIPING, CONDUITS, ETC., INCLUDING CLEARANCE REQUIREMENTS.
16. COORDINATE WITH OTHER TRADES PRIOR TO FABRICATION TO AVOID INTERFERENCES.
17. PROVIDE SUPPORTING STEEL, PIPE HANGERS, BRACKETS, AND ALL REQUIRED MISCELLANEOUS IRON AND STEEL FOR THE PROPER INSTALLATION OF ALL SYSTEMS.
18. COORDINATE FINAL INSTALLATION REQUIREMENTS WITH EQUIPMENT FURNISHED BY OTHER TRADES.
19. COORDINATE ACCESS REQUIREMENTS OF ALL EQUIPMENT TO BE SERVICED, AND INSTALL WORK TO ALLOW ADEQUATE ACCESS CLEARANCE TO ALL EQUIPMENT.
20. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED.
21. MAINTAIN PROPER CLEARANCES AND ACCESS AROUND EQUIPMENT FOR OPERATION, MAINTENANCE, AND REPLACEMENT.
22. INSTALL WORK IN A NEAT AND WORKMANLIKE MANNER. PROVIDE PIPE SLEEVES, ESCUTCHEONS, INSULATION SHIELDS, ETC., AS REQUIRED FOR THE PROPER INSTALLATION OF THE WORK.
23. MAINTAIN PROPER SLOPES FOR ALL PIPING, INCLUDING PIPING TO EQUIPMENT FURNISHED BY OTHERS.
24. PROVIDE SUFFICIENT FLEXIBILITY IN ALL PIPING SYSTEMS TO ALLOW FOR THE EXPANSION AND CONTRACTION OF THE SYSTEMS WITHOUT STRAINING ANY VALVES, JOINTS, OR EQUIPMENT.
25. INSTALL ALL PIPING AND DUCTWORK WITH A MINIMUM OF 12" CLEARANCE FROM THE FINAL STRUCTURE. WHERE THIS CANNOT BE ACHIEVED, PROVIDE A WRITTEN VARIANCE TO THE ENGINEER.
26. PROVIDE ALL NECESSARY TRANSITIONS, OFFSETS, FITTINGS, AND COMPONENTS REQUIRED TO ENSURE THAT ALL PIPING AND DUCTWORK IS INSTALLED AT THE PROPER ELEVATION AND LOCATION.
27. WHERE PIPING, DUCTWORK, OR CONDUITS PASS THROUGH FIRE-RATED ASSEMBLIES, PROVIDE FIRESTOPPING TO MAINTAIN THE INTEGRITY OF THE FIRE RATING.
28. PROVIDE BALANCING VALVES IN ALL BRANCH PIPING AND AT ALL TERMINAL UNITS.
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30. PROVIDE FLEXIBLE CONNECTIONS AT ALL EQUIPMENT WHERE VIBRATION IS A CONCERN.

ENLARGED MECHANICAL KEYNOTES

EM1 TCC TO PROVIDE NEW CO DETECTION AND ALARM PACKAGED SYSTEM FOR BOILER ROOM. SYSTEM SHALL BE POWERED BY 120V WIRING (BY ELECTRICAL) AND SHALL HAVE LOCAL ALARM AND STROBE AND DRY CONTACT FOR BMS ALARM CONNECTION. SIMILAR TO CRITICAL ENVIRONMENT TECHNOLOGIES CGAS-SC (CONTACT NICK BLAIVELT - BLUEFIELD ENGINEERED SYSTEMS - 313.414.3693).

EM2 NEW LOUVER SHALL BE COORDINATED IN FIELD TO BE ABOVE FLOOR BOND BEAM AND ~ 24" ABOVE COUNTER FLASHING.

EM3 (E)POOL AND SPA HEATING PLASTIC PIPING, VALVING, PUMPS, CONTROLS, ETC. TO REMAIN.

EM4 PROVIDE HVLS FAN CONTROLLER AND HM. FANS TO BE NETWORKED TOGETHER AND HAVE THE CAPABILITY TO BE INDIVIDUAL CONTROLLED OR SETUP IN SCENES/GROUPS. FANS TO HAVE FIRE RELAY. TWO TEMPERATURE AND HUMIDITY SENSORS (HIGH/LOW) TO INTEGRATE INTO SYSTEM FOR AUTOMATIC CONTROL. PROVIDE CAGE / SECURE HOUSING AROUND CONTROLLER AND SENSORS. CONTROLLER TO TIE (READ/WRITE) INTO OWNER BMS.

EM5 EXISTING STEEL THAT IS TO BE IN OUTDOOR AIR INTAKE PATH OF LOUVER SHALL BE WIRED BRUSHED AND PAINTED WITH A ZINC RICH COATING. REFER TO ARCHITECTURAL PLANS.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

N

JOB NO. 2600.41F

SHEET TITLE

MECHANICAL ENLARGED PLANS & SECTIONS

SHEET NO.

M402

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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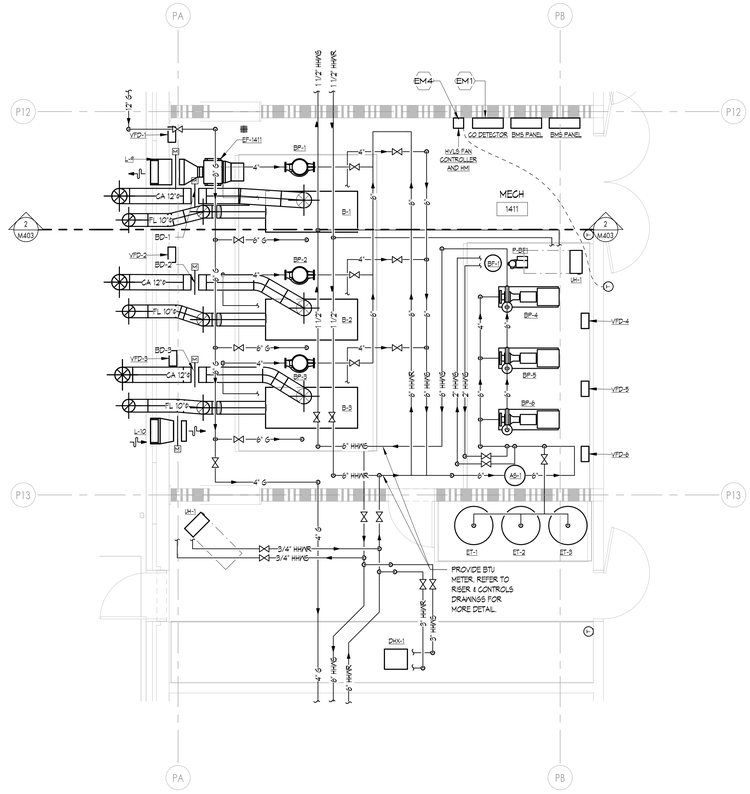
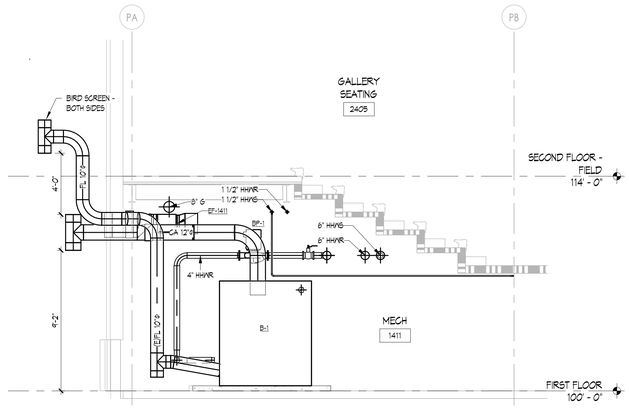


1 PEMB BOILER ROOM ENLARGED PLAN

1/4" = 1'-0"



2 PEMB BOILER ROOM SECTION

1/4" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

N

JOB NO. 2600.41F

SHEET TITLE

MECHANICAL ENLARGED PLANS & SECTIONS

SHEET NO.

M403

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201081679
REGISTERED PROFESSIONAL

07/30/2026

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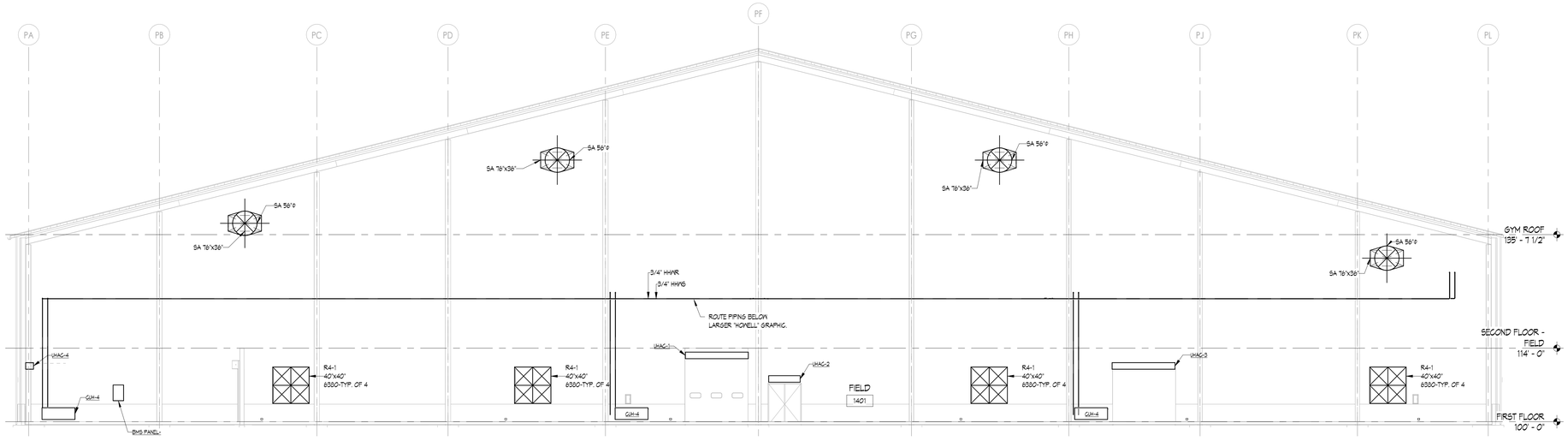
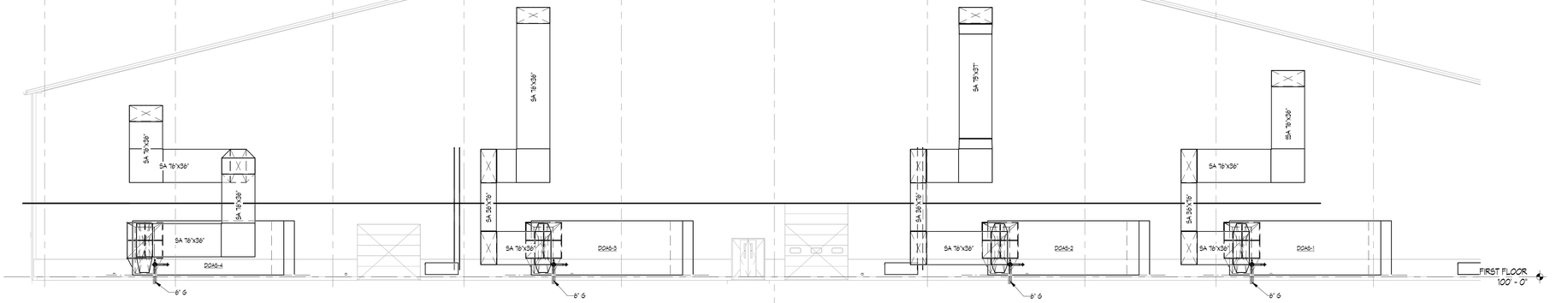
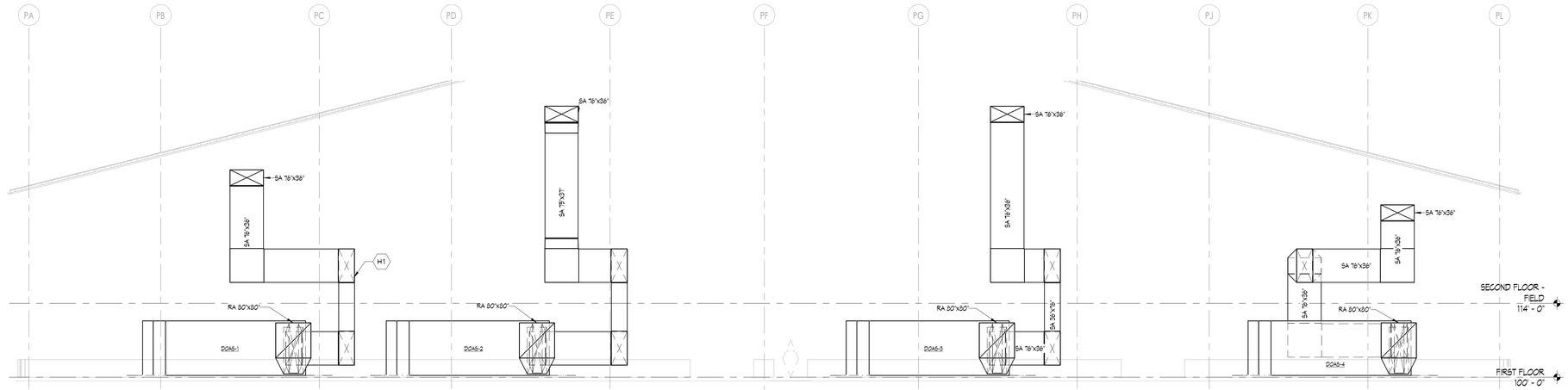


1 PEMB NORTH WALL - MECHANICAL SECTION - LOOKING NORTH
1" = 10'-0"



2 PEMB NORTH WALL - MECHANICAL SECTION - LOOKING SOUTH
1" = 10'-0"



3 PEMB DOAS SECTION - LOOKING NORTH
1" = 10'-0"

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12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
13. AIR VENTS AND DRAIN VALVES SHALL BE PROVIDED ON THE HIGH AND LOW POINTS THROUGHOUT THE SYSTEM.
14. CONTRACTOR SHALL COORDINATE THE WORK UNDER THIS SECTION WITH THAT OF ALL OTHER TRADES.
15. PROVIDE TRANSITIONS, OFFSETS, JOGS, ADDITIONAL PIPE FITTINGS, VALVES, ETC. TO AVOID INTERFERENCE WITH OTHER EQUIPMENT, DUCTWORK, PIPING, CONDUITS, ETC., INCLUDING CLEARANCE REQUIREMENTS.
16. COORDINATE WITH OTHER TRADES PRIOR TO FABRICATION TO AVOID INTERFERENCES.
17. PROVIDE SUPPORTING STEEL, PIPE HANGERS, BRACKETS, AND ALL REQUIRED MISCELLANEOUS IRON AND STEEL FOR THE PROPER INSTALLATION OF ALL SYSTEMS.
18. COORDINATE FINAL INSTALLATION REQUIREMENTS WITH EQUIPMENT FURNISHED BY OTHER TRADES.
19. COORDINATE ACCESS REQUIREMENTS OF ALL EQUIPMENT TO BE SERVICED, AND INSTALL WORK TO ALLOW ADEQUATE ACCESS CLEARANCE TO ALL EQUIPMENT.
20. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED.
21. MAINTAIN PROPER CLEARANCES AND ACCESS AROUND EQUIPMENT FOR OPERATION, MAINTENANCE, AND REPLACEMENT.
22. INSTALL WORK IN A NEAT AND WORKMANLIKE MANNER. PROVIDE PIPE SLEEVES, ESCUTCHEONS, INSULATION SHIELDS, ETC., AS REQUIRED FOR THE PROPER INSTALLATION OF THE WORK.
23. MAINTAIN PROPER SLOPES FOR ALL PIPING, NCLUDING PIPING TO EQUIPMENT FURNISHED BY OTHERS.
24. PROVIDE SUFFICIENT FLEXIBILITY IN ALL PIPING SYSTEMS TO ALLOW FOR THE EXPANSION AND CONTRACTION OF THE SYSTEMS WITHOUT STRAINING ANY VALVES, JOINTS, OR EQUIPMENT.
25. INSTALL ALL PIPING AND DUCTWORK WITH A MINIMUM OF 12" CLEARANCE FROM THE FINAL STRUCTURE. WHERE THIS CANNOT BE ACHIEVED, PROVIDE A WRITTEN VARIANCE TO THE ENGINEER.
26. PROVIDE ALL NECESSARY TRANSITIONS, OFFSETS, FITTINGS, AND COMPONENTS REQUIRED TO ENSURE THAT ALL PIPING AND DUCTWORK IS INSTALLED AT THE PROPER ELEVATION AND LOCATION.
27. WHERE PIPING, DUCTWORK, OR CONDUITS PASS THROUGH FIRE-RATED ASSEMBLIES, PROVIDE FIRESTOPPING TO MAINTAIN THE INTEGRITY OF THE FIRE RATING.
28. PROVIDE BALANCING VALVES IN ALL BRANCH PIPING AND AT ALL TERMINAL UNITS.
29. PROVIDE THERMOMETERS, PRESSURE GAUGES, AND TEST PORTS AS INDICATED ON THE DRAWINGS.
30. PROVIDE FLEXIBLE CONNECTIONS AT ALL EQUIPMENT WHERE VIBRATION IS A CONCERN.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND CM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING N PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

ENLARGED MECHANICAL KEYNOTES

EM1 TCC TO PROVIDE NEW GO DETECTION AND ALARM PACKAGED SYSTEM FOR BOILER ROOM. SYSTEM SHALL BE POWERED BY 120V HRING (BY ELECTRICAL) AND SHALL HAVE LOCAL ALARM AND STROBE AND DRY CONTACT FOR BMS ALARM CONNECTION. SIMILAR TO CRITICAL ENVIRONMENT TECHNOLOGIES CGAS-SC (CONTACT NICK BLAUVELT - BLUEFIELD ENGINEERED SYSTEMS - 313.414.3848).

EM2 NEW LOUVER SHALL BE COORDINATED IN FIELD TO BE ABOVE FLOOR BOND BEAM AND ~ 24" ABOVE COUNTER FLASHING.

EM3 (E)POOL AND SPA HEATING PLASTIC PIPING, VALVING, PUMPS, CONTROLS, ETC. TO REMAIN.

EM4 PROVIDE HVLS FAN CONTROLLER AND HMI. FANS TO BE NETWORKED TOGETHER AND HAVE THE CAPABILITY TO BE INDIVIDUAL CONTROLLED OR SETUP IN SCENES/GROUPS. FANS TO HAVE FIRE RELAY. TWO TEMPERATURE AND HUMIDITY SENSORS (HIGH/LOW) TO INTEGRATE INTO SYSTEM FOR AUTOMATIC CONTROL. PROVIDE CASE / SECURE HOUSING AROUND CONTROLLER AND SENSORS. CONTROLLER TO TIE (READ/WRITE) INTO OWNER BMS.

EM5 EXISTING STEEL THAT IS TO BE IN OUTDOOR AIR INTAKE PATH OF LOUVER SHALL BE WIRED BRUSHED AND PAINTED WITH A ZINC RICH COATING. REFER TO ARCHITECTURAL PLANS.

HVAC KEYNOTES

H1 DUCTWORK SUPPORTS SHALL BE DELEGATED DESIGNED BY A STRUCTURAL ENGINEER. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIRING STRUCTURAL ENGINEER TO DESIGN PROPER SUPPORT FRAMES/TOWERS FOR DUCTWORK COLUMN AND DUCTWORK HIGH ABOVE GRADE TO PEMB. TYPICAL DUCTWORK SUPPORT DETAILS MAY NOT BE USED FOR THIS DUCTWORK.

H2 CLEAN EXISTING RELIEF HOODS AND PROVIDE NEW SCREENS. PROVIDE NEW GRAVITY BACKDRAFT DAMPERS; VERIFY IN FIELD EXACT DIMENSIONS. RE-USE EXISTING DRAIN PANS BENEATH UNITS.

H3 DOAS UNITS TO SIT ON CONCRETE HOUSEKEEPING PAD (REFER TO STRUCTURAL PLANS). GRADING SHALL SLOPE PADS AWAY FROM BUILDING FOR DRAINAGE (REFER TO CIVIL PLANS). UNITS SHALL BE SHIMMED ON SLOPED PADS SUCH THAT UNITS SIT LEVEL. SHIMS SHALL BE CORROSION RESISTANT.

H4 FLOOR GRILLE IN 2-HR RATED FLOOR. PROVIDE 1.5 HR RATED FIRE DAMPER AT PENETRATION BELOW FLOOR (SIMILAR TO GREENHECK DFD-150). CENTERLINE OF DAMPER SHALL BE WITHIN THE RATED BARRIER. DAMPER SLEEVE SHALL BE FASTENED TO THE UNDERSIDE OF CONCRETE FLOOR WITH AN ACCESS PANEL ON 1ST FLOOR DUCTWORK. SLEEVE TO BE MOUNTED FLUSH TO TOP OF CONCRETE FLOOR. SLEEVE PROVIDED WITH GRILLE TABS. GRILLE TO BE INSTALLED IN THE SLEEVE OPENING. SEAL WATER TIGHT.

H5 ADD NEW MOTORIZED DAMPER TO EXISTING RELIEF HOOD.

H6 TERMINATE NEW EXHAUST INTAKE 18" AFT. PROVIDE WITH INSECT SCREEN.

H7 ROUTE REFRIGERANT PIPING FROM CONDENSING UNIT TO INDOOR AC UNIT. SUPPORT WITH NON-PENETRATING PIPE SUPPORTS AND REFER TO DETAILS FOR REFRIGERANT PIPING THROUGH ROOF DETAIL.

H8 10"X10" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H9 30"X12" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H10 30"X18" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H11 8"X6" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H12 16"X16" TRANSFER DUCT. DIMENSIONS ARE CLEAR INSIDE.

H13 EXISTING GYM DUCTWORK AND GRILLES TO REMAIN SHALL BE CLEANED (INSIDE AND OUTSIDE) AND PREPARED FOR NEW PAINT.

H14 REBALANCE EXISTING DIFFUSER TO AIRFLOWS INDICATED. CLEAN ALL EXISTING TO REMAIN DUCTWORK ATTACHED TO NEW AHU/RTU.

H15 PROVIDE COMBINATION FIRE/SMOKE DAMPERS WITH SLEEVES FOR DUCTS THAT PENETRATE DOUBLE 2-HOUR FIRE RATED WALLS. THE CONNECTOR SIDE DUCTS (INTO MEN'S 2304) SHALL HAVE FLEX CONNECTIONS TO FIRE DAMPER SLEEVE ASSEMBLY. PEMB SIDE DUCTWORK SHALL BE HARD-DUCTED TO FIRE DAMPER SLEEVE ASSEMBLY. FIRE DAMPERS AND SLEEVE TO BE INSTALLED AT TIME OF PEMB CONSTRUCTION TO ALIGN WITH ARCH. DETAILS FOR AIR/VAPOR BARRIERS AND SEALING OF SLEEVE THROUGH PEMB WALL.

H16 (E)EXHAUST FANS TO BE TIED INTO THE NEW BMS. CONTROLS TO BE ABLE TO START/STOP FANS AND MONITOR STATUS. DEMOLISH EXISTING ASSOCIATED WIRING (SWITCH, THERMOSTAT, ECT.)

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES DATE
CONSTRUCTION DOCUMENTS 07.30.2026

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL ENLARGED PLANS & SECTIONS

SHEET NO.
M404

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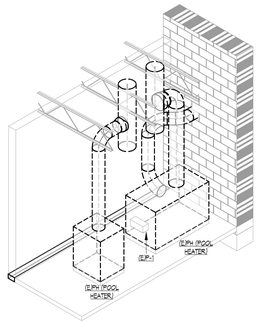
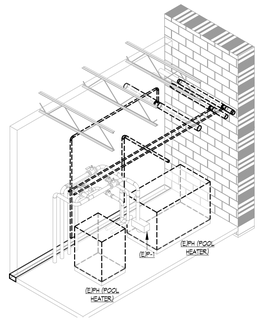
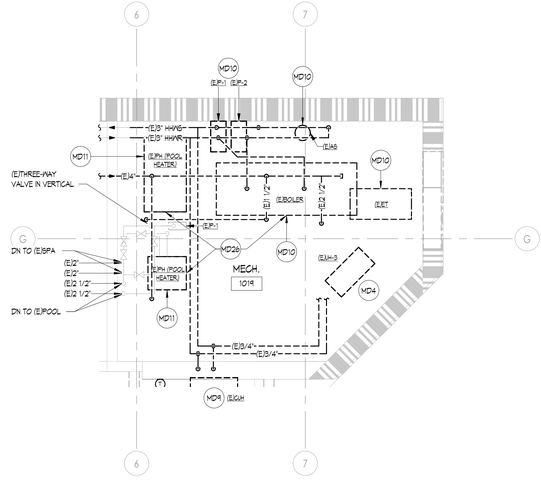


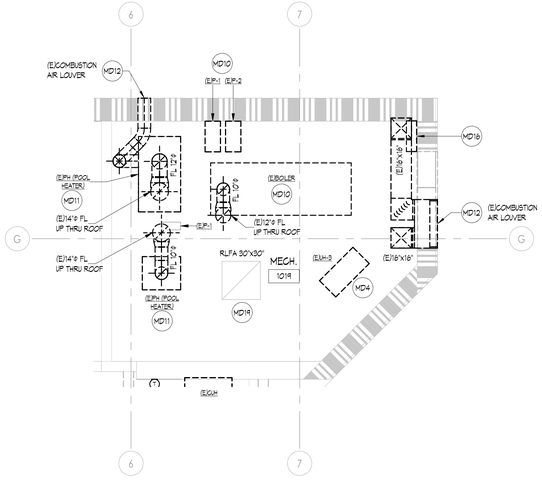
(E)POOL BOILER ROOM POOL & SPA HVAC DEMO ISOMETRIC



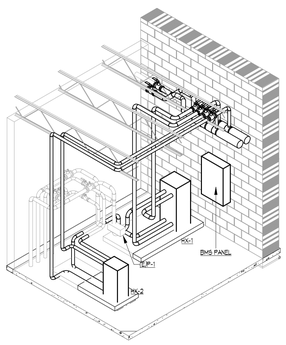
(E)POOL BOILER ROOM POOL & SPA PIPING DEMO ISOMETRIC



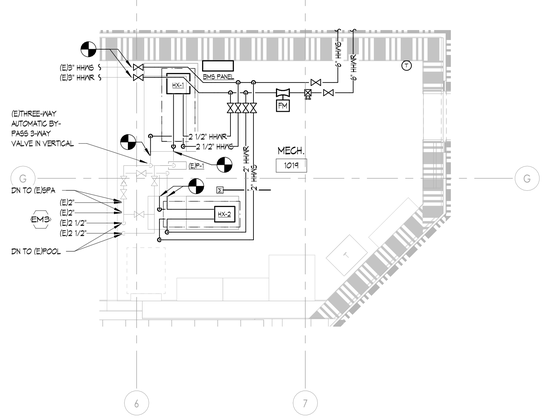
1 (E)POOL BOILER ROOM ENLARGED PIPING DEMO PLAN
1/4" = 1'-0"



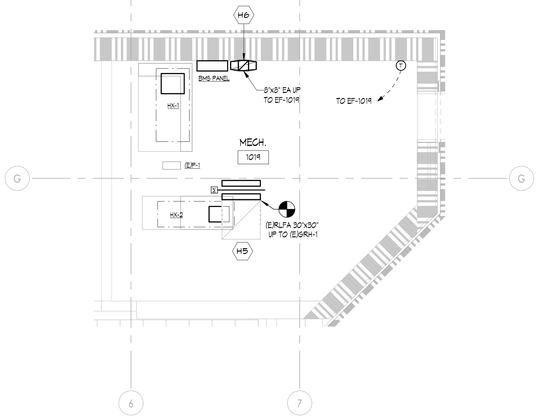
2 (E)POOL BOILER ROOM ENLARGED HVAC DEMO PLAN
1/4" = 1'-0"



(E)POOL BOILER ROOM POOL & SPA PIPING ISOMETRIC



3 (E)POOL BOILER ROOM ENLARGED PIPING PLAN
1/4" = 1'-0"



4 (E)POOL BOILER ROOM ENLARGED HVAC PLAN
1/4" = 1'-0"

MECHANICAL GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
4. PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
5. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
6. FOR ADDITIONAL EQUIPMENT VALVING, COMPONENTS, AND FITTINGS, REFER TO PIPING DIAGRAMS AND DETAILS.
7. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
8. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.
9. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES, STRAINERS, AND VENTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
10. CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
11. ALL BRANCH PIPING TO A SINGLE TERMINAL UNIT TEMPERING COIL OR RADIANT CEILING PANEL SHALL BE 3/4", UNLESS OTHERWISE NOTED.
12. COORDINATE LOCATION OF DUCT MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
13. AIR VENTS AND DRAIN VALVES SHALL BE PROVIDED ON THE HIGH AND LOW POINTS THROUGHOUT THE SYSTEM.
14. CONTRACTOR SHALL COORDINATE THE WORK UNDER THIS SECTION WITH THAT OF ALL OTHER TRADES.
15. PROVIDE TRANSITIONS, OFFSETS, JOGS, ADDITIONAL PIPE FITTINGS, VALVES, ETC. TO AVOID INTERFERENCE WITH OTHER EQUIPMENT, DUCTWORK, PIPING, CONDUITS, ETC., INCLUDING CLEARANCE REQUIREMENTS.
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19. COORDINATE ACCESS REQUIREMENTS OF ALL EQUIPMENT TO BE SERVICED, AND INSTALL WORK TO ALLOW ADEQUATE ACCESS CLEARANCE TO ALL EQUIPMENT.
20. VERIFY ALL MOUNTING HEIGHTS, SUPPORTS, AND INSTALLATION CLEARANCES WITH EQUIPMENT FURNISHED.
21. MAINTAIN PROPER CLEARANCES AND ACCESS AROUND EQUIPMENT FOR OPERATION, MAINTENANCE, AND REPLACEMENT.
22. INSTALL WORK IN A NEAT AND WORKMANLIKE MANNER. PROVIDE PIPE SLEEVES, ESCUTCHEONS, INSULATION SHIELDS, ETC., AS REQUIRED FOR THE PROPER INSTALLATION OF THE WORK.
23. MAINTAIN PROPER SLOPES FOR ALL PIPING, INCLUDING PIPING TO EQUIPMENT FURNISHED BY OTHERS.
24. PROVIDE SUFFICIENT FLEXIBILITY IN ALL PIPING SYSTEMS TO ALLOW FOR THE EXPANSION AND CONTRACTION OF THE SYSTEMS WITHOUT STRAINING ANY VALVES, JOINTS, OR EQUIPMENT.
25. INSTALL ALL PIPING AND DUCTWORK WITH A MINIMUM OF 12" CLEARANCE FROM THE FINAL STRUCTURE. WHERE THIS CANNOT BE ACHIEVED, PROVIDE A WRITTEN VARIANCE TO THE ENGINEER.
26. PROVIDE ALL NECESSARY TRANSITIONS, OFFSETS, FITTINGS, AND COMPONENTS REQUIRED TO ENSURE THAT ALL PIPING AND DUCTWORK IS INSTALLED AT THE PROPER ELEVATION AND LOCATION.
27. WHERE PIPING, DUCTWORK, OR CONDUITS PASS THROUGH FIRE-RATED ASSEMBLIES, PROVIDE FIRESTOPPING TO MAINTAIN THE INTEGRITY OF THE FIRE RATING.
28. PROVIDE BALANCING VALVES IN ALL BRANCH PIPING AND AT ALL TERMINAL UNITS.
29. PROVIDE THERMOMETERS, PRESSURE GAUGES, AND TEST PORTS AS INDICATED ON THE DRAWINGS.
30. PROVIDE FLEXIBLE CONNECTIONS AT ALL EQUIPMENT WHERE VIBRATION IS A CONCERN.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL ENLARGED PLANS & SECTIONS

SHEET NO.
M405

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201081679
07/30/2026

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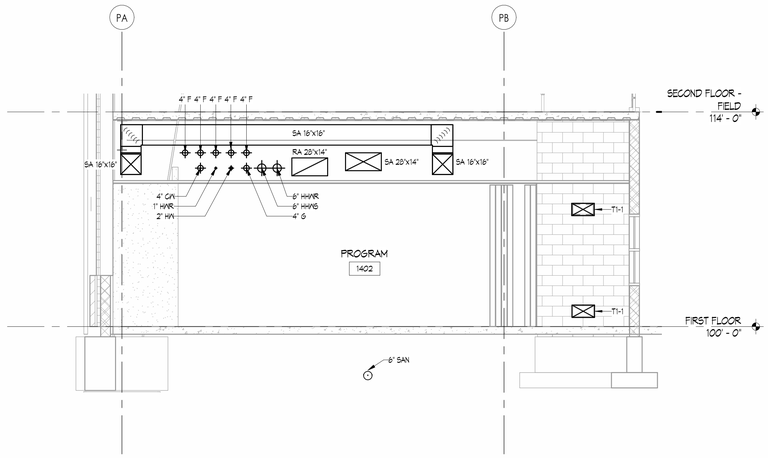
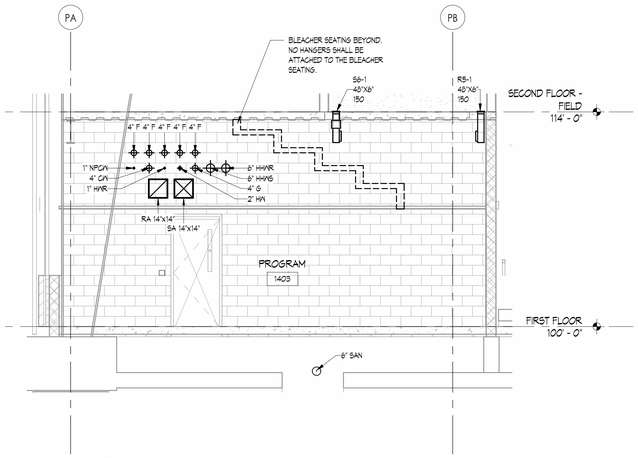
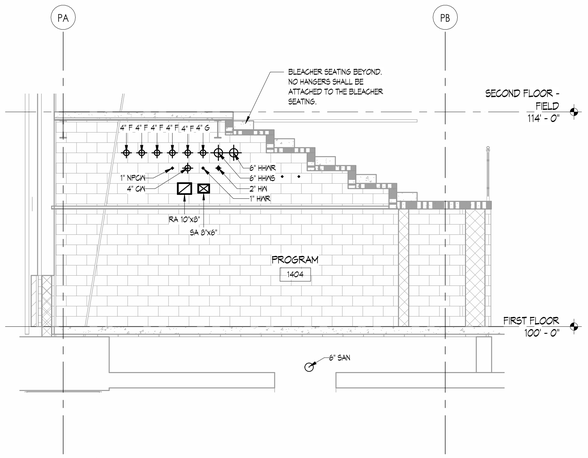


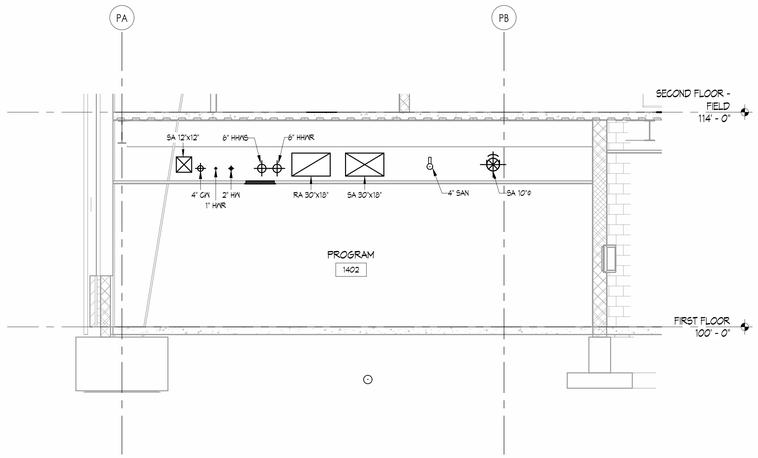
4 SECTION NO.4 (COLUMN LINE P18)
1/4" = 1'-0"



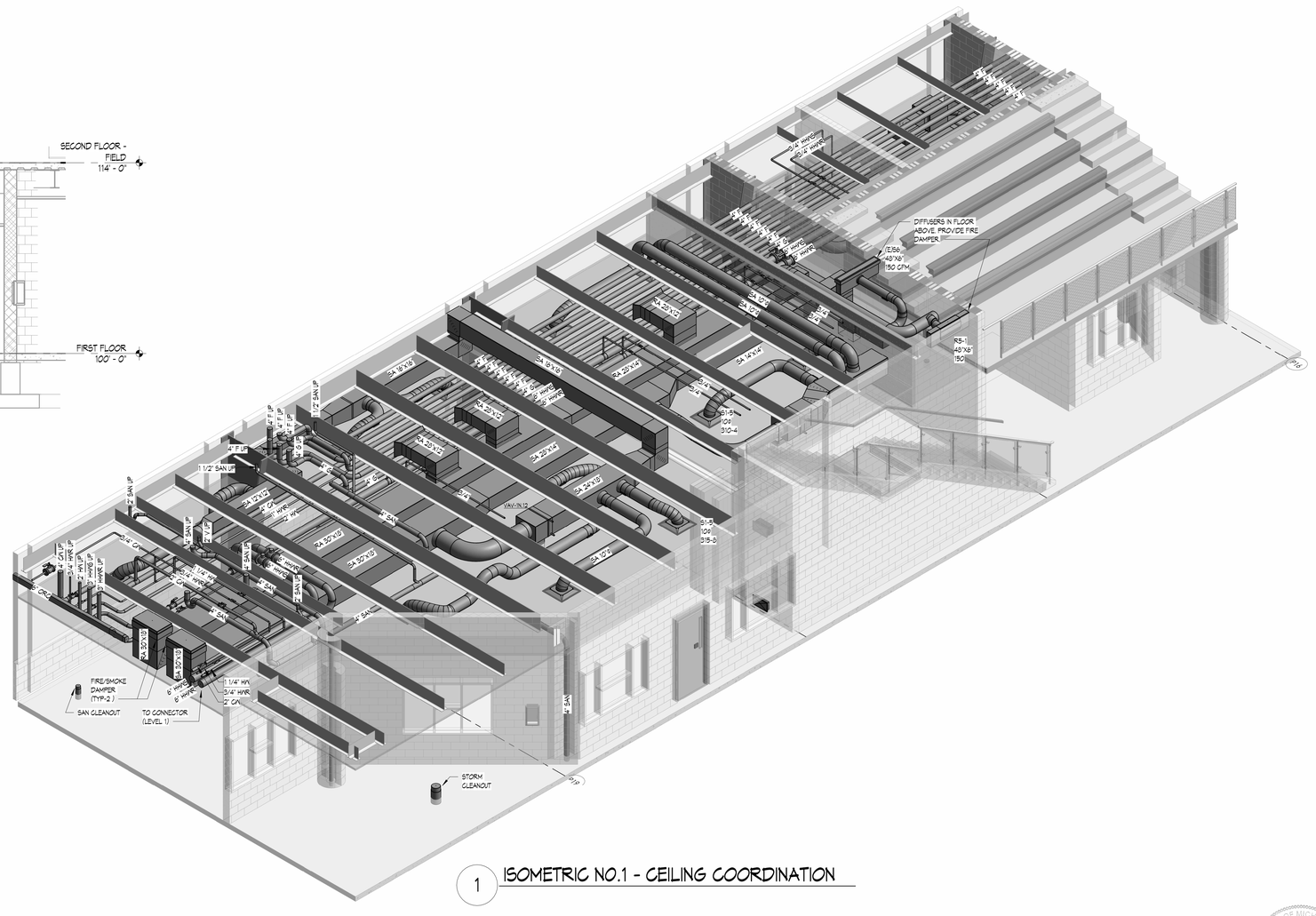
3 SECTION NO.3 (COLUMN LINE P17)
1/4" = 1'-0"



2 SECTION NO.2 (COLUMN LINE P16)
1/4" = 1'-0"



5 SECTION NO.5 (COLUMN LINE P19)
1/4" = 1'-0"



1 ISOMETRIC NO.1 - CEILING COORDINATION

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL ENLARGED PLANS & SECTIONS

SHEET NO.
M406

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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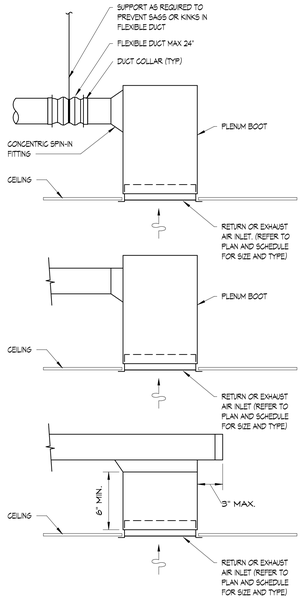
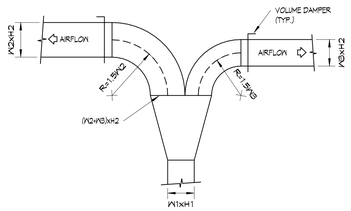


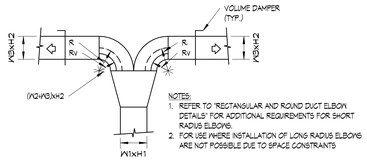
NOTES:
1. PROVIDE VOLUME DAMPER AT ALL BRANCH TAKE-OFFS, REFER TO RECTANGULAR BRANCH TAKE-OFF DETAILS (TYPICAL FOR RETURN OR EXHAUST INLET DETAILS)

RETURN OR EXHAUST AIR INLET DETAIL

NOT TO SCALE

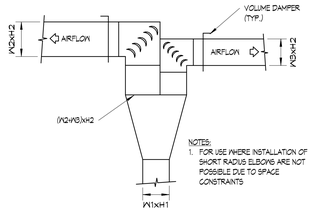


LONG RADIUS ELBOW TEE DUCT SPLIT



NOTES:
1. REFER TO 'RECTANGULAR AND ROUND DUCT ELBOW DETAILS' FOR ADDITIONAL REQUIREMENTS FOR SHORT RADIUS ELBOWS.
2. FOR USE WHERE INSTALLATION OF LONG RADIUS ELBOWS ARE NOT POSSIBLE DUE TO SPACE CONSTRAINTS

SHORT RADIUS ELBOW TEE DUCT SPLIT WITH SINGLE SPLITTER VANES

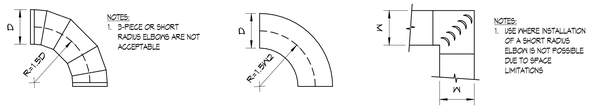


NOTES:
1. FOR USE WHERE INSTALLATION OF SHORT RADIUS ELBOWS ARE NOT POSSIBLE DUE TO SPACE CONSTRAINTS

MITERED ELBOW TEE DUCT SPLIT W/ DOUBLE-VANES

RECTANGULAR DUCT TEE FITTING DETAILS

NOT TO SCALE

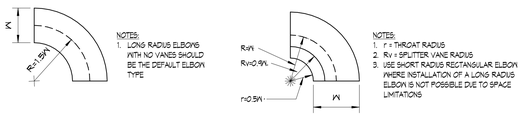


3-PIECE MITERED ROUND ELBOW - DUCTWORK GREATER THAN 12"

SMOOTH ROUND ELBOW - DUCTWORK 12" AND SMALLER

NOTES:
1. USE WHERE INSTALLATION OF A SHORT RADIUS ELBOW IS NOT POSSIBLE DUE TO SPACE LIMITATIONS

MITERED RECTANGULAR ELBOW WITH DOUBLE-VANES

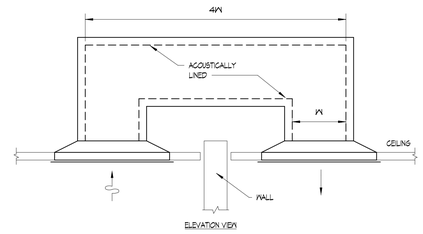


LONG RADIUS RECTANGULAR ELBOW WITH NO SPLITTER VANE

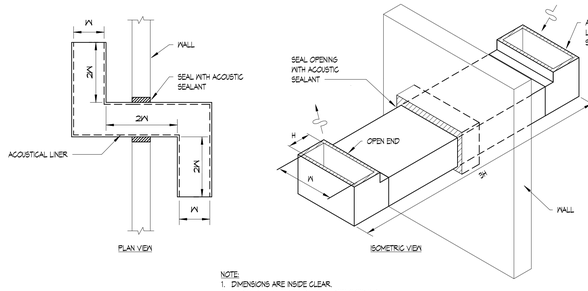
SHORT RADIUS RECTANGULAR ELBOW WITH SINGLE SPLITTER VANE

RECTANGULAR AND ROUND DUCT ELBOW DETAILS

NOT TO SCALE



ELEVATION VIEW



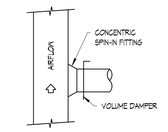
PLAN VIEW

ISOMETRIC VIEW

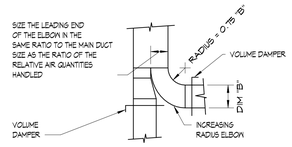
NOTE:
1. DIMENSIONS ARE INSIDE CLEAR.
2. SIZE CLEAR INSIDE DIMENSIONS FOR 0.03" W.G. MAX BASED ON 100% OF THE SUPPLY AIR TO THE SPACE.

TRANSFER DUCT DETAILS

NOT TO SCALE

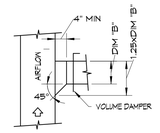


RECTANGULAR TO ROUND DUCT

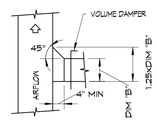


SUPPLY, RETURN OR EXHAUST DUCT

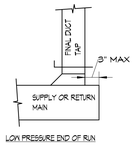
FOR USE WHEN A BRANCH TAKE-OFF IS TO HANDLE MORE THAN 25% OF THE AIR HANDLED BY THE MAIN DUCT



SUPPLY DUCT



RETURN OR EXHAUST DUCT

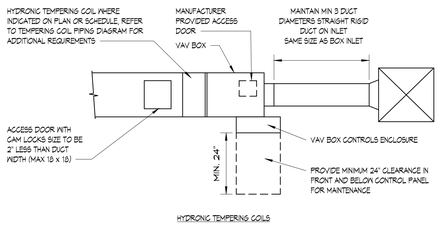


LOW PRESSURE END OF RUN

NOTES:
1. LOCATE VOLUME DAMPER AS CLOSE TO TAKE-OFF OR MINIMUM 5'-0" FROM TERMINAL DEVICE (TYPICAL FOR ALL TAKE-OFF DETAILS)

RECTANGULAR BRANCH TAKE-OFF DETAILS

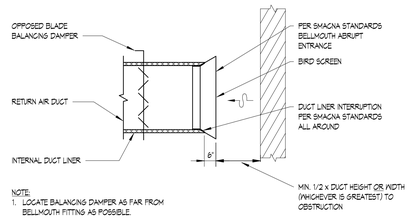
NOT TO SCALE



HYDRONIC TEMPERING COILS

VAV BOX INSTALLATION DETAIL

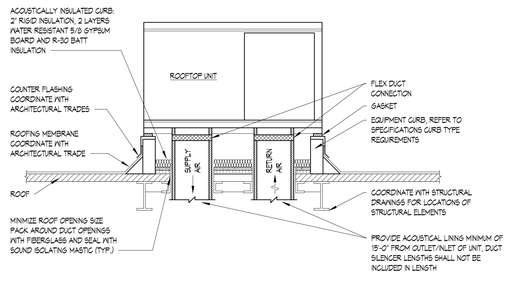
NOT TO SCALE



NOTE:
1. LOCATE BALANCING DAMPER AS FAR FROM BELLMOUTH FITTING AS POSSIBLE

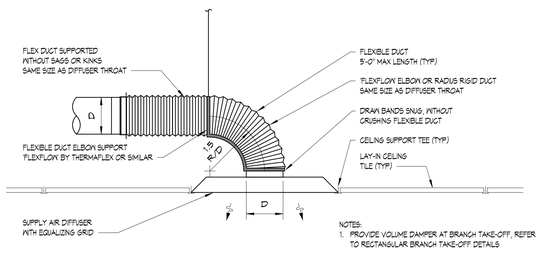
RETURN AIR BELLMOUTH DETAIL

NOT TO SCALE



RTU CURB DETAIL

NOT TO SCALE



NOTES:
1. PROVIDE VOLUME DAMPER AT BRANCH TAKE-OFF, REFER TO RECTANGULAR BRANCH TAKE-OFF DETAILS

SUPPLY AIR DIFFUSER DETAIL #1

NOT TO SCALE

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL DETAILS

SHEET NO.
M500

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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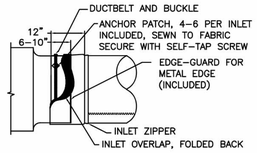
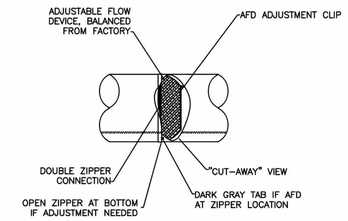
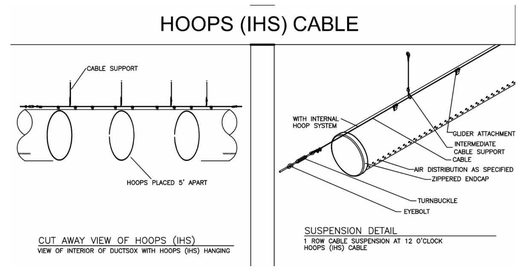


INLET ATTACHMENT DETAIL



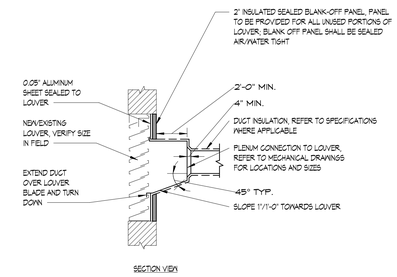
ADJUSTABLE FLOW DEVICE (AFD)

INSTALLED AT ZIPPER LOCATION AT INLET OR AS SPECIFIED IN OTHER LOCATIONS. ZIPPER TO ZIPPER CONNECTION AS SHOWN. EXTERNAL LABEL IDENTIFIES LOCATION



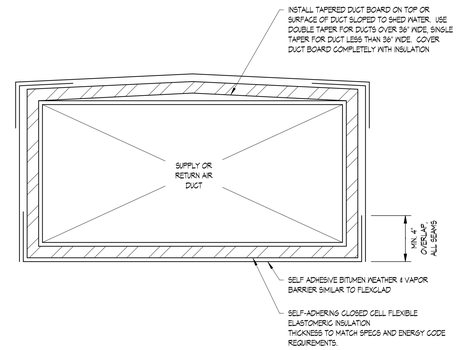
FABRIC DUCT DETAILS

NOT TO SCALE



LOUVER PLENUM DETAIL

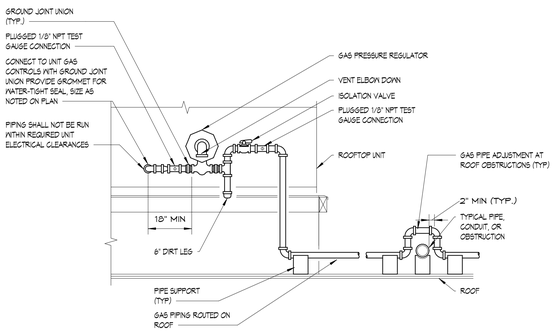
NOT TO SCALE



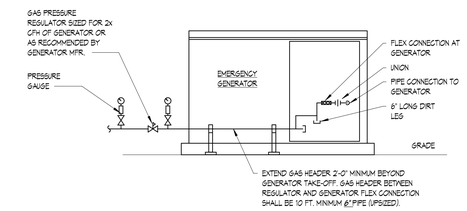
NOTE:
1. DUCT MOUNTING PEDESTAL SHALL BE AS MANUFACTURED BY RPS CORPORATION.
2. PEDESTAL NON-PENETRATING TYPE ROOF SUPPORT (SIMILAR TO MIRO "H-FRAME") ARE ACCEPTABLE.
3. PROVIDE MINIMUM 18" CLEAR BETWEEN BOTTOM OF DUCT BOARD TO ROOFING.

OUTDOOR MOUNTED DUCT DETAIL

NOT TO SCALE

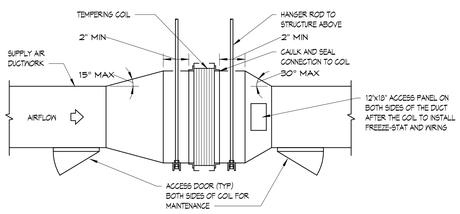


ROOFTOP UNIT GAS CONNECTION DETAIL



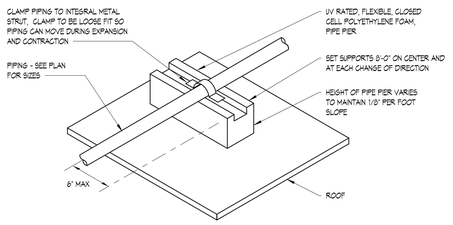
GAS GENERATOR PIPING DETAIL

NOT TO SCALE



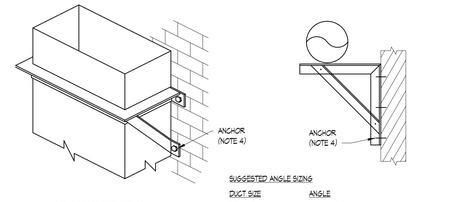
DUCT MOUNTED TEMPERING COIL DETAIL

NOT TO SCALE



ROOF MOUNTED PIPE SUPPORT DETAIL - PIER

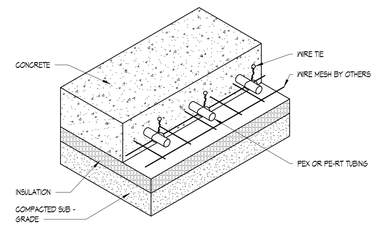
NOT TO SCALE



NOTES:
1. BRACKETS ARE SIZED FOR 12 FEET OF DUCT, MAXIMUM.
2. LOCATE DUCTS AGAINST WALL OR MAXIMUM OF 2" AWAY FROM WALL.
3. EACH WALL ANCHOR SHALL SATISFY THE FOLLOWING:
   A. TENSILE LOAD = 3/8 x DUCT WEIGHT; SAFETY FACTOR OF 4.
   B. SHEAR LOAD = 1/2 DUCT WEIGHT; SAFETY FACTOR OF 4.
4. SECURE WITH APPROVED ANCHORS TO MATCH WALL CONSTRUCTION.
5. SUPPLEMENTAL FASTENERS TO BE PROVIDED AS REQUIRED BY SMACNA CHAPTER 4.
6. FOR PEMB BUILDING - LOCATE ANCHORS ON GIRT LINES AND SEAL ALL SUPPORTS THROUGH INSULATED METAL PANEL.

WALL MOUNTED DUCT SUPPORT DETAIL

NOT TO SCALE



CONCRETE SLAB

SNOWMELT INSTALLATION DETAIL

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KINGSCOTT
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL DETAILS

SHEET NO.
M501

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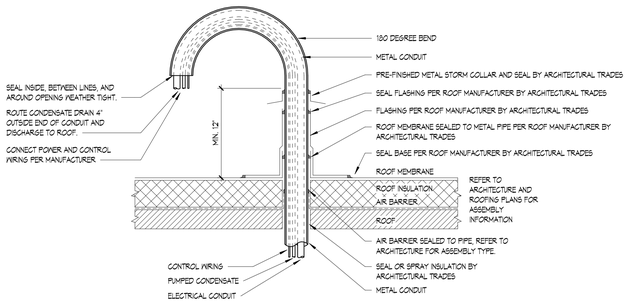
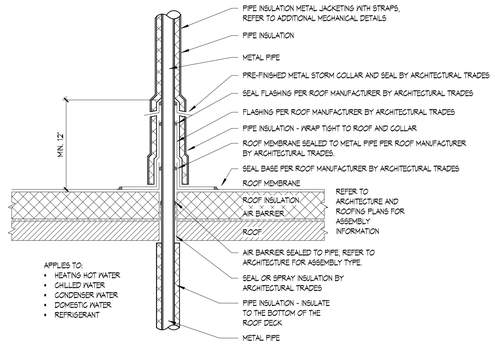


NOTES:
1. COORDINATE WITH ARCHITECTURAL DETAILS.
2. COORDINATE WITH ROOFING MANUFACTURER TO MAINTAIN ROOF WARRANTY.
3. INSTALL ALL COMPONENTS SEGIRELY, CONTINUOS, AND WEATHER TIGHT.

CONDENSING UNIT CONDUIT PENETRATION THROUGH ROOF

NOT TO SCALE



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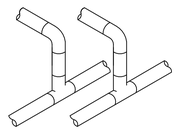
2. COORDINATE WITH ROOFING MANUFACTURER TO MAINTAIN ROOF WARRANTY.
3. INSTALL ALL COMPONENTS SECURELY, CONTINUOS, AND WEATHER TIGHT.

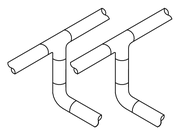
INSULATED PIPE PENETRATION THROUGH ROOF

NOT TO SCALE



BRANCH CONNECTION OFF TOP

APPLIES TO:
• NATURAL GAS



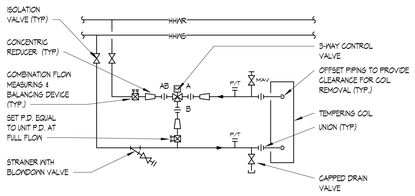
BRANCH CONNECTION OFF BOTTOM

APPLIES TO:
• HOT WATER HEATING
• CHILLED WATER
• CONDENSER WATER
• ENERGY RECOVERY
• PROCESS COOLING WATER

NOTE:
1. SIDE CONNECTION IS ACCEPTABLE IN LIEU OF BOTTOM CONNECTION. CONNECTION ABOVE CENTERLINE OF MAINS IS NOT ACCEPTABLE.

TYPICAL HVAC PIPING BRANCH CONNECTION PIPING DETAIL

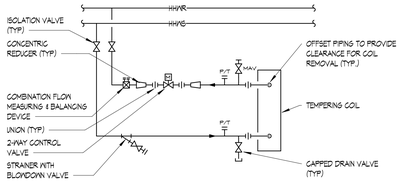
NOT TO SCALE



NOTES:
1. PROVIDE 90° "SWING ARM" CONNECTION FROM MAIN TO ALLOW FOR PIPING EXPANSION AND CONTRACTION.
2. APPLIES TO DUCT MOUNTED COILS AND TERMINAL UNIT COILS.
3. PROVIDE MANUAL VENT AT ALL LOCATIONS WHERE BRANCH PIPING DROPS DOWN IN DIRECTION OF FLOW, INCLUDING HWR CONNECTION TO MAIN IF CONNECTION IS MADE ABOVE HORIZONTAL.
4. IF COIL KITS ARE USED FOR ACCESSORIES - ADDITIONAL ISOLATION VALVES SHALL BE ADDED AT BRANCH TAKE-OFF FOR EQUIPMENT.

TERMINAL UNIT COIL PIPING DIAGRAM (3-WAY VALVE)

NOT TO SCALE



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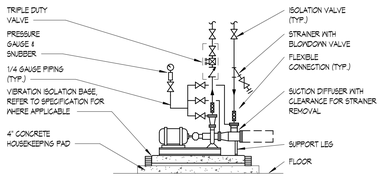
4. IF COIL KITS ARE USED FOR ACCESSORIES - ADDITIONAL ISOLATION VALVES SHALL BE ADDED AT BRANCH TAKE-OFF FOR EQUIPMENT.

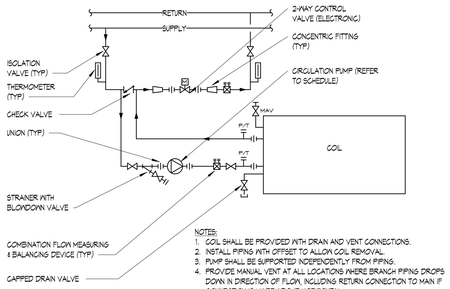
TERMINAL UNIT COIL PIPING DIAGRAM (2-WAY VALVE)

NOT TO SCALE



END SUCTION PUMP PIPING DIAGRAM

NOT TO SCALE

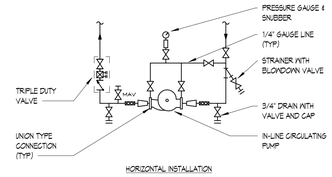


NOTES:
1. COIL SHALL BE PROVIDED WITH DRAIN AND VENT CONNECTIONS.
2. INSTALL PIPING WITH OFFSET TO ALLOW COIL REMOVAL.
3. PUMP SHALL BE SUPPORTED INDEPENDENTLY FROM PIPING.
4. PROVIDE MANUAL VENT AT ALL LOCATIONS WHERE BRANCH PIPING DROPS DOWN IN DIRECTION OF FLOW, INCLUDING RETURN CONNECTION TO MAIN IF CONNECTION IS MADE ABOVE HORIZONTAL.

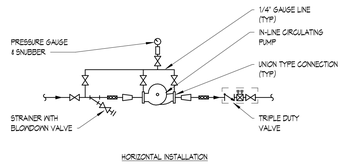
AHU HYDRONIC COIL W/ CIRC. PUMP PIPING DIAGRAM (2-WAY VALVE)

NOT TO SCALE

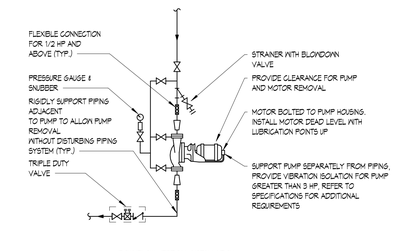
APPLIES TO DUCT MOUNTED REMOTE HEATING COILS AS WELL AS PACKAGED AHU HEATING COILS



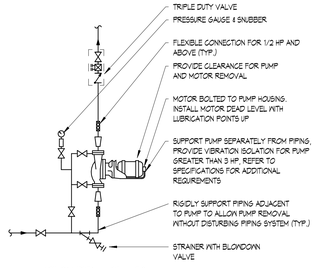
HORIZONTAL INSTALLATION



HORIZONTAL INSTALLATION



DOWNFLOW VERTICAL INSTALLATION



UPFLOW VERTICAL INSTALLATION

NOTES:
1. PUMP SHALL BE SUPPORTED INDEPENDENTLY FROM PIPING.
2. DETAIL IS NOT APPLICABLE FOR SMALL CIRCULATOR PUMPS.

INLINE PUMP PIPING DIAGRAM

NOT TO SCALE

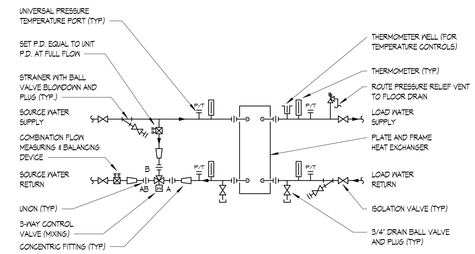
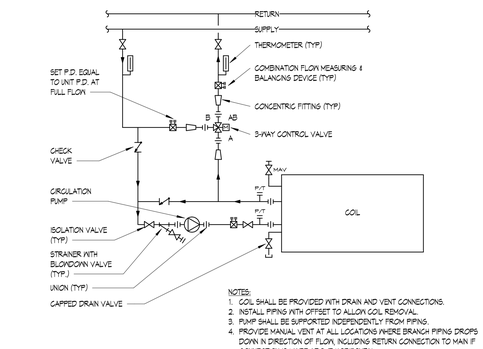


PLATE AND FRAME HEAT EXCHANGER DETAIL (3-WAY VALVE)

NOT TO SCALE



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AHU HYDRONIC COIL W/ CIRC. PUMP PIPING DIAGRAM (3-WAY VALVE)

NOT TO SCALE

APPLIES TO DUCT MOUNTED REMOTE HEATING COILS AS WELL AS PACKAGED AHU HEATING COILS

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No. 6201061679
07/30/2026

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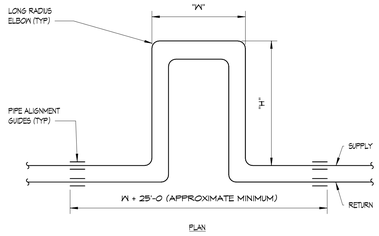


PLAN

EXPANSION LOOP		
LOOP NO.	W	H
EL-1	2 FT	4 FT
EL-2	2.5 FT	5 FT
EL-3	2.5 FT	5 FT
EL-4	2.25 FT	4.5 FT

NOTES:
1. U-LOOP EXPANSION JOINTS (+/- 4 INCH MOVEMENT) CAN BE USED IN LIEU OF PIPED LOOPS.
2. PIPING WITH EXPANSION LOOPS/JOINTS SHALL UTILIZE ROLLER TYPE SUPPORTS.
3. MOUNT ANCHORS WHERE SHOWN ON PLANS.
4. MOUNT PIPE ALIGNMENT GUIDES PER DETAIL OR MFR RECOMMENDATIONS.

EXPANSION LOOP DETAIL

NOT TO SCALE

A = GREATER OF 4" OR 1/2" PLUS (BLOW-THRU) AHU TOTAL PRESSURE IN INCHES-WC

B = GREATER OF 2" OR 1/2" PLUS (DRAW-THRU) AHU TOTAL PRESSURE IN INCHES-WC

NOTES:
1. 1"Ø MIN. PIPE SIZE OR DRAIN SIZE OF AHU, WHICHEVER IS GREATER.

INDOOR AHU CONDENSATE DRAIN DETAIL

NOT TO SCALE

NOTES:
1. VERIFY EXACT LOCATION AND FLOW RATES WITH FLOOR PLANS.

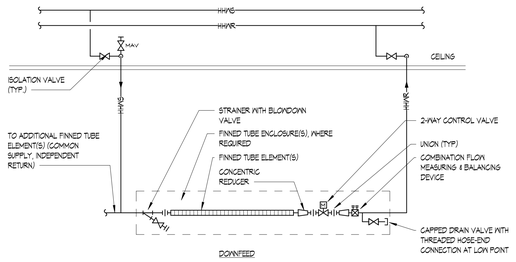
WITH STRAIGHTENER INSTALLATION

NOTES:
1. VERIFY EXACT LOCATION AND FLOW RATES WITH FLOOR PLANS.

WITHOUT STRAIGHTENER INSTALLATION

FLOWMETER INSTALLATION DETAIL

NOT TO SCALE



DOWNFEED

NOTES:
1. CONTROL VALVE AND COMBINATION FLOW MEASURING & BALANCING DEVICE MAY BE LOCATED IN ENCLOSURE OR ABOVE CEILING. ALL VALVES SHALL BE ACCESSIBLE. PROVIDE VALVE COMPARTMENT WITH ACCESS DOOR WHEN LOCATED WITHIN ENCLOSURE.
2. CONTRACTOR SHALL VERIFY AND COORDINATE PIPING CONNECTION LOCATIONS WITH FINAL APPROVED MANUFACTURER SUBMITTAL.
3. ALL PIPING AND VALVES SHALL BE CONCEALED IN CEILING, CHASE, AND/OR IN CEILING BELOW (WHEN FEED FROM LOWER FLOOR). REFER TO DRAWINGS FOR SPECIFIC INSTALLATION CONFIGURATIONS.
4. REFER TO DRAWINGS AND/OR SCHEDULES FOR ENCLOSURE INFORMATION.
5. PROVIDE MANUAL VENT AT ALL LOCATIONS WHERE BRANCH PIPING DROPS DOWN IN DIRECTION OF FLOW, INCLUDING HWR CONNECTION TO MAIN IF CONNECTION IS MADE ABOVE HORIZONTAL.

FINNED TUBE RADIATION PIPING DIAGRAM

NOT TO SCALE

NOTES:
1. IF COIL HAS VENT AND/OR DRAIN CONNECTIONS THEY ARE TO BE USED IN LIEU OF INSTALLING H PIPING AS INDICATED.
2. CONTRACTOR SHALL VERIFY AND COORDINATE PIPING CONNECTION LOCATIONS WITH FINAL APPROVED MANUFACTURER SUBMITTAL.
3. PROVIDE 90° "SWING ARM" CONNECTION FROM MAIN TO ALLOW FOR PIPING EXPANSION AND CONTRACTION.
4. PROVIDE MANUAL VENT AT ALL LOCATIONS WHERE BRANCH PIPING DROPS DOWN IN DIRECTION OF FLOW, INCLUDING HWR CONNECTION TO MAIN IF CONNECTION IS MADE ABOVE HORIZONTAL.

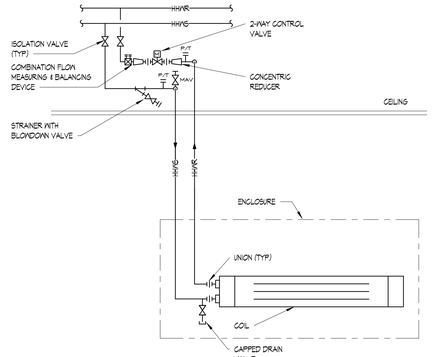
HOT WATER UNIT HEATER PIPING DIAGRAM (2-WAY VALVE)

NOT TO SCALE

NOTES:
1. IF COIL HAS VENT AND/OR DRAIN CONNECTIONS THEY ARE TO BE USED IN LIEU OF INSTALLING H PIPING AS INDICATED.
2. CONTRACTOR SHALL VERIFY AND COORDINATE PIPING CONNECTION LOCATIONS WITH FINAL APPROVED MANUFACTURER SUBMITTAL.
3. PROVIDE 90° "SWING ARM" CONNECTION FROM MAIN TO ALLOW FOR PIPING EXPANSION AND CONTRACTION.
4. PROVIDE MANUAL VENT AT ALL LOCATIONS WHERE BRANCH PIPING DROPS DOWN IN DIRECTION OF FLOW, INCLUDING HWR CONNECTION TO MAIN IF CONNECTION IS MADE ABOVE HORIZONTAL.

HOT WATER UNIT HEATER PIPING DIAGRAM (3-WAY VALVE)

NOT TO SCALE



DOWNFEED

NOTES:
1. CONTROL VALVE, ISOLATION VALVE(S) AND COMBINATION FLOW MEASURING & BALANCING DEVICE(S) SHALL BE LOCATED ABOVE CEILING.
2. CONTRACTOR SHALL VERIFY AND COORDINATE PIPING CONNECTION LOCATIONS WITH FINAL APPROVED MANUFACTURER SUBMITTAL.
3. BRANCH PIPING SHALL BE LOCATED IN THE WALL WHEN CUH IS INSTALLED IN WALL.
4. PROVIDE MANUAL VENT AT ALL LOCATIONS WHERE BRANCH PIPING DROPS DOWN IN DIRECTION OF FLOW, INCLUDING RETURN CONNECTION TO MAIN IF CONNECTION IS MADE ABOVE HORIZONTAL.

CUH PIPING DIAGRAM (2-WAY VALVE)

NOT TO SCALE

DOWNFEED

NOTES:
1. CONTROL VALVE, ISOLATION VALVE(S) AND COMBINATION FLOW MEASURING & BALANCING DEVICE(S) SHALL BE LOCATED ABOVE CEILING.
2. CONTRACTOR SHALL VERIFY AND COORDINATE PIPING CONNECTION LOCATIONS WITH FINAL APPROVED MANUFACTURER SUBMITTAL.
3. BRANCH PIPING SHALL BE LOCATED IN THE WALL WHEN CUH IS INSTALLED IN WALL.
4. PROVIDE MANUAL VENT AT ALL LOCATIONS WHERE BRANCH PIPING DROPS DOWN IN DIRECTION OF FLOW, NCLUDING RETURN CONNECTION TO MAIN IF CONNECTION IS MADE ABOVE HORIZONTAL.

CUH PIPING DIAGRAM (3-WAY VALVE)

NOT TO SCALE

NOTES:

FOR DRAW THROUGH UNIT
DIM "A" = 1/2 OF DIM "B"
DIM "B" = FAN SUCTION STATIC PRESSURE + 2"

REFER TO ROOF TOP SCHEDULE

RTU COOLING COIL DRAIN PAN TRAP DETAIL

NOT TO SCALE

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL DETAILS

SHEET NO.
M503

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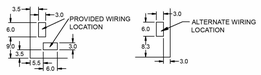
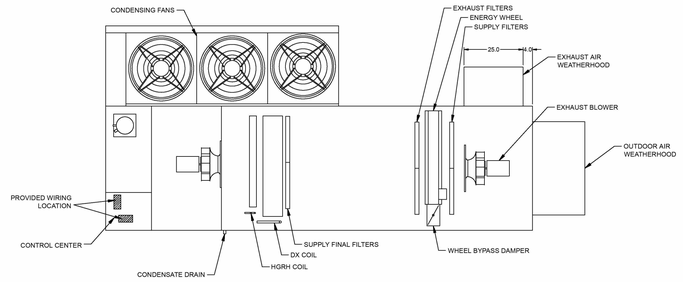
Overview Drawings

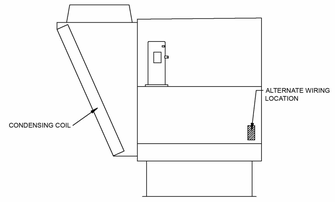
Dimensional Overview

Electrical Connections

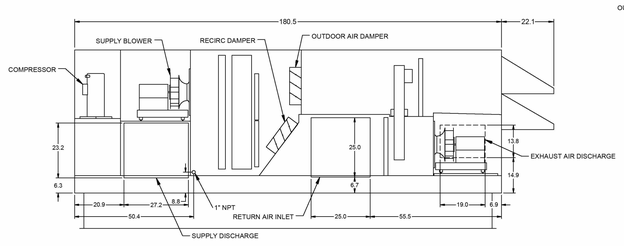




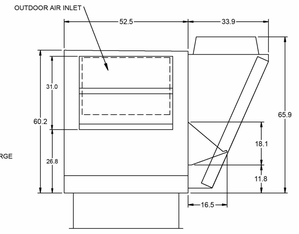
Plan



Left End



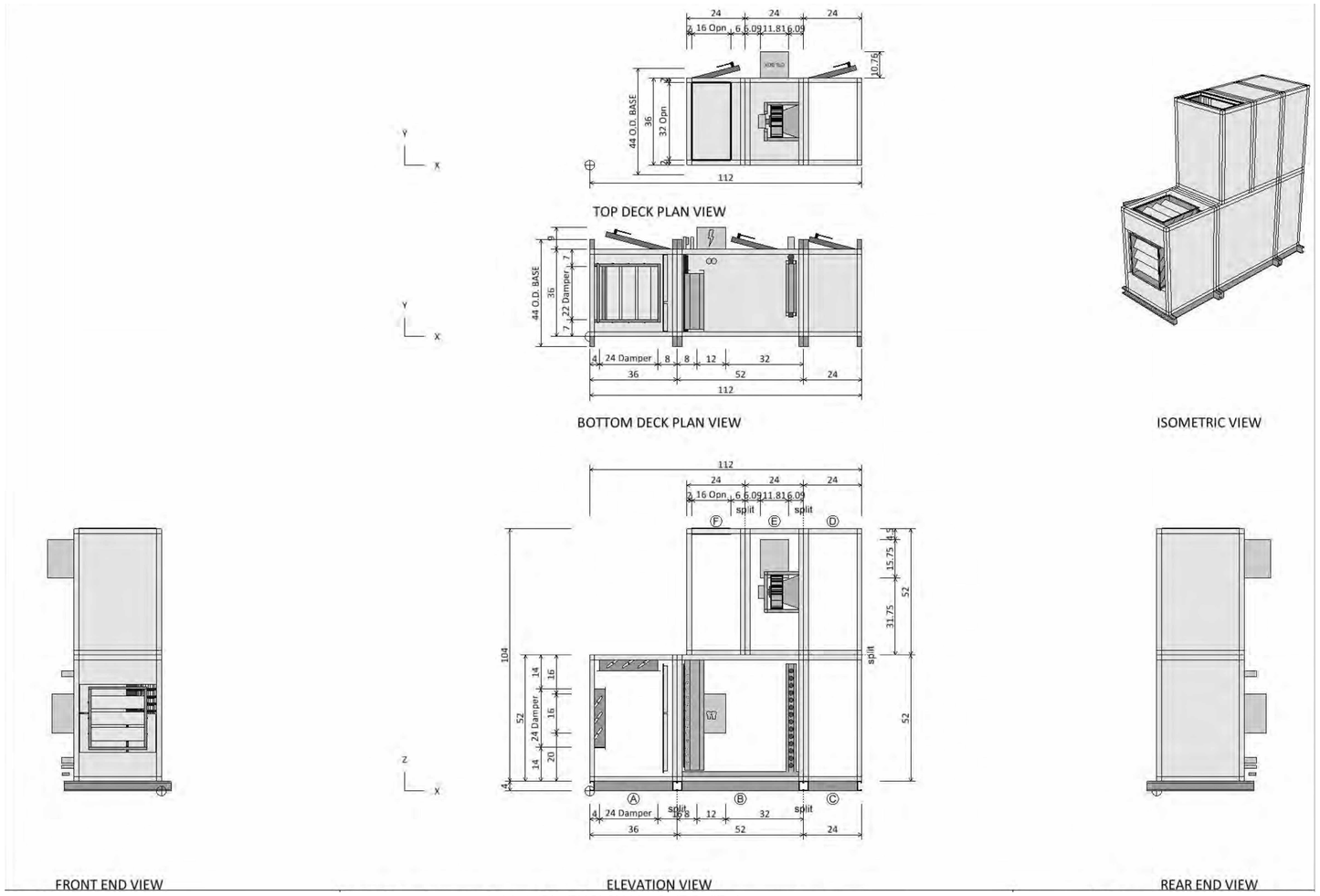
Elevation



Right End

RTU-1 DIMENSIONAL OVERVIEW

NOT TO SCALE



AHU-2 DIMENSIONAL OVERVIEW

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
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SHEET TITLE

MECHANICAL DETAILS - AHU/RTU DIMENSIONS

SHEET NO.

M504

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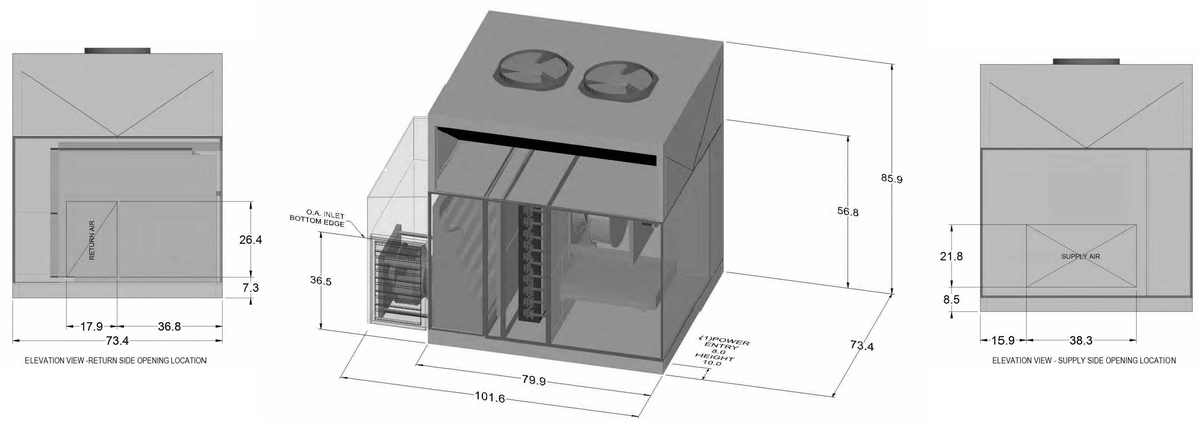
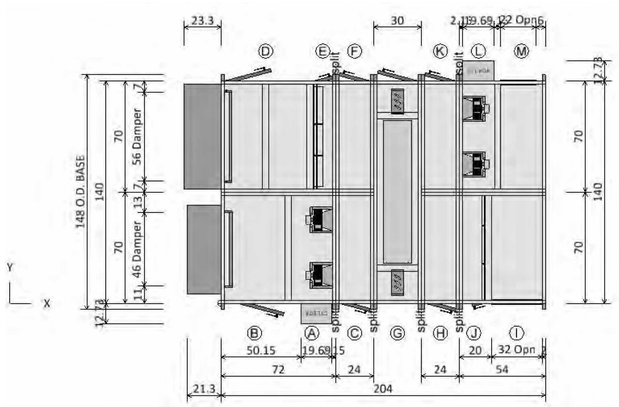
STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

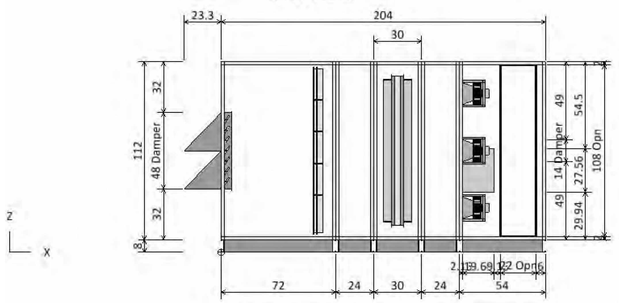
07/30/2026



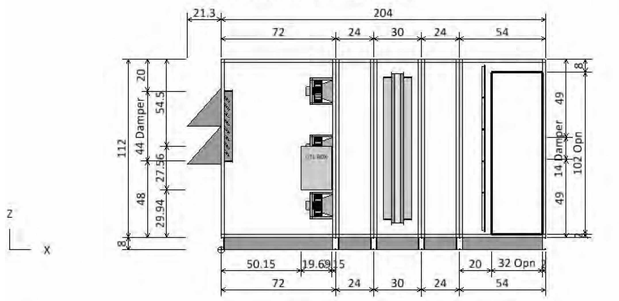
RTU-3 DIMENSIONAL OVERVIEW



PLAN VIEW

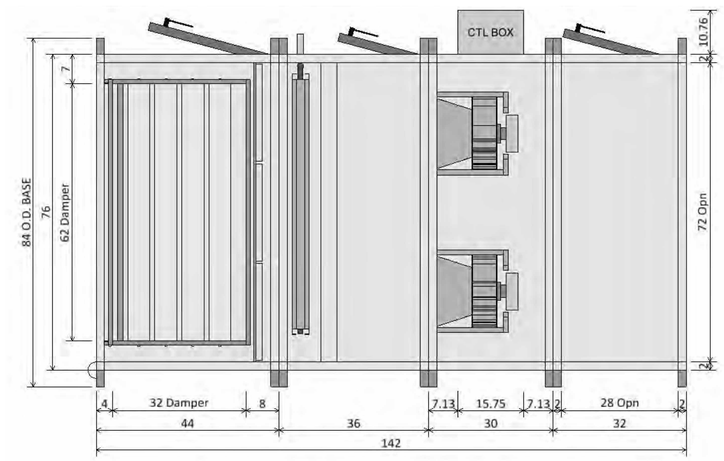


LEFT DECK ELEVATION VIEW

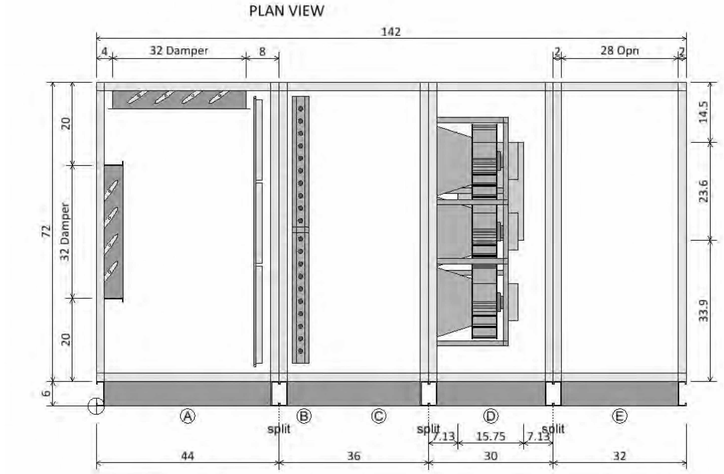


RIGHT DECK ELEVATION VIEW

RTU-14 DIMENSIONAL OVERVIEW



PLAN VIEW



ELEVATION VIEW

AHU-15 DIMENSIONAL OVERVIEW

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SHEET TITLE

MECHANICAL DETAILS - AHU/RTU DIMENSIONS

SHEET NO.

M505

KINGSCOTT ASSOCIATES INC. PORTAGE, MICHIGAN

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No. 6201061679
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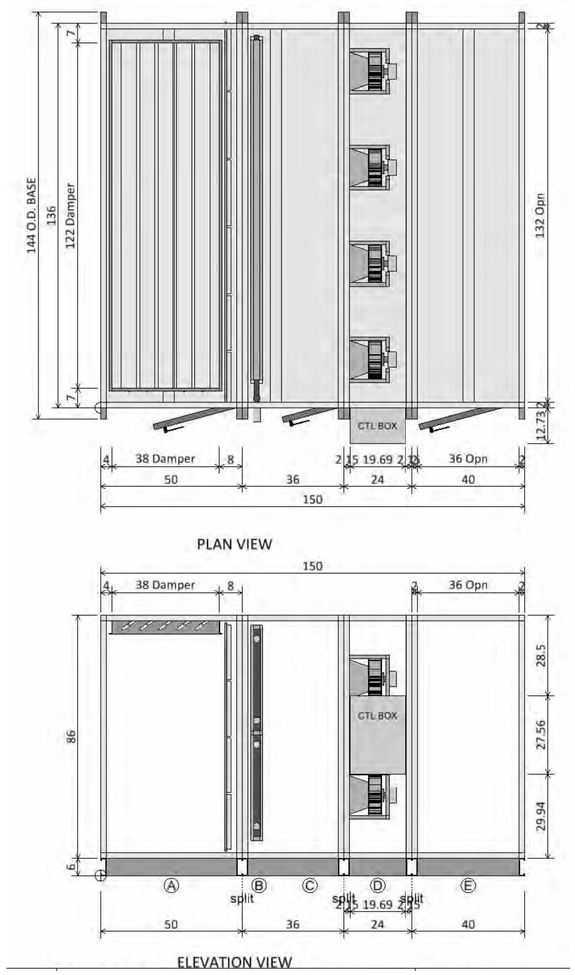
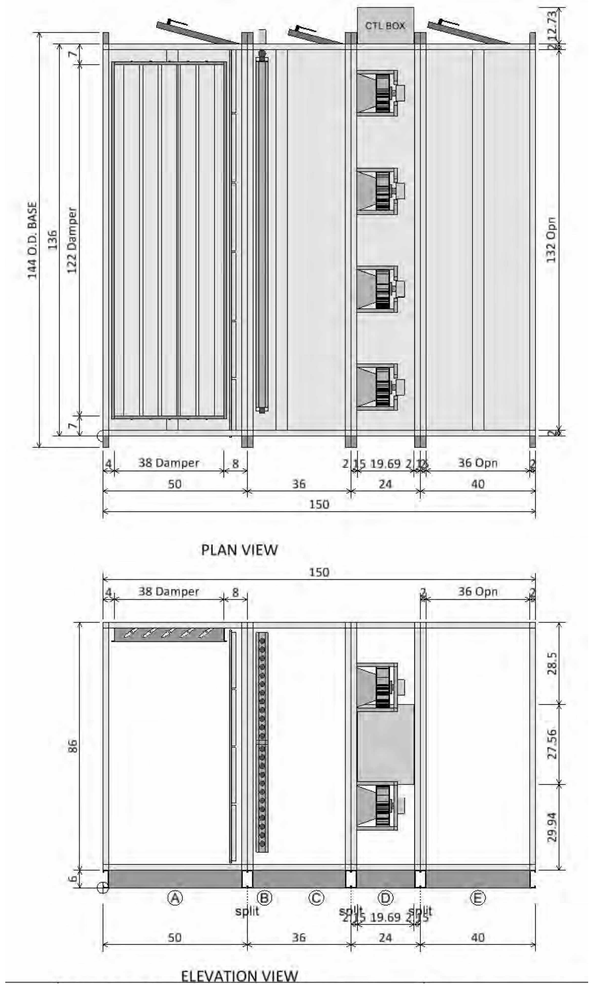


AHU-16 DIMENSIONAL OVERVIEW



AHU-17 DIMENSIONAL OVERVIEW

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SHEET TITLE

MECHANICAL DETAILS - AHU/RTU DIMENSIONS

SHEET NO.

M506

STATE OF MICHIGAN
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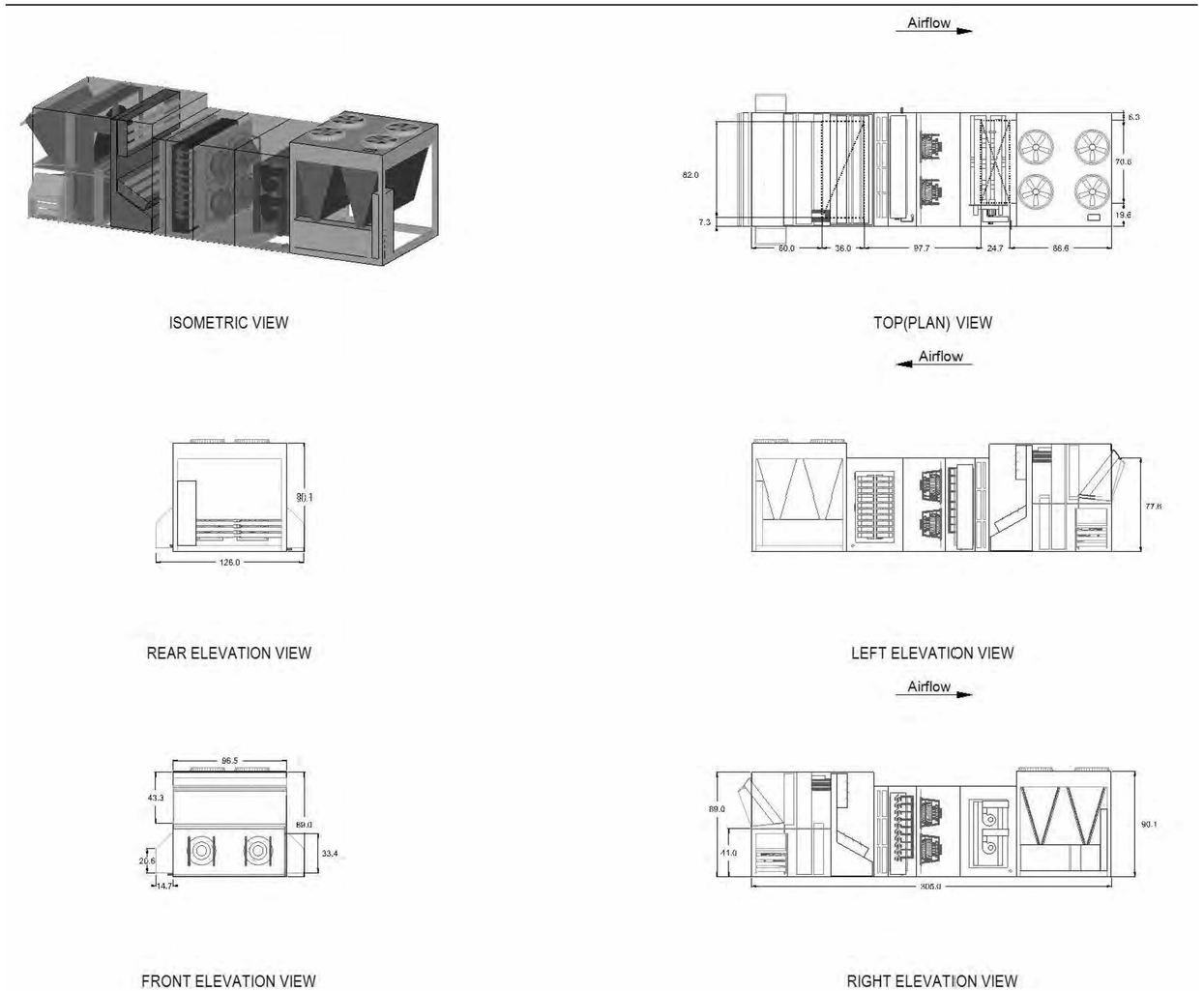

ISOMETRIC VIEW

TOP(PLAN) VIEW

REAR ELEVATION VIEW

LEFT ELEVATION VIEW

FRONT ELEVATION VIEW

RIGHT ELEVATION VIEW

RTU-1N DIMENSIONAL OVERVIEW

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MECHANICAL DETAILS - AHU/RTU DIMENSIONS

SHEET NO.

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STATE OF MICHIGAN
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ENGINEER
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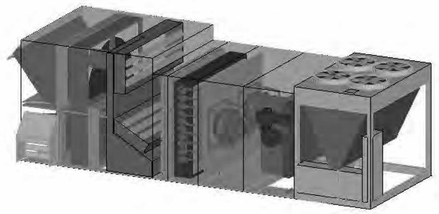
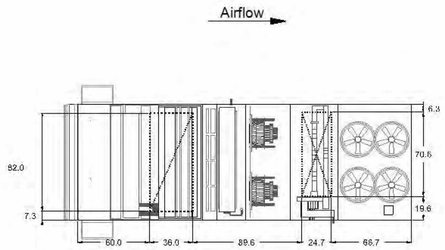
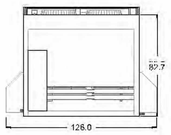


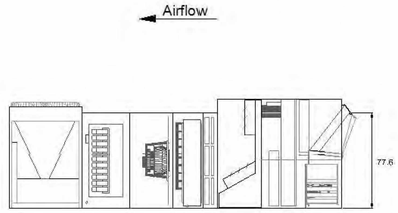
ISOMETRIC VIEW



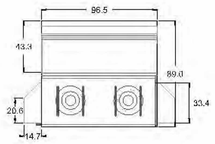
TOP(PLAN) VIEW



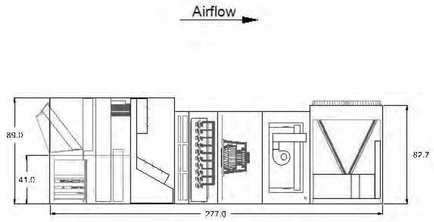
REAR ELEVATION VIEW



LEFT ELEVATION VIEW

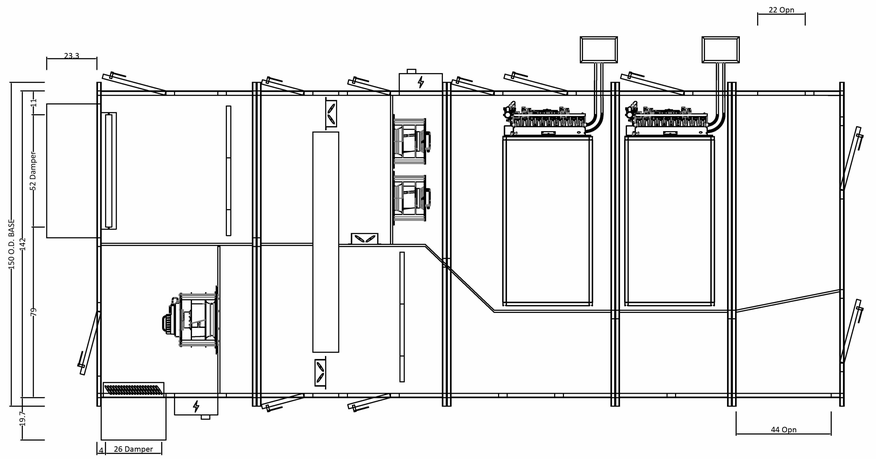


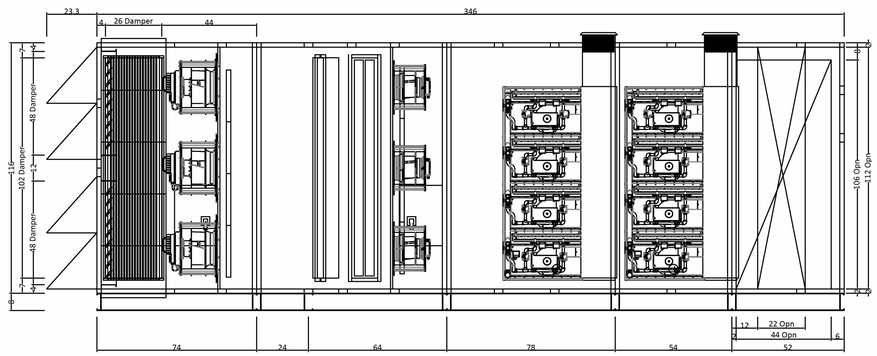
FRONT ELEVATION VIEW



RIGHT ELEVATION VIEW

RTU-2N DIMENSIONAL OVERVIEW





DOAS DIMENSIONAL OVERVIEW

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HOWELL
PUBLIC SCHOOLS

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SHEET TITLE
MECHANICAL DETAILS - AHU/RTU DIMENSIONS

SHEET NO.
M508

KINGSCOTT ASSOCIATES INC. PORTAGE, MICHIGAN

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
LICENSED PROFESSIONAL ENGINEER

07/30/2026

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AIR HANDLING UNIT (DX - HHW) SCHEDULE PART A

UNIT IDENTIFICATION								SUPPLY FAN							DIRECT EXPANSION (DX) COIL							
TAG	TAG #	AREA SERVED	ASSOCIATED EQUIPMENT	MAX AIRFLOW	MIN AIRFLOW	MIN OUTSIDE AIRFLOW	DESIGN OUTSIDE AIRFLOW	QTY	ESP	TSP	FAN SPEED	DRIVE TYPE	BHP	HP	TOTAL CAPACITY	SENSIBLE CAPACITY	EDB	EWB	LDB	LWB	APD	REFRIGERANT TYPE
AHU	2	EXIST. POOL 2ND FL ACTIVITY ROOMS	ACCU-2	3480 CFM	2760 CFM	1300 CFM	1725 CFM	1	1.75 in-wg	4.0 in-wg	3181 RPM	ECM	3.2 hp	4.4 hp	161264 Btu/h	117764 Btu/h	85.0 °F	68.0 °F	52.7 °F	52.0 °F	1.0 in-wg	R-454B

AIR HANDLING UNIT (DX - HHW) SCHEDULE PART B

UNIT IDENTIFICATION		HOT WATER HEATING COIL									ELECTRICAL (FAN SECTION ONLY)						STARTER		DISCONNECT		MAXIMUM UNIT DIMENSIONS/WEIGHT						
TAG	TAG #	EDB	LDB	APD	GPM	EWT	LWT	WPD	CONTROL VALVE TYPE	FILTER TYPE	FLA	MCA	MOCP	VOLTAGE	PHASE	SCCR	FUNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY	HEIGHT	LENGTH	WIDTH	UNIT WEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
AHU	2	30.0 °F	51.2 °F	0.3 in-wg	9.5 GPM	180.0 °F	140.0 °F	0.2 Feet	2-WAY	MERV 13	4.7 A	5.9 A	15 A	480 V	3	65000 A	MFR	MFR	MFR	MFR	105"	112"	36"	2000 lb	DAIKIN	CAHO07SDCM	

GENERAL NOTES:
1. PERFORMANCE BASED ON WATER.
2. DUCT SMOKE DETECTORS ON UNIT SUPPLY AND RETURN FOR AIRFLOW OVER 1900 CFM. DETECTORS SHALL BE BY DIVISION 28. TCC SHALL WIRE FROM DETECTOR TO UNIT SHUTOFF.
3. TEMPERATURE CONTROLS BY TCC INCLUDING FREEZESTAT. CONTROL VALVES BY TCC AND INSTALLED BY MC; PRESSURE DROP SHALL BE TWICE THE PRESSURE DROP OF THE DEVICE IT IS CONTROLLING (MIN. 2, MAX 15'). REFER TO CONTROLS DIAGRAM AND SOO. MANUFACTURER TO PROVIDE STAND-ALONE REFRIGERATION MANAGEMENT CONTROLLER TERMINAL STRIP. TCC TO COORDINATE REQUIRED POINTS FROM REFRIGERATION CONTROLLER TO AHU CONTROLLER/BAS. PROVIDE FACTORY WIRED A2L LEAK DETECTION SYSTEM IN ACCORDANCE WITH ASHRAE 15-2022.
4. ALL FANS SELECTED FOR AHUS MUST MEET REQUIREMENTS OF ASHRAE STANDARD 90.1-2013, SECTION 6.5.3.1.2. WHEN ECMS ARE USED THE REQUIREMENT IS TO USE THE NEXT AVAILABLE ECM NAMEPLATE HORSEPOWER MOTOR. REFER TO INTERPRETATION ICR0.1-2013-11 ADDITIONAL INFORMATION.
5. MAINTAIN UNIT SERVICE CLEARANCES ON FRONT, BACK, SIDE, AND TOP OF UNIT.
6. COORDINATE FIELD INSTALLATION OF ALL EQUIPMENT SHIPPED LOOSE FROM MANUFACTURER.
7. ANY ITEM IN CONTRACT DOCUMENTS NOT INCLUDED BY MANUFACTURER SHALL BE PROVIDED BY DIVISION 23. VERIFY WITH FINAL APPROVED EQUIPMENT SUBMITTAL.
8. PROVIDE FACTORY WIRED EC MOTOR WITH 0-10 VDC CONTROL.
9. UNIT SHALL NOT EXCEED DIMENSIONS AND WEIGHTS LISTED IN SCHEDULE WITHOUT PRIOR WRITTEN APPROVAL FROM ARCHITECT, MECHANICAL ENGINEER, AND STRUCTURAL ENGINEER.
10. UNIT SHALL COME WITH 6" FORMED CHANNEL BASE RAIL.
11. MOUNT ON 4" HOUSEKEEPING PAD AS REQUIRED FOR COOLING COIL DRAIN TRAP HEIGHT RECOMMENDED BY MANUFACTURER. PROVIDE SPRING VIBRATION ISOLATORS BETWEEN UNIT AND HOUSEKEEPING PAD. SPRING ISOLATORS SHALL BE EQUAL TO MASON INDUSTRIES SLF WITH 2" RATED DEFLECTION. FINAL LOCATION AND QTY SHALL BE COORDINATED WITH UNIT MOUNTED POINTS AND WEIGHTS.
12. UNIT SHALL NEED (2) POINTS OF POWER. FAN SECTION SHALL COME WITH POWER NOTED ABOVE. N EMA 3R ENCLOSURE WITH FUSED DISCONNECT AND MOTOR STARTER. REFRIGERANT LEAK DETECTION CONTROLS PANEL SHALL BE FACTORY INSTALLED BUT SHALL REQUIRE SEPARATE 120V, 1 PHASE, POWER CONNECTION WITH DISCONNECT: MAC = 2 A, MOP = 10A.
13. COILS SHALL BE ELECTROFIN COATED FOR USE IN CHLORINATED POOL AIR ENVIRONMENTS.
14. PROVIDE WITH STAINLESS STEEL DRAIN PAN.
15. PROVIDE 5 YEAR EXTENDED WARRANTY.

AIR HANDLING UNIT (HHW) SCHEDULE PART A

UNIT IDENTIFICATION							SUPPLY FAN						
TAG	TAG #	AREA SERVED	ASSOCIATED EQUIPMENT	MAX AIRFLOW	MIN AIRFLOW	MIN OUTSIDE AIRFLOW	DESIGN OUTSIDE AIRFLOW	QTY	ESP	TSP	FAN SPEED	DRIVE TYPE	BHP (EACH FAN)	HP (EACH FAN)
AHU	15	EXIST. FIELD HOUSE WRESTLING AND OFFICES	RAF-15	13750 CFM	6875 CFM	2030 CFM	3380 CFM	3	1.50 in-wg	2.5 in-wg	2000 RPM	ECM	2.8 hp	4.0 hp
AHU	16	EXIST. FIELD HOUSE GYM	-	32000 CFM	16000 CFM	5220 CFM	6400 CFM	3	1.75 in-wg	2.8 in-wg	3174 RPM	ECM	2.8 hp	4.4 hp
AHU	17	EXIST. FIELD HOUSE GYM	-	32000 CFM	16000 CFM	5220 CFM	6400 CFM	3	1.75 in-wg	2.8 in-wg	3174 RPM	ECM	2.8 hp	4.4 hp

AIR HANDLING UNIT (HHW) SCHEDULE PART B

UNIT IDENTIFICATION		HOT WATER HEATING COIL									ELECTRICAL						STARTER		DISCONNECT		MAXIMUM UNIT DIMENSIONS/WEIGHT						
TAG	TAG #	EDB	LDB	APD	GPM	EWT	LWT	WPD	CONTROL VALVE TYPE	FILTER TYPE	FLA	MCA	MOCP	VOLTAGE	PHASE	SCCR	FUNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY	HEIGHT	LENGTH	WIDTH	UNIT WEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
AHU	15	45.0 °F	80.0 °F	0.1 in-wg	12.9 GPM	180.0 °F	148.0 °F	0.3 Feet	3-WAY	MERV 13	13.5 A	14.6 A	15 A	480 V	3	65000 A	MFR	MFR	MFR	MFR	75"	142"	84"	3000 lb	DAIKIN	CAHO28SHCM	
AHU	16	52.0 °F	80.0 °F	0.2 in-wg	56.0 GPM	180.0 °F	148.0 °F	1.1 Feet	3-WAY	MERV 13	37.8 A	38.9 A	40 A	480 V	3	65000 A	MFR	MFR	MFR	MFR	92"	150"	136"	5200 lb	DAIKIN	CAHO66SHCM	
AHU	17	52.0 °F	80.0 °F	0.2 in-wg	56.0 GPM	180.0 °F	148.0 °F	1.1 Feet	2-WAY	MERV 13	37.8 A	38.9 A	40 A	480 V	3	65000 A	MFR	MFR	MFR	MFR	92"	150"	136"	5200 lb	DAIKIN	CAHO66SHCM	

GENERAL NOTES:
1. PERFORMANCE BASED ON WATER.
2. DUCT SMOKE DETECTORS ON UNIT SUPPLY AND RETURN FOR AIRFLOW OVER 1900 CFM. DETECTORS SHALL BE BY DIVISION 28. TCC SHALL WIRE FROM DETECTOR TO UNIT SHUTOFF.
3. TEMPERATURE CONTROLS BY TCC INCLUDING FREEZESTAT. CONTROL VALVES BY TCC AND INSTALLED BY MC; PRESSURE DROP SHALL BE TWICE THE PRESSURE DROP OF THE DEVICE IT IS CONTROLLING (MIN. 2, MAX 15'). REFER TO CONTROLS DIAGRAM AND SOO.
4. ALL FANS SELECTED FOR AHUS MUST MEET REQUIREMENTS OF ASHRAE STANDARD 90.1-2013, SECTION 6.5.3.1.2. WHEN ECMS ARE USED THE REQUIREMENT IS TO USE THE NEXT AVAILABLE ECM NAMEPLATE HORSEPOWER MOTOR. REFER TO INTERPRETATION ICR0.1-2013-11 ADDITIONAL INFORMATION.
5. MAINTAIN UNIT SERVICE CLEARANCES ON FRONT, BACK, SIDE, AND TOP OF UNIT.
6. COORDINATE FIELD INSTALLATION OF ALL EQUIPMENT SHIPPED LOOSE FROM MANUFACTURER.
7. ANY ITEM IN CONTRACT DOCUMENTS NOT INCLUDED BY MANUFACTURER SHALL BE PROVIDED BY DIVISION 23. VERIFY WITH FINAL APPROVED EQUIPMENT SUBMITTAL.
8. PROVIDE FACTORY WIRED EC MOTORS WITH 0-10 VDC CONTROL ON SUPPLY/RETURN/EXHAUST FANS. WHERE (2) FANS ARE SUPPLIED EACH FAN SHALL HAVE ITS OWN VFD OR BE EC MOTORS TO PROVIDE FOR REDUNDANCY. UNITS WILL MULTIPLE EC MOTORS SHALL LIST FAN REDUNDANCY.
9. UNIT SHALL NOT EXCEED DIMENSIONS AND WEIGHTS LISTED IN SCHEDULE WITHOUT PRIOR WRITTEN APPROVAL FROM ARCHITECT, MECHANICAL ENGINEER, AND STRUCTURAL ENGINEER.
10. UNIT SHALL COME WITH 6" FORMED CHANNEL BASE RAIL.
11. MOUNT ON 4" HOUSEKEEPING PAD. PROVIDE SPRING VIBRATION ISOLATORS BETWEEN UNIT AND HOUSEKEEPING PAD. SPRING ISOLATORS SHALL BE EQUAL TO MASON INDUSTRIES SLF WITH 2" RATED DEFLECTION. FINAL LOCATION AND QTY SHALL BE COORDINATED WITH UNIT MOUNTED POINTS AND WEIGHTS.
12. PROVIDE SINGLE POINT POWER FOR FAN ARRAY CONTROL BOX, 65 SCCR WITH NON-FUSED DISCONNECT FACTORY WIRED, H-O-A FUNCTIONALITY AND 0-10VDC SPEED SIGNAL FOR BMS.
13. PROVIDE 5 YEAR EXTENDED WARRANTY.

ROOFTOP UNIT (DX - REMOTE HHW) SCHEDULE PART A

UNIT IDENTIFICATION								SUPPLY FAN							EXHAUST FAN							DIRECT EXPANSION (DX) COIL							HOT GAS REHEAT COIL		
TAG	TAG #	AREA SERVED	ASSOCIATED EQUIPMENT	MAX AIRFLOW	MIN AIRFLOW	MIN OUTSIDE AIRFLOW	DESIGN OUTSIDE AIRFLOW	QTY	ESP	TSP	FAN SPEED	DRIVE TYPE	BHP (EACH FAN)	HP (EACH FAN)	AIRFLOW	QTY	ESP	TSP	FAN SPEED	DRIVE TYPE	BHP (EACH FAN)	HP (EACH FAN)	TOTAL NET CAPACITY	SENSIBLE NET CAPACITY	EDB	EWB	LDB	LWB	REFRIGERANT TYPE	TOTAL CAPACITY	LDB	LWB
RTU	1	EXIST. POOL LOCKERS	ERV-1 & HG-1	3150 CFM	2520 CFM	3150 CFM	3150 CFM	1	2.00 in-wg	4.0 in-wg	2094 RPM	VFD	3.1 hp	5.0 hp	3150 CFM	1	1.0 in-wg	2.8 in-wg	1942 RPM	VFD	2.5 hp	3.0 hp	176100 Btu/h	110900 Btu/h	95.0 °F	75.0 °F	56.0 °F	51.0 °F	R-454B	106800 Btu/h	80.0 °F	0.0 °F
RTU	3	EXIST. POOL LOBBY	HG-3	1800 CFM	1500 CFM	360 CFM	550 CFM	1	1.50 in-wg	2.3 in-wg	1584 RPM	ECM	1.3 hp	2.4 hp	1800 CFM	1	1.0 in-wg	1.0 in-wg	2580 RPM	ECM	0.5 hp	1.2 hp	85143 Btu/h	59545 Btu/h	80.0 °F	65.4 °F	48.1 °F	48.1 °F	R-32	42754 Btu/h	70.0 °F	51.0 °F
RTU	14	EXIST. FIELD HOUSE LOCKERS	ERV-14 & HG-14	18000 CFM	9000 CFM	4000 CFM	18000 CFM	6	3.00 in-wg	5.1 in-wg	3228 RPM	ECM	3.4 hp	4.4 hp	18000 CFM	6	3.0 in-wg	4.2 in-wg	3170 RPM	ECM	2.9 hp	3.3 hp								0 Btu/h	0.0 °F	0.0 °F

ROOFTOP UNIT (DX - REMOTE HHW) SCHEDULE PART B

UNIT IDENTIFICATION		EFFICIENCY			ELECTRICAL						STARTER		DISCONNECT		MAXIMUM UNIT DIMENSIONS/WEIGHT						
TAG	TAG #	EER	IEER	FINAL FILTER TYPE	FLA	MCA	MOCP	VOLTAGE	PHASE	SCCR	FUNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY	HEIGHT	LENGTH	WIDTH	UNIT WEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
RTU	1	11	20.4	MERV 13	44.4 A	51.9 A	60 A	480 V	3	65000 A	MFR	MFR	MFR	MFR	60 1/4"	180 1/2"	52 1/2"	3400 lb	DAIKIN / VALENT	VXE-112-36D-15J-0-J2	1, 2, 3, 4, 5, 6
RTU	3	13.8	21	MERV 13	20.5 A	23.4 A	35 A	480 V	3	65000 A	MFR	MFR	MFR	MFR	86"	102"	73 3/8"	2200 lb	DAIKIN	DPSC07B	1, 3, 4, 6, 8, 9
RTU	14	-	-	MERV 13	28.2 A	29.4 A	30 A	480 V	3	65000 A	MFR	MFR	SEE KEYED NOTES	SEE KEYED NOTES	120"	204"	140"	11000 lb	DAIKIN	DAH041SVGM	1, 3, 7

GENERAL NOTES:
1. DUCT SMOKE DETECTORS ON UNIT SUPPLY AND RETURN FOR AIRFLOW OVER 1900 CFM. DETECTORS SHALL BE BY DIVISION 28. TCC SHALL WIRE FROM DETECTOR TO UNIT SHUTOFF. DAMPERS SHALL BE BY MFR. ACTUATORS FOR ALL DAMPERS ARE BY TCC.
2. TEMPERATURE CONTROLS BY TCC INCLUDING FREEZESTAT. REFER TO CONTROLS DIAGRAM AND SOO. MANUFACTURER TO PROVIDE STAND-ALONE REFRIGERATION MANAGEMENT CONTROLLER (CONTROLS SEQUENCING/TERMINAL STRIP. TCC TO COORDINATE REQUIRED POINTS FROM REFRIGERATION CONTROLLER TO AHU CONTROLLER/BAS.
3. ALL FANS SELECTED FOR RTUS MUST MEET REQUIREMENTS OF ASHRAE STANDARD 90.1-2013, SECTION 6.5.3.1.2. WHEN INDUCTION MOTORS ARE USED THEN THE REQUIREMENT IS TO USE THE NEXT AVAILABLE NEMA NAMEPLATE HORSEPOWER MOTOR, AND WHEN ECMS ARE USED THE REQUIREMENT IS TO USE THE NEXT AVAILABLE ECM NAMEPLATE HORSEPOWER MOTOR. REFER TO INTERPRETATION ICR0.1-2013-11 ADDITIONAL INFORMATION.
4. MAINTAIN UNIT SERVICE CLEARANCES ON FRONT, BACK, SIDE, AND TOP OF UNIT. ENSURE OUTDOOR AIR INTAKE IS GREATER THAN 10'-0" FROM ANY BUILDING EXHAUST.
5. COORDINATE FIELD INSTALLATION OF ALL EQUIPMENT SHIPPED LOOSE FROM MANUFACTURER.
6. ANY ITEM IN CONTRACT DOCUMENTS NOT INCLUDED BY MANUFACTURER SHALL BE PROVIDED BY DIVISION 23. VERIFY WITH FINAL APPROVED EQUIPMENT SUBMITTAL.
7. PROVIDE FACTORY WIRED EC MOTORS WITH 0-10 VDC CONTROL (OR VFDS AS SPECIFIED IN SCHEDULE) ON SUPPLY/RETURN/EXHAUST FANS. UNITS WILL MULTIPLE EC MOTORS SHALL LIST FAN REDUNDANCY.
8. UNIT SHALL NOT EXCEED DIMENSIONS AND WEIGHTS LISTED IN SCHEDULE WITHOUT PRIOR WRITTEN APPROVAL FROM ARCHITECT, MECHANICAL ENGINEER, AND STRUCTURAL ENGINEER.
9. UNIT SHALL COME WITH MODULATING OA/RA/EA DAMPERS WITH ECONOMIZER.
10. SERVICE RECEPTACLES SHALL BE FURNISHED AND INSTALLED BY DIVISION 26.
11. PROVIDE 5 YEAR EXTENDED WARRANTY.

KEYED NOTES:
1. UNIT SHALL BE SIDE DISCHARGE/SIDE RETURN. MOUNT ON 24" VIBRATION ISOLATION CURB.
2. PROVIDE SINGLE POINT POWER, 65 SCCR WITH NON-FUSED DISCONNECT SWITCH. PROVIDE PHASE FAILURE MONITORS.
3. COILS SHALL BE ELECTROFIN COATED FOR USE IN CHLORINATED POOL AIR ENVIRONMENTS.
4. UNIT SHALL COME WITH POWERED RELIEF/EXHAUST AND ECONOMIZER HOOD.
5. UNIT SHALL COME WITH FACTORY ENERGY RECOVERY WHEEL. REFER TO ENERGY RECOVERY SECTION SCHEDULE. HEATING + COOLING COILS TO BE SIZED FOR WHEEL FAILURE. UNIT SHALL BE PROVIDED WITH MODULATING OA, EA, RA DAMPERS WITH ECONOMIZER PATH. UNIT SHALL HAVE A RETURN AIR PATH FOR MORNING WARM-UP.
6. UNITS WITH COOLING SHALL COME WITH STAINLESS STEEL DRAIN PAN. MODULATING HOT GAS REHEAT. PROVIDE HAIL GUARDS ON ECM CONDENSER FANS. COMPRESSORS SHALL BE VARIABLE SPEED/MODULATING INVERTER. PROVIDE VANHAM 5 YEAR COMPRESSOR WARRANTY. PROVIDE FACTORY WIRED A2L LEAK DETECTION SYSTEM IN ACCORDANCE WITH ASHRAE 15-2022.
7. UNIT SHALL HAVE (3) POINTS OF ELECTRICAL CONNECTION. SUPPLY FAN CONNECTION SHALL BE AS SHOWN ON SCHEDULE. 28.2 FLA, 29.4 MCA, 30 MOP; EXHAUST FAN CONNECTION SHALL BE 23.4 FLA, 24.4 MCA AND 25 MOP; TCC SHALL PROVIDE AND INSTALL VFD WITH INTEGRAL DISCONNECT FOR WHEEL MOTOR - MOTOR IS 1.8 FLA, 1 HP, 480V, 3PH. SUPPLY FAN ARRAY AND EXHAUST FAN ARRAY SHALL COME WITH FACTORY DISCONNECT WITH MOTOR STARTER.
8. PROVIDE SINGLE POINT POWER, 65 SCCR WITH NON-FUSED DISCONNECT 'CIRCUIT BREAKER' FACTORY WIRED AND PHASE FAILURE MONITORS.
9. RETURN AIR CONNECTION SHALL BE 'THROUGH' THE ECONOMIZER HOOD. CONTRACTOR SHALL DIRECT THE DUCT SO THAT OUTDOOR AIR IS NOT CHOKED OFF FROM ENTERING THE UNIT; THIS SHALL BE COORDINATED IN FIELD WITH ENGINEER.
10. UNIT SHALL COME WITH SIDE BY SIDE SUPPLY AND EXHAUST AIR TUNNELS, BYPASS AROUND WHEEL WITH BYPASS DAMPERS, ACCESS SECTIONS. SUPPLY AND RETURN AIR PLENUMS. FAN ARRAYS SHALL COME WITH 65 SCCR, H-O-A FUNCTIONALITY WITH 0-10VDC SPEED CONTROL FROM BMS.

HHW HEATING COIL SCHEDULE

UNIT IDENTIFICATION					AIR					FLUID					DUCT SIZE				
TAG	TAG #	SYSTEM SERVED	MAXIMUM NUMBER OF ROWS	MAXIMUM FIN DENSITY FINS/IN	TOTAL CAPACITY	AIRFLOW	EDB	LDB	APD	MINIMUM FACE AREA	FLOW RATE	EWT	LWT	WPD	CONTROL VALVE TYPE	HEIGHT	WIDTH	MANUFACTURER	MODEL NO.	KEYED NOTES
HC	1	RTU-1	2	12	268894 Btu/h	3150 CFM	-10 °F	75 °F	0.22 in-wg	6 SF	15.0 GPM	180 °F	140 °F	1.10 Feet	3-WAY	24"	30"	DAIKIN	5WH1202B	1
HC	3	RTU-3	2	8	37870 Btu/h	1800 CFM	45 °F	90 °F	0.10 in-wg	5 SF	4.5 GPM	180 °F	138 °F	0.10 Feet	2-WAY	24"	30"	DAIKIN	5WH0802B	1
HC	14	RTU-14	2	9	1481300 Btu/h	18000 CFM	0 °F	75 °F	0.30 in-wg	27 SF	45.0 GPM	180 °F	148 °F	7.70 Feet	2-WAY	48"	90"	PRECISION	HWB5602F09	

GENERAL NOTES:
1. PERFORMANCE BASED ON WATER.
2. ALL COILS TO BE PUMPED FOR FREEZE PROTECTION; REFER TO PUMP SCHEDULE.
3. CONTROL VALVES BY TCC AND INSTALLED BY MC; PRESSURE DROP SHALL BE TWICE THE PRESSURE DROP OF THE DEVICE IT IS CONTROLLING (MIN. 2', MAX 15').

KEYED NOTES:
1. COIL SHALL HAVE ELECTROFIN COATINGS SUITABLE FOR CHLORINATED POOL AIR USE.

AIR COOLED CONDENSING UNIT SCHEDULE

UNIT IDENTIFICATION								CONDENSER		CONDENSER FAN		COMPRESSOR		ELECTRICAL				STARTER		DISCONNECT		MAXIMUM DIMENSIONS/WEIGHT						
TAG	TAG #	ASSOCIATED EQUIPMENT	TOTAL CAPACITY	EER / IEER	REFRIGERANT TYPE	NUMBER OF CIRCUITS	NUMBER OF STAGES	DESIGN AMBIENT TEMPERATURE	MIN TEMPERATURE	NO. OF FANS	HP	NO. OF COMPRESSORS	TYPE	MCA	MOCP	VOLTAGE	PHASE	FUNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY	LENGTH	WIDTH	HEIGHT	UNIT WEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
ACCU	2	AHU-2	180000 Btu/h	11 / 14.2	R-454B	1	2	95 °F	50 °F	3	0.8 hp	2	SCROLL	35.0 A	40 A	480 V	3	MFR	MFR	DIV 26	DIV 26	90"	40"	44"	850.00 lbf	RHEEM	RACY2180	

GENERAL NOTES:
1. EFFICENCY RATING SHALL BE IN ACCORDANCE WITH ARI-STANDARD 340/360-2004.
2. ALL CONTROLS BY TCC.
3. UNIT SHALL BE MOUNTED ON 18" ROOFTOP NON-PENETRATING SUPPORT BASE WITH DECKING WITH NEOPRENE VIBRATION ISOLATORS.
4. PROVIDE WITH REFRIGERANT PIPING TO/FROM INDOOR AHU. ALL PIPING SHALL BE FIELD INSULATED PER SPECIFICATIONS. PROVIDE NON-PENETRATING PIPE SUPPORTS ON ROOF. CORE NEW PIPE PENETRATIONS IN PENTHOUSE WALL. SEAL WEATHER TIGHT WITH CAULK - COLOR TO BE CHOSEN BY ARCH.
5. PROVIDE 5 YEAR EXTENDED WARRANTY.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO.
M600

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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ROOFTOP UNIT SCHEDULE (DX-HGR-GAS) PART A

UNIT IDENTIFICATION								SUPPLY FAN							EXHAUST FAN							DX COOLING									HOT GAS REHEAT			
TAG	TAG #	AREA SERVED	ASSOCIATED EQUIPMENT	MAX AIRFLOW	MIN AIRFLOW	MIN OUTSIDE AIRFLOW	DESIGN OUTDOOR AIRFLOW	FAN TYPE	QTY	ESP	TSP	FAN SPEED	BHP (EACH)	HP (EACH)	AIRFLOW	FAN TYPE	QTY	ESP	TSP	FAN SPEED	BHP (EACH)	HP (EACH)	TOTAL CAPACITY	SENSIBLE CAPACITY	EDB	EWB	LDB	LWB	APD	REFRIGERANT TYPE	EER / IEER	TOTAL CAPACITY	EDB	LDB	APD
RTU	1N	CONNECTOR	ERV-1N	14000 CFM	7885 CFM	3000 CFM	9500 CFM	ECM	4	2.8 in-wg	5.9 in-wg	2120 RPM	6.2 hp	7.6 hp	11600 CFM	ECM	2	1.25 in-wg	1.8 in-wg	1420 RPM	2.9 hp	5.9 hp	597662 Btu/h	418542 Btu/h	78.1 °F	65.1 °F	53.3 °F	53.3 °F	0.8 in-wg	R-32	9.4 / 16.4	253948 Btu/h	53.3 °F	70.0 °F	0.1 in-wg
RTU	2N	MULTI-PURPOSE 131 & 13132	ERV-2N	7300 CFM	4200 CFM	500 CFM	3200 CFM	ECM	2	1.0 in-wg	2.9 in-wg	1864 RPM	2.4 hp	5.9 hp	7200 CFM	ECM	1	0.50 in-wg	0.8 in-wg	2304 RPM	3.0 hp	5.9 hp	391491 Btu/h	228501 Btu/h	80.6 °F	66.9 °F	51.6 °F	51.6 °F	0.5 in-wg	R-32	10.5 / 17.1	46521 Btu/h	70.0 °F	59.4 °F	0.0 in-wg

ROOFTOP UNIT SCHEDULE (DX-HGR-GAS) PART B

UNIT IDENTIFICATION		GAS HEATING									ELECTRICAL					DISCONNECT			UNIT WEIGHT INCLUDING CURB	UNIT DIMENSIONS			MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #	INPUT	OUTPUT	EDB	LDB	APD	GAS PRESSURE MAX	GAS PRESSURE MIN	STAGES OR MODULATION TURNDOWN	FINAL FILTER TYPE	MCA	MOCP	VOLTAGE	PHASE	SCCR	FUNISHED BY	INSTALLED BY	CURB HEIGHT		HEIGHT	LENGTH	WIDTH			
RTU	1N	1125000 Btu/h	911000 Btu/h	38.0 °F	90.0 °F	0.1 in-wg	7 in-wg	14 in-wg	5-100%	MERV 13	147.6 A	150 A	480 V	3	65000 A	MFR	MFR	24"	11100 lb	77 5/8"	305"	98 1/2"	DAIKIN	DPSA052	
RTU	2N	600000 Btu/h	486000 Btu/h	38.0 °F	100.0 °F	0.1 in-wg	7 in-wg	14 in-wg	10-100%	MERV 13	82.7 A	100 A	480 V	3	65000 A	MFR	MFR	24"	8600 lb	77 5/8"	217"	98 1/2"	DAIKIN	DPSA030	

GENERAL NOTES:
1. DUCT SMOKE DETECTORS ON UNIT SUPPLY AND RETURN FOR AIRFLOW OVER 1900 CFM. DETECTORS SHALL BE BY DIVISION 28. TCC SHALL WIRE FROM DETECTOR TO UNIT SHUTOFF.
2. TEMPERATURE CONTROLS BY TEMPERATURE CONTROLS CONTRACTOR. REFER TO CONTROLS DIAGRAM AND SOO. MANUFACTURER TO PROVIDE REFRIGERATION MANAGEMENT CONTROLLER/CONTROLS SEQUENCING. TCC TO COORDINATE REQUIRED POINTS FROM REFRIGERATION CONTROLLER TO RTU CONTROLLER/BAS. DAMPERS SHALL BE BY MFR, ACTUATORS FOR ALL DAMPERS ARE BY TCC.
3. ALL FANS SELECTED FOR RTUS MUST MEET REQUIREMENTS OF ASHRAE STANDARD 90.1-2013, SECTION 6.5.3.1.2. WHEN ECMS ARE USED THE REQUIREMENT IS TO USE THE NEXT AVAILABLE ECM NAMEPLATE HORSEPOWER MOTOR. REFER TO INTERPRETATION ICR0.1-2013-11 ADDITIONAL INFORMATION.
4. PROVIDE SINGLE POINT POWER, FACTORY WIRED WITH EXTERNAL DISCONNECT, 65 SCCR AND PHASE FAILURE MONITORS.
5. PROVIDE FACTORY WIRED EC MOTORS WITH 0-10 VDC CONTROL ON SUPPLY/RETURN/EXHAUST FANS. UNITS WILL MULTIPLE EC MOTORS SHALL LIST FAN REDUNDANCY.
6. MAINTAIN UNIT SERVICE CLEARANCES ON FRONT, BACK, SIDE, AND TOP OF UNIT. ENSURE OUTDOOR AIR INTAKE IS GREATER THAN 10'-0" FROM ANY BUILDING EXHAUST.
7. COORDINATE FIELD INSTALLATION OF ALL EQUIPMENT SHIPPED LOOSE FROM MANUFACTURER.
8. ANY ITEM IN CONTRACT DOGMENTS NOT INCLUDED BY MANUFACTURER SHALL BE PROVIDED BY DIVISION 23. VERIFY WITH FINAL APPROVED EQUIPMENT SUBMITTAL.
9. PROVIDE HAIL GUARD ON ECM CONDENSER FANS. COMPRESSORS SHALL BE VARIABLE SPEED/MODULATING INVERTER. PROVIDE MINIMUM 5 YEAR COMPRESSOR WARRANTY. PROVIDE FACTORY WIRED A2L LEAK DETECTION SYSTEM IN ACCORDANCE WITH ASHRAE 15-2022.
10. UNIT SHALL COME WITH MODULATING OA/RA/EA DAMPERS WITH ECONOMIZER, MODULATING HOT GAS REHEAT, CONDENSER FAN ACTIVE VFD HEAD PRESSURE LOW AMBIENT CONTROL, SUPPLY AIR DISCHARGE SENSOR, STAINLESS STEEL DRIP PAN.
11. NATURAL GAS HEAT EXCHANGER SHALL BE STAINLESS STEEL WITH MODULATING CONTROL.
12. UNIT SHALL COME WITH FACTORY ENERGY RECOVERY WHEEL. REFER TO ENERGY RECOVERY SECTION SCHEDULE. HEATING & COOLING COILS TO BE SIZED FOR WHEEL FAILURE.
13. UNIT SHALL BE BOTTOM DISCHARGE/BOTTOM RETURN.
14. MOUNT ON 24" VIBRATION ISOLATION. PLENUM CURB FOR CUSTOM BOTTOM DISCHARGE/RETURN CONNECTION LOCATIONS AND SIZES. ROOF CURBS SHALL BE FULL UNIT LENGTH INCLUDING CONDENSING SECTION; PROVIDE CAP FOR PORTION OF CURB BELOW CONDENSING AREA.
15. SERVICE RECEPTACLES SHALL BE FURNISHED AND INSTALLED BY DIVISION 26.
16. PROVIDE 5 YEAR EXTENDED WARRANTY.

DEDICATED OUTSIDE AIR UNIT (HHW) SCHEDULE PART A

UNIT IDENTIFICATION								SUPPLY FAN							EXHAUST FAN						
TAG	TAG #	AREA SERVED	ASSOCIATED EQUIPMENT	MAX AIRFLOW	MIN AIRFLOW	MIN OUTSIDE AIRFLOW	DESIGN OUTSIDE AIRFLOW	QTY	ESP	TSP	FAN SPEED	DRIVE TYPE	BHP (EACH FAN)	HP (EACH FAN)	AIRFLOW	QTY	ESP	TSP	FAN SPEED	DRIVE TYPE	BHP (EACH FAN)	HP (EACH FAN)
DOAS	1	FIELD 1401	ERVD-1	25525 CFM	21429 CFM	24140 CFM	25525 CFM	6	1.50 in-wg	4.2 in-wg	2065 RPM	ECM	4.7 hp	6.0 hp	25525 CFM	3	0.5 in-wg	2.5 in-wg	1544 RPM	ECM	6.2 hp	9.2 hp
DOAS	2	FIELD 1401	ERVD-2	25525 CFM	21429 CFM	24140 CFM	25525 CFM	6	1.50 in-wg	4.2 in-wg	2065 RPM	ECM	4.7 hp	6.0 hp	25525 CFM	3	0.5 in-wg	2.5 in-wg	1544 RPM	ECM	6.2 hp	9.2 hp
DOAS	3	FIELD 1401	ERVD-3	25525 CFM	21429 CFM	24140 CFM	25525 CFM	6	1.50 in-wg	4.2 in-wg	2065 RPM	ECM	4.7 hp	6.0 hp	25525 CFM	3	0.5 in-wg	2.5 in-wg	1544 RPM	ECM	6.2 hp	9.2 hp
DOAS	4	FIELD 1401	ERVD-4	25525 CFM	21429 CFM	24140 CFM	25525 CFM	6	1.50 in-wg	4.2 in-wg	2065 RPM	ECM	4.7 hp	6.0 hp	25525 CFM	3	0.5 in-wg	2.5 in-wg	1544 RPM	ECM	6.2 hp	9.2 hp

DEDICATED OUTDOOR AIR UNIT (HHW) SCHEDULE PART B

UNIT IDENTIFICATION		GAS HEATING (2) HEATERS								FINAL FILTER TYPE	ELECTRICAL (SUPPLY FAN SECTION ONLY* SEE SCHEDULE NOTES)					STARTER		DISCONNECT		MAXIMUM UNIT DIMENSIONS/WEIGHT				MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #	INPUT	OUTPUT	EDB	LDB	APD	GAS PRESSURE MAX	GAS PRESSURE MIN	STAGES OR MODULATION TURNDOWN		MCA	MOCP	VOLTAGE	PHASE	SCCR	FUNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY	HEIGHT	LENGTH	WIDTH	UNIT WEIGHT			
DOAS	1	4000000.0 Btu/h	3240000.0 Btu/h	-10 °F	108 °F	0.40 in-wg	6 in-wg	14 in-wg	20:1	MERV 13	38.6 A	45 A	480 V	3	100000 A	MFR	MFR	SEE NOTES	SEE NOTES	116"	346"	142"	20200 lb	DAIKIN	SKYLINE	
DOAS	2	4000000.0 Btu/h	3240000.0 Btu/h	-10 °F	108 °F	0.40 in-wg	6 in-wg	14 in-wg	20:1	MERV 13	38.6 A	45 A	480 V	3	100000 A	MFR	MFR	SEE NOTES	SEE NOTES	116"	346"	142"	20200 lb	DAIKIN	SKYLINE	
DOAS	3	4000000.0 Btu/h	3240000.0 Btu/h	-10 °F	108 °F	0.40 in-wg	6 in-wg	14 in-wg	20:1	MERV 13	38.6 A	45 A	480 V	3	100000 A	MFR	MFR	SEE NOTES	SEE NOTES	116"	346"	142"	20200 lb	DAIKIN	SKYLINE	
DOAS	4	4000000.0 Btu/h	3240000.0 Btu/h	-10 °F	108 °F	0.40 in-wg	6 in-wg	14 in-wg	20:1	MERV 13	38.6 A	45 A	480 V	3	100000 A	MFR	MFR	SEE NOTES	SEE NOTES	116"	346"	142"	20200 lb	DAIKIN	SKYLINE	

GENERAL NOTES:
1. DUCT SMOKE DETECTORS ON UNIT SUPPLY AND RETURN FOR AIRFLOW OVER 1900 CFM. DETECTORS SHALL BE BY DIVISION 28. TCC SHALL WIRE FROM DETECTOR TO UNIT SHUTOFF.
2. TEMPERATURE CONTROLS BY TEMPERATURE CONTROLS CONTRACTOR. REFER TO CONTROLS DIAGRAM AND SOO. DAMPERS SHALL BE BY MFR, ACTUATORS FOR ALL DAMPERS ARE BY TCC.
3. ALL FANS SELECTED FOR RTUS MUST MEET REQUIREMENTS OF ASHRAE STANDARD 90.1-2013, SECTION 6.5.3.1.2. WHEN ECMS ARE USED THE REQUIREMENT IS TO USE THE NEXT AVAILABLE ECM NAMEPLATE HORSEPOWER MOTOR. REFER TO INTERPRETATION ICR0.1-2013-11 ADDITIONAL INFORMATION.
4. MAINTAIN UNIT SERVICE CLEARANCES ON FRONT, BACK, SIDE, AND TOP OF UNIT. ENSURE OUTDOOR AIR INTAKE IS GREATER THAN 10'-0" FROM ANY BUILDING EXHAUST AND UNIT EXHAUST IS 10'-0" FROM ANY BUILDING OPENING.
5. COORDINATE FIELD INSTALLATION OF ALL EQUIPMENT SHIPPED LOOSE FROM MANUFACTURER.
6. ANY ITEM IN CONTRACT DOGMENTS NOT INCLUDED BY MANUFACTURER SHALL BE PROVIDED BY DIVISION 23. VERIFY WITH FINAL APPROVED EQUIPMENT SUBMITTAL.
7. PROVIDE FACTORY WIRED EC MOTOR FAN ARRAY WITH 0-10 VDC CONTROL ON SUPPLY/EXHAUST FANS. UNITS WILL MULTIPLE EC MOTORS SHALL LIST FAN REDUNDANCY.
8. UNIT SHALL BE PROVIDED WITH MODULATING OA, EA, RA DAMPERS WITH ECONOMIZER PART SHALL HAVE A RETURN AIR PATH FOR MORNING WARM-UP.
9. UNIT SHALL COME WITH FACTORY ENERGY RECOVERY WHEEL. REFER TO ENERGY RECOVERY SECTION SCHEDULE. HEATING COILS TO BE SIZED FOR WHEEL FAILURE.
10. UNIT SHALL COME WITH SIDE BY SIDE SUPPLY AND EXHAUST AIR TUNNELS, ACCESS SECTIONS, SUPPLY AND RETURN AIR PLENUMS. FAN ARRAYS SHALL COME WITH MIN. 65 SCCR, H-O-A FUNCTIONALITY WITH 0-10VDC SPEED CONTROL FROM BMS.
11. NATURAL GAS HEAT EXCHANGER SHALL BE STAINLESS STEEL WITH MODULATING CONTROL.
12. SERVICE RECEPTACLES SHALL BE FURNISHED AND INSTALLED BY DIVISION 26.
13. UNIT SHALL HAVE (5) POINTS OF ELECTRICAL POWER CONNECTION: (1) SUPPLY FAN CONNECTION - 38.6 MCA, 45 MOCP, 480V/3PH WITH 100KAIC FUSED DISCONNECT, (1) EXHAUST FAN CONNECTION - 29.71 MCA, 35 MOCP, 480V/3PH WITH 100 KAIC FUSED DISCONNECT, (1) WHEEL VFD CONNECTION FOR 480V/3PH - 1.5 HP. ADDITIONALLY EACH OF THE TWO BURNER SECTIONS WILL NEED (1) 120V - 20 AMP CONNECTION WITH DISCONNECT BY DIV. 26.
14. PROVIDE 5 YEAR EXTENDED WARRANTY.
15. MOUNT UNITS ON HOUSEKEEPING PAD PROVIDED ON GRADE (REFER TO CIVIL AND STRUCTURAL PLANS); PAD IS SLOPED - PROVIDE WEATHER PROOF SHIMS TO LEVEL UNIT.

ENERGY RECOVERY SECTION SCHEDULE

UNIT IDENTIFICATION		ASSOCIATED EQUIPMENT	ENERGY RECOVERY DEVICE TYPE	MOTOR DRIVE TYPE	MODULATING WHEEL?	SUMMER						WINTER				MANUFACTURER	MODEL NO.
TAG	TAG #					OA EDB	OA EWB	OA LDB	OA LWB	EA EDB	EA EWB	OA EDB	OA LDB	EA EDB	EA EWB		
DOAS	1	ERVD-1	WHEEL	BELT	YES	85 °F	78 °F	84 °F	71 °F	75 °F	62 °F	-10 °F	34 °F	75 °F	62 °F	DAIKIN	SKYLINE
DOAS	2	ERVD-2	WHEEL	BELT	YES	85 °F	78 °F	84 °F	71 °F	75 °F	62 °F	-10 °F	34 °F	75 °F	62 °F	DAIKIN	SKYLINE
DOAS	3	ERVD-3	WHEEL	BELT	YES	85 °F	78 °F	84 °F	71 °F	75 °F	62 °F	-10 °F	34 °F	75 °F	62 °F	DAIKIN	SKYLINE
DOAS	4	ERVD-4	WHEEL	BELT	YES	85 °F	78 °F	84 °F	71 °F	75 °F	62 °F	-10 °F	34 °F	75 °F	62 °F	DAIKIN	SKYLINE
RTU	1N	ERV-1N	WHEEL	BELT	YES	85 °F	75 °F	81 °F	68 °F	75 °F	64 °F	-10 °F	45 °F	70 °F	50 °F	DAIKIN	DPSA052
RTU	1-4	ERV-1-4 & HC-1-4	WHEEL	BELT	YES	85 °F	75 °F	84 °F	71 °F	75 °F	64 °F	-10 °F	32 °F	70 °F	50 °F	DAIKIN	GAH041SVJM
RTU	1	ERV-1 & HC-1	WHEEL	BELT	YES	85 °F	75 °F	82 °F	68 °F	75 °F	62 °F	-10 °F	34 °F	70 °F	50 °F	DAIKIN / VALENT	VXE-112-36D-15J-0-J2
RTU	2N	ERV-2N	WHEEL	BELT	YES	85 °F	75 °F	83 °F	69 °F	74 °F	65 °F	-10 °F	45 °F	70 °F	50 °F	DAIKIN	DPSA030

GENERAL NOTES:
1. WHEELS ARE INTEGRAL TO ASSOCIATED ROOFTOP UNITS/AIR HANDLING UNITS.
2. TOTAL RECOVERY EFFECTIVENESS SHALL BE GREATER THAN 80%.
3. PROVIDE WITH ENERGY RECOVERY BYPASS OPTION ON EA AND OA FOR ECONOMIZER OPERATION.
4. WHEELS SHALL BE COMPOSITE MATERIAL.
5. WHEELS SHALL HAVE FROST PROTECTION WITH VFD AND ROTATION SENSOR - EXCEPT RTU-14 WHERE THE WHEEL VFD SHALL BE PROVIDED BY TCC.
6. ALL UNITS SHALL HAVE A RETURN AIR PATH WITH RECIRCULATION DAMPERS AROUND THE WHEEL FOR MORNING WARM-UP/COOL-DOWN SEQUENCES - EXCEPT RTU-14.

PACKAGED SNOWMELT SKID

HYDRONIC SNOWMELT PUMP SCHEDULE

UNIT IDENTIFICATION				MINIMUM FLOW	MAXIMUM FLOW	WATER PRESSURE DROP	PUMP SPEED AT DESIGN (RPM)	MOTOR SPEED (RPM)	MIN % EFFICIENCY	ELECTRICAL						STARTER			DISCONNECT		MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #	SYSTEM SERVED	TYPE							BHP	HP	VOLTAGE	PHASE	FLA	MOCP	STARTER TYPE	FUNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY			
P	SNW	SNOWMELT - GOLD SIDE	INLINE	8.9 GPM	59.0 GPM	40 Feet	1725	1800	55.9	1.12 hp	1.5 hp	480 V	3	5.4 A	15 A	H-O-A	MFR	MFR	MFR	MFR	B&G	E-40 1.5AB	

GENERAL NOTES:
1. PERFORMANCE BASED ON 40% PROPYLENE GLYCOL SOLUTION.
2. WHEN VFD CONTROL IS SPECIFIED, PROVIDE WITH NEMA PREMIUM EFFICIENT MOTOR WITH AEGIS SHAFT GROUNDING RINGS.
3. PUMPS DESIGNED TO OPERATE AT VARIABLE SPEED SHALL BE PROVIDED WITH MAX IMPELLER DIAMETER THAT IS NON-OVERLOADING OVER THE ENTIRE PUMP CURVE FOR THE SCHEDULED MOTOR HORSEPOWER.
4. A SINGLE PRESSURE GAUGE SHALL BE CONNECTED TO THE DISCHARGE AND SUCTION SIDE OF EACH PUMP AND ACROSS THE STRAINER SO THAT THE DIFFERENTIAL PRESSURE CAN BE OBSERVED. NO TRUMPET VALVE IS ALLOWED.
5. RPM AT DUTY POINT SHALL NOT BE LESS THAN 15% OF MAX RPM.
6. DISCONNECTS SHALL BE MOUNTED ON EQUIPMENT OR WITHIN 8'-0" OF EQUIPMENT. COORDINATE WITH ELECTRICAL CONTRACTOR.
7. PUMP SHALL BE PART OF SNOWMELT SKID.
8. SNOWMELT SKID TO COME WITH SINGLE POINT POWER CONNECTION AND WILL INCLUDE THE PUMP MOTOR STARTER AND DISCONNECT. DISCONNECTS SHALL BE MOUNTED ON EQUIPMENT OR WITHIN 8'-0" OF EQUIPMENT. COORDINATE WITH MANUFACTURE.

HYDRONIC SNOWMENT HEAT EXCHANGER SCHEDULE

UNIT IDENTIFICATION			ASSOCIATED EQUIPMENT	TYPE	TOTAL CAPACITY	EFFECTIVE SURFACE AREA	TOTAL NUMBER OF PLATES	FIELD PIPE SIZE	FIELD SIDE						SOURCE SIDE						CIRCUIT QUANTITY	TOTAL CIRCUIT LENGTH	MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #	AREA SERVED							FLUID TYPE	FLOW RATE	EWT	LWT	PRESSURE DROP	FOULING FACTOR	FLUID TYPE	FLOW RATE	EWT	LWT	PRESSURE DROP	FOULING FACTOR					
HX	SNW	SNOWMELT SYSTEM	P-SNW	BRAZED PLATE	641450.5 Btu/h	40 SF	40	2 1/2"	40%PG	60.0 GPM	105 °F	130 °F	8.93 Feet	0.0000	WATER	95.3 GPM	180 °F	140 °F	4.62 Feet	0.0000	20	5461 FT	BELL & GOSSETT	BPX BP423-40	

GENERAL NOTES:
1. PIPE SIZE LISTED IS FOR FIELD PIPING.
2. SYSTEM SIDE PRESSURE DROP SHALL NOT EXCEED PRESSURE DROP OF 7.0 FEET - H20 (3 PSI).
3. HEAT EXCHANGER SHALL BE PART OF SNOWMELT SKID.

HYDRONIC SNOWMELT EXPANSION TANK SCHEDULE

UNIT IDENTIFICATION					SYSTEM FILL VALVE OR GLYCOL PUMP PRESSURE SETTING PSIG	OPERATING PRESSURES		SYSTEM OPERATING TEMPERATURES		EXPANSION VOLUME	ACCEPTANCE FACTOR	MINIMUM TANK VOLUME	TANK DIMENSIONS		UNIT WEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #	SYSTEM SERVED	SYSTEM VOLUME	TYPE		MIN PRESSURE	MAX PRESSURE	MIN TEMPERATURE	MAX TEMPERATURE				DIAMETER	HEIGHT				
ET	SNW	SNOWMELT SYSTEM	150 gal	BLADDER	12.00 psig	0.4 psig	68.0 psig	40 °F	130 °F	4.6 gal	877	7 gal	12"	24"	123.00 lb	BELL & GOSSETT	B35	

GENERAL NOTES:
1. PERFORMANCE BASED ON 40% PROPYLENE GLYCOL SOLUTION.
2. HEAT EXCHANGER SHALL BE PART OF SNOWMELT SKID.
3. UNIT SHALL BE ASME RATED.
4. PROVIDE WITH SIGHT GLASS OR BLADDER INTEGRITY MONITOR.

SNOWMELT SKID SYSTEM GENERAL NOTES:
1. BASIS OF DESIGN SKID PACKAGE: PROPAK MODEL SMW0250.
2. PROVIDE 4" HOUSEKEEPING PAD UNDER SKID.
3. SNOWMELT SYSTEM SHALL BE FROM MANUFACTURER AS A PACKAGED SKID CONTAINNG HEAT EXCHANGER, PUMP (FIELD SIDE), EXPANSION TANK, 40% GLYCOL MAKEUP UNIT, DISCONNECT SWITCH, PIPING, VALVES, AND ALL CONTROLS WITH TEMPERATURE AND MOISTURE SENSORS.
4. SKID SHALL BE A SINGLE POINT CONNECTION TO MATCH ELECTRICAL INFORMATION INDICATED IN HYDRONIC SNOWMELT PUMP SCHEDULE.
5. SKID SHALL BE INTEGRATED INTO OWNER'S BUILDING MANAGEMENT SYSTEM.
6. COORDINATE PAVEMENT MATERIAL WITH CIVIL. PROVIDE INSULATION BELOW SLAB AND PIPING.
7. PROVIDE ISOLATION VALVES AT FLOOR PRIOR TO UNDERGROUND CONNECTION.
8. PROVIDE ISOLATION VALVES BEFORE CONNECTION TO SKID.
9. PROVIDE 3-WAY CONTROL VALVE AS PART OF SKID.
10. CONTRACTOR TO VERIFY DIMENSIONS OF SKID, DOOR, AND ROOM PRIOR TO ORDER.
11. PROVIDE PIPING SLEEVES AS PIPE PENETRATIONS FLOOR/FOOTINGS.

HYDRONIC SNOWMELT MANIFOLD SCHEDULE

UNIT IDENTIFICATION		AREA SERVED	ASSOCIATED EQUIPMENT	TOTAL CAPACITY	FLOW RATE	EWT	LWT	WATER PRESSURE DROP	NUMBER OF CIRCUITS	TUBING LENGTH	CIRCUIT SPACING	MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #													
SMM	1	ZONE 1	SM-1	231000.0 Btu/h	20.1 GPM	130 °F	105 °F	16.9 FT	7	1867	9"	MRPEX	328 SERIES	
SMM	2	ZONE 2	SM-1	148000.0 Btu/h	11.2 GPM	130 °F	105 °F	16.9 FT	6	1600	9"	MRPEX	328 SERIES	
SMM	3	ZONE 3	SM-1	241300.0 Btu/h	21.5 GPM	130 °F	105 °F	20.3 FT	7	2000	9"	MRPEX	328 SERIES	

GENERAL NOTES:
1. PERFORMANCE BASED ON 40% PROPYLENE GLYCOL SOLUTION.
2. PROVIDE SNOW/ICE SENSOR IN SNOWMELT ZONE PER MANUFACTURER REQUIREMENTS/RECOMMENDATIONS.
3. PROVIDE WITH MANUFACTURER SNOW MELTING CONTROLLER.
4. MAXIMUM WATER SUPPLY TEMPERATURE SHALL BE 130°F.
5. MANIFOLD TO BE LOCATED IN QUIZTE BOX AND LOCATION SHOWN ON PLANS.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO.
M601

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201081679
07/30/2026

BOILER SCHEDULE

UNIT IDENTIFICATION		FLUID					GAS		GAS PRESSURE			DISCONNECT		ELECTRICAL							
TAG	TAG #	FLOW RATE	EWT	LWT	WATER PRESSURE DROP	PRESSURE RELIEF VALVE RATING	INPUT	OUTPUT	MAX	MIN	STAGES OR MODULATION TURNDOWN	FURNISHED BY	INSTALLED BY	FLA	MOCP	VOLTAGE	PHASE	SCCR	MANUFACTURER	MODEL NO.	KEYED NOTES
B	1	165.0 GPM	140 °F	180 °F	3.0 Feet	75 psi	4000000 Btu/h	3120000 Btu/h	14.00 in-wg	3.50 in-wg	10:1	ELEC	ELEC	20 A	20 A	480 V	3	0 A	PATTERSON KELLEY	C-4000	1
B	2	165.0 GPM	140 °F	180 °F	3.0 Feet	75 psi	4000000 Btu/h	3120000 Btu/h	14.00 in-wg	3.50 in-wg	10:1	ELEC	ELEC	20 A	20 A	480 V	3	0 A	PATTERSON KELLEY	C-4000	1
B	3	165.0 GPM	140 °F	180 °F	3.0 Feet	75 psi	4000000 Btu/h	3120000 Btu/h	14.00 in-wg	3.50 in-wg	10:1	ELEC	ELEC	20 A	20 A	480 V	3	0 A	PATTERSON KELLEY	C-4000	

GENERAL NOTES:
1. PERFORMANCE BASED ON WATER.
2. BOILER ARE SIZED FOR 50% ANTICIPATED BUILDING LOAD (2N+1).
3. BOILER SHALL COME WITH PRESSURE RELIEF VALVE, GSD-1 GAS TRAIN, AND CONDENSATE NEUTRALIZATION KIT.
4. PROVIDE 4" HOUSEKEEPING PAD UNDER BOILER.
5. BOILER SHALL BE DIRECT VENTED. PROVIDE ALSP-4C STAINLESS STEEL FLUE. COMBUSTION AIR SHALL BE SINGLE WALL STAINLESS STEEL. COMBUSTION AIR DUCT IN MECHANICAL ROOM TO BE INSULATED PER MANUFACTURER RECOMMENDATIONS AND SPECIFICATIONS. TERMINATE BOTH FLUE AND COMBUSTION AIR WITH VENT TEE WITH MAX. 1"X1" BIRD SCREEN.
6. PROVIDE WITH MFR RECOMMENDED NORMALLY CLOSED MOTORIZED DAMPER IN COMBUSTION AIR INLET. DAMPER SHALL HAVE END LIMIT SWITCH. DAMPERS OPERATE AT 120 VAC, 0.5 AMPS AND REQUIRE SEPARATE POWER.
7. PROVIDE WITH BACNET IP COMMUNICATION AND VARIABLE SPEED BOILER PRIMARY PUMP CONTACT.
8. PROVIDE EXTENDED 5 YEAR WARRANTY ON ALL PARTS, 5 YEAR WARRANTY ON BURNER AND HEAT EXCHANGER, 10 YEAR WARRANTY AGAINST THERMAL SHOCK. WARRANTY SHALL BEGIN AT START-UP.

KEYED NOTES:
1. BOILER TO BE FED FROM EMERGENCY POWER. ~20 AMPS. ASSOCIATED BOILER COMBUSTION AIR DAMPER TO ALSO TO BE FED FROM EMERGENCY POWER. 120 VAC, 0.5 AMPS EACH.

HVAC PUMP SCHEDULE

UNIT IDENTIFICATION										ELECTRICAL					STARTER			DISCONNECT				
TAG	TAG #	SYSTEM SERVED	TYPE	MINIMUM FLOW	MAXIMUM FLOW	WATER PRESSURE DROP	PUMP SPEED AT DESIGN (RPM)	MOTOR SPEED (RPM)	MIN % EFFICIENCY	BHP	HP	VOLTAGE	PHASE	SCCR	STARTER TYPE	FUNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY	MANUFACTURER	MODEL NO.	KEYED NOTES
BP	1	BOILER PLANT - PRIMARY	INLINE	18.0 GPM	165.0 GPM	22 Feet	1084	1200	64.2	1.32 hp	2.0 hp	480 V	3	0 A	VFD	TCC	DIV 26	TCC	DIV 26	B&G	E-80	1, 5
BP	2	BOILER PLANT - PRIMARY	INLINE	18.0 GPM	165.0 GPM	22 Feet	1084	1200	64.2	1.32 hp	2.0 hp	480 V	3	0 A	VFD	TCC	DIV 26	TCC	DIV 26	B&G	E-80	1, 5
BP	3	BOILER PLANT - PRIMARY	INLINE	18.0 GPM	165.0 GPM	22 Feet	1084	1200	64.2	1.32 hp	2.0 hp	480 V	3	0 A	VFD	TCC	DIV 26	TCC	DIV 26	B&G	E-80	1
BP	4	BOILER PLANT - SECONDARY	END SUCTION	37.0 GPM	175.0 GPM	70 Feet	1145	1200	64.6	4.70 hp	7.5 hp	480 V	3	0 A	VFD	TCC	DIV 26	TCC	DIV 26	B&G	E-1510	1, 2, 3, 5
BP	5	BOILER PLANT - SECONDARY	END SUCTION	37.0 GPM	175.0 GPM	70 Feet	1145	1200	64.6	4.70 hp	7.5 hp	480 V	3	0 A	VFD	TCC	DIV 26	TCC	DIV 26	B&G	E-1510	1, 2, 3, 5
BP	6	BOILER PLANT - SECONDARY	END SUCTION	37.0 GPM	175.0 GPM	70 Feet	1145	1200	64.6	4.70 hp	7.5 hp	480 V	3	0 A	VFD	TCC	DIV 26	TCC	DIV 26	B&G	E-1510	1, 2, 3
P	1	HC-1 - FREEZE	INLINE	15.0 GPM	15.0 GPM	13 Feet	2718	4600	47.1	0.10 hp	0.2 hp	115 V	1	0 A	ECM	MFR	MFR	DIV 26	DIV 26	B&G	ECOCIRC XL	1, 5
P	2	AHU-2 HEATING COIL - FREEZE	INLINE	9.5 GPM	9.5 GPM	13 Feet	2722	4600	38.1	0.08 hp	0.2 hp	115 V	1	0 A	ECM	MFR	MFR	DIV 26	DIV 26	B&G	ECOCIRC XL	1, 5
P	3	HC-3 - FREEZE	INLINE	5.0 GPM	5.0 GPM	12 Feet	2813	4600	2.52	0.01 hp	0.1 hp	115 V	1	0 A	ECM	MFR	MFR	DIV 26	DIV 26	B&G	ECOCIRC XL	1, 5
P	14	HC-14 - FREEZE	INLINE	98.0 GPM	98.0 GPM	28 Feet	2736	4600	52.9	1.28 hp	2.0 hp	208 V	1	0 A	ECM	MFR	MFR	DIV 26	DIV 26	B&G	ECOCIRC XL	1, 5
P	15	AHU-15 HEATING COIL - FREEZE	INLINE	33.0 GPM	33.0 GPM	17 Feet	3004	4600	29.4	0.33 hp	0.5 hp	208 V	1	0 A	ECM	MFR	MFR	DIV 26	DIV 26	B&G	ECOCIRC XL	1, 5
P	16	AHU-16 HEATING COIL - FREEZE	INLINE	60.0 GPM	60.0 GPM	13 Feet	2737	4600	58.3	0.34 hp	0.5 hp	208 V	1	0 A	ECM	MFR	MFR	DIV 26	DIV 26	B&G	ECOCIRC XL	1, 5
P	17	AHU-17 HEATING COIL - FREEZE	INLINE	60.0 GPM	60.0 GPM	13 Feet	2737	4600	58.3	0.34 hp	0.5 hp	208 V	1	0 A	ECM	MFR	MFR	DIV 26	DIV 26	B&G	ECOCIRC XL	1, 5
P	BP1	BYPASS FILTER	INLINE	35.0 GPM	35.0 GPM	26 Feet	2283	4800	47.9	0.48 hp	1.0 hp	208 V	1	0 A	ECM	MFR	MFR	DIV 26	DIV 26	B&G	ECOCIRC XL	1

GENERAL NOTES:
1. WHEN VFD CONTROL IS SPECIFIED, PROVIDE WITH NEMA PREMIUM EFFICIENT MOTOR WITH AEGIS SHAFT GROUNDING RINGS.
2. PUMPS DESIGNED TO OPERATE AT VARIABLE SPEED SHALL BE PROVIDED WITH MAX IMPELLER DIAMETER THAT IS NON-OVERLOADING OVER THE ENTIRE PUMP CURVE FOR THE SCHEDULED MOTOR HORSEPOWER.
3. A SINGLE PRESSURE GAUGE SHALL BE CONNECTED TO THE DISCHARGE AND SUCTION SIDE OF EACH PUMP AND ACROSS THE STRAINER SO THAT THE DIFFERENTIAL PRESSURE CAN BE OBSERVED. NO TRIMPET VALVE IS ALLOWED.
4. RPM AT DUTY POINT SHALL NOT BE LESS THAN 15% OF MAX RPM.
5. DISCONNECTS SHALL BE MOUNTED ON EQUIPMENT OR WITHIN 6'-0" OF EQUIPMENT. COORDINATE WITH ELECTRICAL CONTRACTOR.
6. WHERE PUMPS ARE NOTED TO OPERATE IN PARALLEL (I.E. LEAD/LAG), PUMPS SHALL BE SELECTED SUCH THAT THE SYSTEM CURVE CROSSES ALL OPERATING PUMP CURVES.

KEYED NOTES:
1. PERFORMANCE BASED ON WATER.
2. PROVIDE 4" HOUSEKEEPING PAD. PROVIDE VIBRATION ISOLATED INERTIA BASE BETWEEN PUMP AND 4" HOUSEKEEPING PAD.
3. PUMPS SIZED FOR 2N+1 AT 100% PEAK LOAD. PUMPS ARE TO OPERATE IN PARALLEL (LEAD/LAG/STANDBY). PROVIDE PARALLEL PUMP CONTROLLER FROM THE MANUFACTURER. TOTAL PUMP SYSTEM FLOW IS 330 GPM. REFER TO GENERAL NOTE 6.
4. PERFORMANCE IS BASED ON 40% PROPYLENE GLYCOL.
5. PUMP TO BE FED FROM EMERGENCY POWER.

AIR & DIRT SEPARATOR SCHEDULE

INLET/OUTLET PIPE SIZE	MAX SYSTEM FLOW	MAX PRESSURE DROP (CLEAN)	BUNDLE REMOVAL CLEANANCE	OPERATING WEIGHT	TYPE	MANUFACTURER	MODEL NO.	KEYED NOTES
8"	940 GPM	0.61 psi	33"	1179.00 lbf	STANDARD VELOCITY / AIR & DIRT	SPIROTHERM	VDN 800 FA	

GENERAL NOTES:
1. SEPARATOR FLANGE CONNECTION MUST BE MINIMUM OF THE PIPE DIAMETER SIZE OF WHICH THE SEPARATOR IS INSTALLED.
2. MINIMUM BUNDLE REMOVAL CLEARANCE IS MEASURED FROM CENTERLINE OF INLET/OUTLET PIPING. PROVIDE CLEARANCE BELOW UNIT TO DIMENSION LISTED TO ALLOW REMOVAL OF HEAD AND ELEMENT BUNDLE.
3. REFER TO PUMP SCHEDULE FOR ACTUAL SYSTEM FLOW.

BYPASS FILTER/FEEDER SCHEDULE

UNIT IDENTIFICATION		SYSTEM SERVED	TYPE	CLEAN PD	DIRTY PD	FILTER QUANTITY	FILTER LENGTH	FLOW RATE	INLET SIZE	OUTLET SIZE	DIAMETER	HEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #														
BF	1	HWN	CARTRIDGE	2 Feet	10 Feet	7	14 1/2"	35 GPM	1 1/2"	1 1/2"	13"	28"	HARMSCO	HF 14	

GENERAL NOTES:
1. MOUNT ON 4" HOUSEKEEPING PAD.
2. CARTRIDGES SHALL BE ARRANGED IN A CLUSTER SO ALL CARTRIDGES CAN BE REMOVED AT ONE TIME FOR EASE OF CLEANING AND REPLACEMENT.
3. STAINLESS STEEL MODEL WITH STAINLESS STEEL RODS, PIE CAPS AND STANDPIPES FOR 200°F RATING.

HVAC HEAT EXCHANGER SCHEDULE

UNIT IDENTIFICATION		SYSTEM SERVED	LOCATION	TYPE	TOTAL CAPACITY	EFFECTIVE SURFACE AREA	# OF PLATES	HOT SIDE					COLD SIDE					DIMENSIONS			WEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #							FLUID	EWT	LWT	FLOW	PD	FLUID	EWT	LWT	FLOW	PD	DEPTH	WIDTH	HEIGHT				
HX	1	POOL HEATER	MECHANICAL - 1350	GASKETED PLATE AND FRAME	1260000.0 Btu/h	97.10 SF	45	WATER	180.0 °F	140.0 °F	65.0 GPM	0.50 psi	WATER - POOL	111.7 °F	140.0 °F	90.0 GPM	1.00 psi	15.75"	13.00"	44.75"	474 lb	B&G	PI-K	1
HX	2	SPA HEATER	MECHANICAL - 1350	GASKETED PLATE AND FRAME	300000.0 Btu/h	24.22 SF	17	WATER	180.0 °F	140.0 °F	15.5 GPM	0.22 psi	WATER - SPA	114.9 °F	140.0 °F	30.0 GPM	0.83 psi	15.75"	12.12"	34.30"	313 lb	B&G	PI-4	1
DHX	1	DOMESTIC	MECHANICAL - 1410	DOUBLE WALL PLATE AND FRAME	1381034.0 Btu/h	45.20 SF	30	WATER	180.0 °F	140.0 °F	70.8 GPM	2.20 psi	WATER	50.0 °F	130.0 °F	34.8 GPM	0.50 psi	15.75"	18.00"	44.75"	474 lb	B&G	PI-4 - DW	2

GENERAL NOTES:
1. PLATE AND FRAME HEAT EXCHANGERS SHALL ALLOW FOR ADDITIONAL PLATES TO BE ADDED, SELECT FOR A EXCESS PLATE CAPACITY OF AT LEAST 20%.
2. TEMPERATURE CONTROLS BY TCC. CONTROL VALVES SHALL BE 3-WAY TYPE.
3. MOUNT ON 4" HOUSEKEEPING PADS.

KEYED NOTES:
1. PLATE MATERIAL SHALL BE TITANIUM; ALL MATERIALS TO BE SUITABLE FOR USE WITH POOL SYSTEMS.
2. PLATE MATERIAL SHALL BE 316L STAINLESS STEEL W/ NITRILE HT GASKETS; ALL MATERIALS TO BE SUITABLE FOR USE IN POTABLE WATER SYSTEMS.

CABINET UNIT HEATER SCHEDULE (HEATING HOT WATER)

UNIT IDENTIFICATION								FLUID					UNIT DIMENSIONS				FAN		ELECTRICAL					STARTER			DISCONNECT				
TAG	TAG #	QTY	TYPE	TOTAL CAPACITY	AIRFLOW	OUTSIDE AIRFLOW	LAT @ 60 °F EAT	FLOW RATE	EWT	LWT	WPD	CONTROL VALVE TYPE	LENGTH	DEPTH	HEIGHT	MOUNTING TYPE	NO. OF FANS	MOTOR POWER	MCA	MOCP	VOLTAGE	PHASE	SCCR	STARTER TYPE	FURNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY	MANUFACTURER	MODEL NO.	KEYED NOTES
CUH	1	3	HOT WATER	60000 Btu/h	1200 CFM	0 CFM	106 °F	1.7 GPM	180.0 °F	170.4 °F	1.2 Feet	2-WAY	84 1/2"	10 3/8"	33 1/2"	RECESSED WALL	2	300 W	3.60 A	15 A	277 V	1	5 A	ECM	MFR	MFR	MFR	MFR	TRANE	FTHB120	1
CUH	2	7	HOT WATER	32000 Btu/h	600 CFM	85 CFM	98 °F	0.8 GPM	180.0 °F	102.0 °F	1.0 Feet	2-WAY	50 1/8"	10 3/8"	29 7/8"	HORIZONTAL RECESSED	1	133 W	2.00 A	15 A	277 V	1	5 A	ECM	MFR	MFR	MFR	MFR	TRANE	FFEB060	2
CUH	3	5	HOT WATER	15000 Btu/h	400 CFM	0 CFM	95 °F	0.4 GPM	180.0 °F	100.9 °F	0.2 Feet	2-WAY	40 5/8"	10 3/8"	29 7/8"	HORIZONTAL RECESSED	1	93 W	2.00 A	15 A	277 V	1	5 A	ECM	MFR	MFR	MFR	MFR	TRANE	FFEB040	1
CUH	4	12	HOT WATER	60000 Btu/h	1200 CFM	0 CFM	106 °F	1.7 GPM	180.0 °F	110.4 °F	1.4 Feet	2-WAY	75 3/8"	10 3/8"	28 7/8"	VERTICAL WALL HUNG	2	516 W	3.60 A	15 A	277 V	1	5 A	ECM	MFR	MFR	MFR	MFR	TRANE	FFEB120	1
CUH	5	2	HOT WATER	18000 Btu/h	300 CFM	75 CFM	98 °F	0.5 GPM	180.0 °F	114.0 °F	1.3 Feet	2-WAY	33"	11"	30"	HORIZONTAL RECESSED	1	75 W	2.00 A	15 A	277 V	1	5 A	ECM	MFR	MFR	MFR	MFR	TRANE	FFEB020	3, 4
CUH	6	1	HOT WATER	18000 Btu/h	300 CFM	0 CFM	109 °F	0.5 GPM	180.0 °F	114.0 °F	1.3 Feet	2-WAY	33"	11"	30"	HORIZONTAL RECESSED	1	75 W	2.00 A	15 A	277 V	1	5 A	ECM	MFR	MFR	MFR	MFR	TRANE	FFEB020	4

GENERAL NOTES:
1. PERFORMANCE BASED ON WATER.
2. CONTROLS BY TCC. PROVIDE WALL MOUNTED REMOTE TEMPERATURE SENSOR (FLAT PLATE STYLE) UNLESS OTHERWISE INDICATED ON THE DRAWINGS, THERMOSTAT TEMPERATURE TO BE SET TO MAINTAIN 60°F.
3. FOR WALL MOUNTED APPLICATIONS, PROVIDE CORRESPONDING TRIM KITS FOR MOUNTING TYPE INDICATED ON SCHEDULE.
4. FOR GYP CEILING MOUNTED APPLICATIONS, PROVIDE CORRESPONDING MOUNTING KITS FOR RECESSED INSTALLATION. REFER TO REFLECTED CEILING PLANS FOR CEILING TYPE. LOCATE AIR OUTLET NEAREST TO THE EXTERIOR.
5. FOR CEILING MOUNTED APPLICATIONS, PROVIDE SPRING VIBRATION ISOLATOR HANGERS.

KEYED NOTES:
1. FINISH SHALL BE GREY.
2. CABINET UNIT HEATER SHALL HAVE OUTDOOR AIR INLET. MIXED AIR TEMPERATURE PRIOR TO THE COIL IS 50.3 DEGREES. TEMPERATURE RISE IS BASED ON THIS TEMPERATURE AND NOT 60.0 DEGREES.
3. CABINET UNIT HEATER SHALL HAVE OUTDOOR AIR INLET. MIXED AIR TEMPERATURE PRIOR TO THE COIL IS 50.0 DEGREES. TEMPERATURE RISE IS BASED ON THIS TEMPERATURE AND NOT 60.0 DEGREES.
4. FINISH SHALL BE WHITE.

FINNED TUBE RADIANT (HOT WATER) SCHEDULE

UNIT IDENTIFICATION					FIN DATA				HEATING							ENCLOSURE						
TAG	TAG #	QTY	SERVICE	MOUNTING TYPE	FINS/FT	HEIGHT	WIDTH	ELEMENT PIPE DIAMETER	BTU/FT	ROOM AIR	FLOW RATE	AWT	EWT	LWT	WPD	CONTROL VALVE TYPE	TYPE	LENGTH	DEPTH	HEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
FTR	1	4	STORAGE -1207/1208/1209/1209	HIGH WALL	40	3 3/4"	3 3/4"	3/4"	670	65 °F	0.8 GPM	178 °F	180 °F	170 °F	0.30 Feet	2-WAY	SLOPE TOP	9' - 0"	0' - 4"	0' - 11"	ZHENDER RITTLING	FSHL	1
FTR	2	1	STORAGE -1202	HIGH WALL	40	3 3/4"	3 3/4"	3/4"	630	65 °F	0.9 GPM	170 °F	180 °F	160 °F	0.30 Feet	2-WAY	SLOPE TOP	17' - 0"	0' - 4"	0' - 11"	ZHENDER RITTLING	FSHL	1
FTR	3	1	WOMEN - 1125	HIGH WALL	40	3 3/4"	3 3/4"	3/4"	630	65 °F	1.8 GPM	170 °F	180 °F	160 °F	0.30 Feet	2-WAY	SLOPE TOP	29' - 0"	0' - 4"	0' - 11"	ZHENDER RITTLING	FSHL	1
FTR	4	1	LOBBY - 1303	LOW WALL (ABOVE BENCH)	NA	12"	3 1/4"	0"	857	65 °F	0.7 GPM	170 °F	180 °F	160 °F	0.20 Feet	2-WAY	LOW SURFACE TEMP RADIATOR	8' - 0"	0' - 3 1/4"	1' - 0"	RUNTAL	TT-4	2
FTR	5	1	LOBBY - 1303	LOW WALL (ABOVE BENCH)	NA	12"	3 1/4"	0"	857	65 °F	0.7 GPM	170 °F	180 °F	160 °F	0.03 Feet	2-WAY	LOW SURFACE TEMP RADIATOR	10' - 0"	0' - 3 1/4"	1' - 0"	RUNTAL	TT-4	2
FTR	6	1	LOBBY - 1303	HIGH WALL	NA	11 1/2"	1 1/2"	0"	844	65 °F	1.0 GPM	170 °F	180 °F	160 °F	0.05 Feet	2-WAY	STANDARD RADIATOR	12' - 0"	0' - 1 5/8"	0' - 11 1/2"	RUNTAL	RF-4	2
FTR	7	1	LOBBY - 1303	HIGH WALL	NA	11 1/2"	1 1/2"	0"	844	65 °F	1.0 GPM	170 °F	180 °F	160 °F	0.05 Feet	2-WAY	STANDARD RADIATOR	12' - 0"	0' - 1 5/8"	0' - 11 1/2"	RUNTAL	RF-4	2
FTR	8	1	LOBBY - 1303	HIGH WALL	NA	11 1/2"	1 1/2"	0"	844	65 °F	1.0 GPM	170 °F	180 °F	160 °F	0.05 Feet	2-WAY	STANDARD RADIATOR	12' - 0"	0' - 1 5/8"	0' - 11 1/2"	RUNTAL	RF-4	2
FTR	9	1	LOBBY - 1303	HIGH WALL	NA	11 1/2"	1 1/2"	0"	844	65 °F	1.0 GPM	170 °F	180 °F	160 °F	0.05 Feet	2-WAY	STANDARD RADIATOR	12' - 0"	0' - 1 5/8"	0' - 11 1/2"	RUNTAL	RF-4	2
FTR	10	1	LOBBY - 1303	HIGH WALL	NA	11 1/2"	1 1/2"	0"	844	65 °F	0.7 GPM	170 °F	180 °F	160 °F	0.03 Feet	2-WAY	STANDARD RADIATOR	8' - 0"	0' - 1 5/8"	0' - 11 1/2"	RUNTAL	RF-4	2
FTR	11	1	IT - 1169	HIGH WALL	40	3 3/4"	3 3/4"	3/4"	675	65 °F	0.7 GPM	178 °F	180 °F	172 °F	0.20 Feet	2-WAY	SLOPE TOP	7' - 0"	0' - 4"	0' - 11"	ZHENDER RITTLING	FSHL	1

NOTES:
1. PERFORMANCE BASED ON WATER.
2. ELEMENT SHALL BE COPPER PIPING WITH ALUMINUM FINS.
3. PROVIDE WALL TO WALL ENCLOSURE UNLESS OTHERWISE NOTED.
4. PROVIDE PIPE COVER TRIMS, ACCESS PANELS, BRACKETS, AND END CAPS TO CONCEAL PIPING, VALVES, AND FITTING.
5. INSTALLATION SHALL BE COORDINATED TO PROVIDE A CLEAN AND AESTHETIC LOOK. PIPING SHALL COME STRAIGHT OUT OF WALL/FLOOR (NO OFFSET) AND SHALL BE COVERED.

KEYED NOTES:
1. ENCLOSURE SHALL BE SELECTED FROM MANUFACTURER STANDARD COLORS. BASIS OF DESIGN SHALL BE WHITE.
2. FINISH SHALL BE RUNTAL GREY WHITE 9002.

UNIT HEATER SCHEDULE (HEATING HOT WATER)

UNIT IDENTIFICATION				HOT WATER COIL								UNIT DIMENSION				FAN		ELECTRICAL					STARTER			DISCONNECT				
TAG	TAG #	QTY	TYPE	TOTAL CAPACITY	AIRFLOW	LAT @ 60 °F EAT	FLOW RATE	EWT	LWT	WPD	CONTROL VALVE TYPE	LENGTH	WIDTH	HEIGHT	MOUNTING TYPE	NO. OF FANS	HP	FLA	MCA	MOCP	VOLTAGE	PHASE	STARTER TYPE	FURNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY	MANUFACTURER	MODEL NO.	KEYED NOTES
UH	1	5	HOT WATER	15500 Btu/h	500 CFM	86 °F	1.4 GPM	180.0 °F	169.1 °F	2.20 Feet	2-WAY	1' - 6"	0' - 9 1/2"	1' - 4"	SUSPENDED	1	16.00 W	0.9 A	1.0 A	2 A	120 V	1	ECM	MFR	MFR	MFR	MFR	TRANE	S-A18	

GENERAL NOTES:
1. PERFORMANCE BASED ON WATER.
2. CONTROLS BY TCC. PROVIDE WALL MOUNTED REMOTE TEMPERATURE SENSOR (FLAT PLATE STYLE) UNLESS OTHERWISE INDICATED ON THE DRAWINGS, THERMOSTAT TEMPERATURE TO BE SET TO MAINTAIN 60°F.
3. PROVIDE CEILING MOUNTING KIT.

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Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO.
M602

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VAV TERMINAL UNIT (HHW) SCHEDULE

UNIT IDENTIFICATION			AIRFLOW RANGE		STATIC PRESSURE		DUCT CONNECTIONS		SOUND DATA			HOT WATER HEATING COIL										
TAG	TAG #	SERVICE	MAX AIRFLOW	MIN AIRFLOW	INLET	OUTLET	INLET SIZE	OUTLET SIZE	DISCHARGE NC	RADIATED NC	HTG AIRFLOW	APD	EAT	LAT	TOTAL CAPACITY	EWT	LWT	FLOW RATE	NO. OF ROWS	WPD	CONTROL VALVE TYPE	S.O.O. NO.	MANUFACTURER	MODEL NO.	KEYED NOTES
VAV	1N.1	LOBBY 1303 - CENTER EAST	2010 CFM	440 CFM	1.00 in-wg	0.25 in-wg	16"	24" x 18"	20	12	1005 CFM	0.16 in-wg	55 °F	85 °F	32700.0 Btu/h	180.0 °F	49.5 °F	0.8 GPM	2	0.2 Feet	2-WAY	NO.1	PRICE	SDV	2
VAV	1N.2	LOBBY 1303 - CENTER WEST	1475 CFM	445 CFM	1.00 in-wg	0.30 in-wg	12"	20" X 18"	<20	<20	740 CFM	0.22 in-wg	55 °F	85 °F	24000.0 Btu/h	180.0 °F	150.5 °F	2.3 GPM	1	0.8 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.3	LOBBY 1303 - WEST 1ST FL	1475 CFM	445 CFM	1.00 in-wg	0.30 in-wg	12"	20" X 18"	<20	<20	740 CFM	0.22 in-wg	55 °F	85 °F	24000.0 Btu/h	180.0 °F	150.5 °F	2.3 GPM	1	0.8 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.4	LOBBY 1303 - CENTER 2ND FL	450 CFM	135 CFM	1.00 in-wg	0.50 in-wg	8"	14" X 12-1/2"	<20	20	230 CFM	0.09 in-wg	55 °F	85 °F	7400.0 Btu/h	180.0 °F	140.3 °F	0.5 GPM	1	0.3 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.5	LOBBY 1303 - WEST 2ND FL	660 CFM	200 CFM	1.00 in-wg	0.50 in-wg	8"	14" X 12-1/2"	<20	25	330 CFM	0.18 in-wg	55 °F	85 °F	10700.0 Btu/h	180.0 °F	151.4 °F	1.0 GPM	1	0.4 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.6	OFFICE 1304	100 CFM	30 CFM	1.50 in-wg	0.30 in-wg	4"	12" X 10"	20	<20	100 CFM	0.01 in-wg	55 °F	95 °F	4400.0 Btu/h	180.0 °F	155.4 °F	0.4 GPM	1	0.1 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.7	MEN'S 1306 & WOMEN'S 1307	500 CFM	300 CFM	1.50 in-wg	0.30 in-wg	6"	12" X 10"	25	20	500 CFM	0.07 in-wg	55 °F	85 °F	19900.0 Btu/h	180.0 °F	165.3 °F	1.4 GPM	1	1.1 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.8	CONFERENCE 1309	410 CFM	225 CFM	1.50 in-wg	0.30 in-wg	5"	14" X 12-1/2"	24	<20	235 CFM	0.10 in-wg	55 °F	85 °F	7700.0 Btu/h	180.0 °F	149.5 °F	0.5 GPM	1	0.3 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.9	OFFICE 1310	200 CFM	100 CFM	1.50 in-wg	0.30 in-wg	6"	12" X 10"	<20	<20	200 CFM	0.03 in-wg	55 °F	95 °F	8600.0 Btu/h	180.0 °F	162.3 °F	1.0 GPM	1	1.0 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.10	RECEPTION 1311	530 CFM	140 CFM	1.50 in-wg	0.30 in-wg	8"	14" X 12-1/2"	25	<20	390 CFM	0.27 in-wg	55 °F	85 °F	12700.0 Btu/h	180.0 °F	108.1 °F	0.4 GPM	2	0.0 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.11	CHECK-IN 1314	330 CFM	145 CFM	1.00 in-wg	0.25 in-wg	8"	14" X 12-1/2"	<20	<20	235 CFM	0.08 in-wg	55 °F	85 °F	7800.0 Btu/h	180.0 °F	149.5 °F	0.5 GPM	1	0.3 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.12	PROGRAM 1402	2520 CFM	2420 CFM	1.50 in-wg	0.30 in-wg	16"	24" x 18"	21	42	2420 CFM	0.25 in-wg	55 °F	85 °F	78700.0 Btu/h	180.0 °F	104.3 °F	2.1 GPM	2	0.9 Feet	2-WAY	NO.1	PRICE	SDV	2
VAV	1N.13	PROGRAM 1403	1240 CFM	1170 CFM	1.50 in-wg	0.30 in-wg	12"	20" X 18"	20	21	1170 CFM	0.21 in-wg	55 °F	85 °F	38100.0 Btu/h	180.0 °F	108.5 °F	1.1 GPM	2	0.2 Feet	2-WAY	NO.1	PRICE	SDV	2
VAV	1N.14	PROGRAM 1404	650 CFM	645 CFM	1.50 in-wg	0.30 in-wg	10"	14" x 12-1/2"	20	<20	645 CFM	0.23 in-wg	55 °F	85 °F	21000.0 Btu/h	180.0 °F	110.4 °F	0.6 GPM	2	0.1 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.15	TRAINER 1407	170 CFM	60 CFM	1.50 in-wg	0.30 in-wg	4"	12" X 10"	21	<20	85 CFM	0.02 in-wg	55 °F	95 °F	3500.0 Btu/h	180.0 °F	152.1 °F	0.3 GPM	1	0.1 Feet	2-WAY	NO.1	PRICE	SDV	1
VAV	1N.16	UPPER LOBBY 2101	320 CFM	100 CFM	1.50 in-wg	0.30 in-wg	6"	12" X 10"	<20	24	155 CFM	0.07 in-wg	55 °F	85 °F	5100.0 Btu/h	180.0 °F	147.0 °F	0.3 GPM	1	0.1 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.17	OFFICE 2102	100 CFM	30 CFM	1.50 in-wg	0.30 in-wg	4"	12" X 10"	20	<20	100 CFM	0.01 in-wg	55 °F	95 °F	4400.0 Btu/h	180.0 °F	155.4 °F	0.4 GPM	1	0.1 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.18	MEN'S 2104 & WOMEN'S 2105	500 CFM	300 CFM	1.50 in-wg	0.30 in-wg	6"	12" X 10"	25	20	500 CFM	0.07 in-wg	55 °F	85 °F	19900.0 Btu/h	180.0 °F	165.3 °F	1.4 GPM	1	1.1 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.19	LOUNGE 2107	550 CFM	210 CFM	1.50 in-wg	0.30 in-wg	8"	14" X 12-1/2"	26	<20	275 CFM	0.01 in-wg	55 °F	85 °F	8900.0 Btu/h	180.0 °F	153.1 °F	0.7 GPM	1	0.5 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	1N.20	TIMING ROOM 2404	150 CFM	150 CFM	1.50 in-wg	0.30 in-wg	6"	12" X 10"	<20	<20	150 CFM	0.02 in-wg	55 °F	75 °F	3300.0 Btu/h	180.0 °F	121.1 °F	0.2 GPM	1	0.0 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	2.1	AEROBICS 2002	1825 CFM	1300 CFM	1.00 in-wg	0.25 in-wg	14"	20" x 17-1/2"	<20	20	1825 CFM	0.18 in-wg	65 °F	75 °F	26500.0 Btu/h	180.0 °F	138.0 °F	1.3 GPM	1	0.4 Feet	3-WAY	NO.1	PRICE	SDV	
VAV	2.2	AEROBICS 2004	1825 CFM	1460 CFM	1.00 in-wg	0.25 in-wg	14"	20" x 17-1/2"	<20	20	1825 CFM	0.18 in-wg	65 °F	75 °F	24800.0 Btu/h	180.0 °F	141.0 °F	1.6 GPM	1	0.5 Feet	3-WAY	NO.1	PRICE	SDV	
VAV	15.1	GYM MEZZANNE 2201	3600 CFM	1800 CFM	1.00 in-wg	0.25 in-wg	16"	24" x 18"	20	20	3600 CFM	0.51 in-wg	60 °F	75 °F	50500.0 Btu/h	180.0 °F	145.0 °F	3.5 GPM	1	2.3 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	15.2	WRESTLING 1204	2400 CFM	1200 CFM	1.00 in-wg	0.25 in-wg	16"	24" x 18"	20	20	2400 CFM	0.15 in-wg	60 °F	75 °F	34100.0 Btu/h	180.0 °F	142.0 °F	2.2 GPM	1	1.0 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	15.3	WRESTLING 1204	1800 CFM	900 CFM	1.00 in-wg	0.25 in-wg	12"	20" X 18"	20	20	1800 CFM	0.15 in-wg	60 °F	75 °F	26000.0 Btu/h	180.0 °F	142.0 °F	1.6 GPM	1	3.1 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	15.4	ADMIN 1424 & OFFICE 1108	600 CFM	300 CFM	1.00 in-wg	0.25 in-wg	8"	14" X 12-1/2"	20	20	600 CFM	0.15 in-wg	60 °F	75 °F	8500.0 Btu/h	180.0 °F	142.0 °F	0.5 GPM	1	0.3 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	15.5	CONFERENCE 1425	1000 CFM	500 CFM	1.00 in-wg	0.25 in-wg	10"	14" x 12-1/2"	20	20	1000 CFM	0.15 in-wg	60 °F	75 °F	16900.0 Btu/h	180.0 °F	144.0 °F	0.9 GPM	1	0.7 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	15.6	SOUTH LOBBY 1103	2550 CFM	1300 CFM	1.00 in-wg	0.25 in-wg	16"	24" x 18"	20	20	2550 CFM	0.15 in-wg	60 °F	75 °F	41500.0 Btu/h	180.0 °F	143.0 °F	2.3 GPM	1	1.1 Feet	2-WAY	NO.1	PRICE	SDV	
VAV	15.7	NORTH LOBBY 1332	2000 CFM	1000 CFM	1.00 in-wg	0.25 in-wg	14"	20" x 17-1/2"	20	20	2000 CFM	0.15 in-wg	60 °F	75 °F	32600.0 Btu/h	180.0 °F	143.0 °F	1.8 GPM	1	0.7 Feet	2-WAY	NO.1	PRICE	SDV	

GENERAL NOTES:
1. PERFORMANCE BASED ON WATER.
2. AIRFLOW SHALL BE SET TO THE CFM INDICATED ON FLOOR PLANS.
3. MAXIMUM SOUND DATA IS BASED ON AHRI 885-2008 MINERAL FIBER CEILING/SPACE EFFECT ATTENUATION. REFER TO ARCHITECTURAL FINISH PLANS AND REFLECTED CEILING PLANS FOR DIFFERENT CEILING TYPES OR SPACE EFFECTS. PROVIDE MAXIMUM NC VALUES (DISCHARGE AND RADIATED) BASED ON ACTUAL INSTALLATION.
4. CONTRACTOR TO COORDINATE HANDEDNESS OF UNITS WITH SHOP DRAWINGS PRIOR TO ORDERING.
5. IN WATER SYSTEMS, SELECT MODULATING CONTROL VALVE FOR A DESIGN CV BASED ON A PRESSURE DROP OF TWICE THE DEVICE IT IS CONTROLLING WITH A MINIMUM OF 2.3 FT AND MAXIMUM OF 10 FT, UNLESS OTHERWISE REVIEWED BY ENGINEER.
6. CONTROLS BY CONTROLS CONTRACTOR.
7. CONTROL BOX SHALL BE MOUNTED TO BOTTOM OF UNIT WHEN LOCATED ABOVE CEILING. UNIT SHALL BE MOUNTED A MAXIMUM 3'-0" ABOVE CEILING. MAINTAIN 2FT CLEARANCE TO CONTROL BOX ENCLOSURE - BOTH HORIZONTALLY AND VERTICALLY. BOX SHALL BE READILY ACCESSIBLE TO COMPLY WITH ELECTRICAL CODES.
8. CONTROL BOX SHALL BE LOCATED ON THE SAME SIDE AS THE HYDRONIC COIL CONNECTIONS WHEN INSTALLED IN AN EXPOSED CEILING APPLICATION. MAINTAIN 2FT CLEARANCE TO CONTROL BOX ENCLOSURE - BOTH HORIZONTALLY AND VERTICALLY. BOX SHALL BE READILY ACCESSIBLE TO COMPLY WITH ELECTRICAL CODES.
9. FINAL VAV LOCATION SHALL BE COORDINATED WITH RCP (LIGHTS, SPRINKLERS, OCCUPANCY SENSORS, ETC.) TO MAINTAIN DIRECT ACCESS UNDERNEATH UNIT.
10. TERMINAL UNIT OUTLETS SHALL BE TRANSITIONED TO NEXT EVEN SIZE DIMENSION.
11. PRESSURE DROP LISTED THROUGH COIL SHALL BE BASED ON MAXIMUM UNIT AIRFLOW, NOT HEATING AIRFLOW LISTED.

KEYED NOTES:
1. PROVIDE DISCHARGE ATTENUATOR SIMILAR TO PRICE ATTB.
2. PROVIDE OVERSIZED CASING.

AIRFLOW MEASURING STATION SCHEDULE

ASSOCIATED EQUIPMENT	LOCATION	SENSOR TYPE	DUCT SIZE		MANUFACTURER	MODEL NO.	KEYED NOTES
			WIDTH	HEIGHT			
AHU-2 OA	DUCT	THERMAL DISPERSION	24"	24"	EBTRON	GTC116E-PC/H	
AHU-2 RA	DUCT	THERMAL DISPERSION	36"	12"	EBTRON	GTC116E-PC/H	
AHU-2 SA	FAN	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
AHU-15 OA	DUCT	THERMAL DISPERSION	46"	46"	EBTRON	GTC116E-PC/H	
AHU-15 RA	DUCT	THERMAL DISPERSION	36"	38"	EBTRON	GTC116E-PC/H	
AHU-15 SA	FAN ARRAY - 3	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
AHU-16 OA	DAMPER 4 AFMS	THERMAL DISPERSION	130"	48"	EBTRON	(2) AIR I/22	
AHU-16 RA	DAMPER 4 AFMS	THERMAL DISPERSION	80"	44"	EBTRON	(2) AIR I/22	
AHU-16 SA	FAN ARRAY - 5	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
AHU-17 OA	DAMPER 4 AFMS	THERMAL DISPERSION	130"	48"	EBTRON	(2) AIR I/22	
AHU-17 RA	DAMPER 4 AFMS	THERMAL DISPERSION	80"	44"	EBTRON	(2) AIR I/22	
AHU-17 SA	FAN ARRAY - 5	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
DOAS-1 EA	FAN ARRAY - 3	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
DOAS-1 OA	INTAKE HOODS	THERMAL DISPERSION			EBTRON	EF-N2000-U	1
DOAS-1 SA	FAN ARRAY - 6	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
DOAS-2 EA	FAN ARRAY - 3	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
DOAS-2 OA	INTAKE HOODS	THERMAL DISPERSION			EBTRON	EF-N2000-U	1
DOAS-2 SA	FAN ARRAY - 6	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
DOAS-3 EA	FAN ARRAY - 3	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
DOAS-3 OA	INTAKE HOODS	THERMAL DISPERSION			EBTRON	EF-N2000-U	1
DOAS-3 SA	FAN ARRAY - 6	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
DOAS-4 EA	FAN ARRAY - 3	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
DOAS-4 OA	INTAKE HOODS	THERMAL DISPERSION			EBTRON	EF-N2000-U	1
DOAS-4 SA	FAN ARRAY - 6	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
RTU-1 OA	INTAKE HOOD	THERMAL DISPERSION			EBTRON	EF-N2000-U	
RTU-1 RA	DUCT	THERMAL DISPERSION	35"	14"	EBTRON	GTC116E-PC/H	
RTU-1 SA	FAN	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
RTU-1N OA	INTAKE HOOD	THERMAL DISPERSION			EBTRON	EF-N2000-U	
RTU-1N RA	DUCT	THERMAL DISPERSION	48"	30"	EBTRON	GTC116E-PC/H	
RTU-1N SA	FAN ARRAY - 4	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
RTU-2N OA	INTAKE HOOD	THERMAL DISPERSION			EBTRON	EF-N2000-U	
RTU-2N RA	DUCT	THERMAL DISPERSION	76"	20"	EBTRON	GTC116E-PC/H	
RTU-2N SA	FAN ARRAY - 2	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
RTU-3 OA	INTAKE HOOD	THERMAL DISPERSION			EBTRON	EF-N2000-U	
RTU-3 RA	DUCT	THERMAL DISPERSION	24"	14"	EBTRON	GTC116E-PC/H	
RTU-3 SA	FAN	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	
RTU-14 OA	INTAKE HOOD	THERMAL DISPERSION			EBTRON	EF-N2000-U	
RTU-14 RA	DUCT	THERMAL DISPERSION	48"	48"	EBTRON	GTC116E-PC/H	
RTU-14 SA	FAN ARRAY - 8	THERMAL DISPERSION			EBTRON	GTC105E-F/AN	

GENERAL NOTES:
1. AIRFLOW MEASURING STATIONS SHALL BE THE RESPONSIBILITY OF THE T.C.C.
2. THE MANUFACTURER'S AUTHORIZED REPRESENTATIVE SHALL CONFIRM PROBE LENGTH WITH INSTALLING CONTRACTOR AND COORDINATE PLACEMENT OF THE AIRFLOW MEASURING STATION IN THE FIELD.
3. PROBE TYPES LISTED ABOVE ARE PRELIMINARY AND FINAL PROBE TYPE WILL BE EVALUATED WITH MANUFACTURER'S AUTHORIZED REPRESENTATIVE UPON APPROVAL OF FINAL EQUIPMENT CUTSHEETS AND UNIT PLACEMENT/DUCT LAYOUT.
4. AIRFLOW MEASURING DEVICE SHALL BE THERMAL DISPERSION TYPE AND SHALL USE HERMETICALLY SEALED BEAD IN GLASS THERMISTORS. CHIP THERMISTORS ARE NOT ACCEPTABLE. DIFFERENTIAL PRESSURE TRANSMITTERS ARE ALSO NOT ACCEPTABLE.
5. AIRFLOW MEASURING DEVICE SHALL HAVE BACNET MS/TP AND BACNET IP COMMUNICATION CAPABILITIES. REFER TO CONTROLS DRAWINGS FOR FINAL COMMUNICATIONS REQUIREMENTS. AIRFLOW MEASURING DEVICE SHALL HAVE BLUETOOTH TO PHONE VIA EB-LINK.
6. PROBES TO BE INSTALLED IN THE DUCTWORK PER MANUFACTURER'S RECOMMENDATIONS. FAN INLET SENSORS SHALL ONLY BE USED IF MANUFACTURER'S REPRESENTATIVE AND ENGINEER DETERMINE THAT DUCT MOUNTING IS NOT FEASIBLE.
7. AIRFLOW MEASURING DEVICE TO PROVIDE TEMPERATURE OUTPUT WHICH SHALL HAVE AN ACCURACY OF 0.15°F, BE VELOCITY WEIGHTED, AND AVERAGED BY TRANSMITTER PRIOR TO OUTPUT.
8. TRANSMITTER SHALL BE EQUIPPED WITH AN ANALOG TEMPERATURE OUTPUT THAT CAN BE CONFIGURED AS AN ALARM OUTPUT. ALARM CAN BE SET AS HIGH, ACTIVE LOW OR SETPOINT.
9. T.C.C. TO CONFIRM DUCT SIZE PRIOR TO ORDER.
10. AIRFLOW MEASURING STATIONS SHALL BE 24V POWERED.

KEYED NOTES:
1. THERE ARE (4) INTAKE HOODS. INTERNALLY MOUNT (1) PROBE IN EACH HOOD.

LOUVER SCHEDULE

UNIT IDENTIFICATION			OVERALL DIMENSIONS			AIRFLOW	MINIMUM FREE AREA	MAXIMUM FREE AREA VELOCITY (ACTIVE SECTION)	MAX AIR PRESSURE DROP	MATERIAL TYPE	MATERIAL FINISH	MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #	SYSTEM SERVED	WIDTH	DEPTH	HEIGHT									
L	1	AHU-15	30' - 0"	0' - 6"	10' - 0"	13750 CFM	194.3 SF	500 FPM	0.10 in-wg	ALUMINUM	CLASSIC BRONZE	GREENECK	ESD-635	1
L	2	AHU-16	30' - 0"	0' - 6"	10' - 0"	32000 CFM	194.3 SF	500 FPM	0.10 in-wg	ALUMINUM	CLASSIC BRONZE	GREENECK	ESD-635	1
L	3	AHU-17	30' - 0"	0' - 6"	10' - 0"	32000 CFM	194.3 SF	500 FPM	0.10 in-wg	ALUMINUM	CLASSIC BRONZE	GREENECK	ESD-635	1
L	4	FIRE PUMP ROOM INTAKE	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	410 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	5	EF-1408	1' - 8"	0' - 6"	1' - 8"	600 CFM	1.1 SF	500 FPM	0.05 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	6	EF-1409	1' - 8"	0' - 6"	1' - 8"	600 CFM	1.1 SF	500 FPM	0.05 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	7	EF-1419	1' - 8"	0' - 6"	1' - 8"	600 CFM	1.1 SF	500 FPM	0.05 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	8	EF-1421	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	315 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	9	EF-1411	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	410 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	10	BOILER ROOM INTAKE	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	410 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	11	EF-2202	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	410 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	12	EF-1421	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	315 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	13	CUH-2 INTAKE	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	315 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	14	CUH-2 INTAKE	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	315 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	15	CUH-2 INTAKE	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	315 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	16	CUH-2 INTAKE	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	315 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	17	CUH-2 INTAKE	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	315 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	18	CUH-2 INTAKE	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	315 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	20	CUH-3 INTAKE	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	315 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	
L	21	CUH-2 INTAKE	1' - 8"	0' - 6"	1' - 8"	350 CFM	1.1 SF	315 FPM	0.03 in-wg	ALUMINUM	CUSTOM COLOR - SW6141 DERBYSHIRE	GREENECK	ESD-635	

GENERAL NOTES:
1. COORDINATE FINISH AND INSTALLATION WITH ARCHITECT/GC AND FIELD CONDITIONS.
2. BEGINNING POINT OF WATER PENETRATION SHALL BE GREATER THAN 1250 FPM FREE AREA VELOCITY.
3. LOUVER SHALL BE AMCA CERTIFIED.
4. LOUVERS SHALL BE FLANGED EXTERIOR FACE.
5. PROVIDE WITH BIRDSCREEN.
6. BLANK OFF PANELS USED WITH UNUSED PORTIONS OF LOUVERS. BLANK OFF PANELS SHALL BE 2" THICK, FAN-IN-PAN, WITH EXTRUDED POLYSTYRENE INSULATION. PANELS SHALL BE SEALED AND MECHANICALLY FASTENED TO INTERIOR FACE OF LOUVER. REFER TO LOUVER PLENUM DETAIL."

KEYED NOTES:
1. LOUVER SHALL COME IN 5 SECTIONS WIDE AND 1 SECTION HIGH FOR SHIPPING.

AIR CURTAN SCHEDULE

TAG	TAG #	AIRFLOW	ELECTRICAL					HEIGHT	WIDTH	WEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
			MOTOR HP	MCA	MOCP	VOLTAGE	PHASE						
UHAC	1	9324 CFM	(4) 1.5	12	20	480	3	16.75"	21.25"	510 LBS	POWERED AIRE	TPD-4-144	3
UHAC	2	5903 CFM	(2) 3/4	8	15	480	3	15"	17.5"	200 LBS	POWERED AIRE	ETD-2-72	2
UHAC	3	11808 CFM	(4) 3/4	10	15	480	3	15"	17.5"	350 LBS	POWERED AIRE	ETD-4-144	1
UHAC	4	11808 CFM	(4) 3/4	10	15	480	3	15"	17.5"	350 LBS	POWERED AIRE	ETD-4-144	1

GENERAL NOTES:
1. PROVIDE COMMERCIAL MAGNETIC DOOR SWITCHES FOR MAN DOORS AND BUILT-IN TIME DELAY RELAY. PROVIDE INDUSTRIAL MAGNETIC DOOR SWITCH FOR OVERHEAD DOORS.
2. PROVIDE WITH HAND-OFF-AUTO SWITCH/STARTER AND FACTORY DISCONNECT.
3. PROVIDE ANGLE BRACKETS, THREADED ROD AND STRUTS AS REQUIRED TO HANG CURTAINS FROM PEMB WALLS ABOVE OVERHEAD AND MAN DOORS.
4. AIR CURTAIN FINISH SHALL BE WHITE.

KEYED NOTES:
1. MOUNT AT 10'-0" AFF. COORDINATE WITH OVERHEAD DOOR INSTALLATION AND TRACKS.
2. MOUNT AT 7'-9" AFF. COORDINATE WITH DOOR INSTALLATION.
3. MOUNT AT 14'-0" AFF. COORDINATE WITH OVERHEAD DOOR INSTALLATION AND TRACKS.

HVLS FAN SCHEDULE

UNIT IDENTIFICATION		AREA SERVED	TYPE	CONTROL TYPE	FAN SPEED	MOTOR		ELECTRICAL			STARTER		DISCONNECT		FAN DIAMETER	MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #					WATTS	DRIVE TYPE	FLA	HP	VOLTAGE	PHASE	FUNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY			
HVLS	1.1	FIELD 1401	PROPELLER	BMS	64 RPM	1218 W	DIRECT	3.0 A	1.75 hp	480 V	3	MANU	DIV 26	MANU	DIV 26	24' - 0"	HUNTER	TITAN	1
HVLS	1.2	FIELD 1401	PROPELLER	BMS	64 RPM	1218 W	DIRECT	3.0 A	1.75 hp	480 V	3	MANU	DIV 26	MANU	DIV 26	24' - 0"	HUNTER	TITAN	1
HVLS	1.3	FIELD 1401	PROPELLER	BMS	64 RPM	1218 W	DIRECT	3.0 A	1.75 hp	480 V	3	MANU	DIV 26	MANU	DIV 26	24' - 0"	HUNTER	TITAN	1
HVLS	1.4	FIELD 1401	PROPELLER	BMS	64 RPM	1218 W	DIRECT	3.0 A	1.75 hp	480 V	3	MANU	DIV 26	MANU	DIV 26	24' - 0"	HUNTER	TITAN	1
HVLS	1.5	FIELD 1401	PROPELLER	BMS	64 RPM	1218 W	DIRECT	3.0 A	1.75 hp	480 V	3	MANU	DIV 26	MANU	DIV 26	24' - 0"	HUNTER	TITAN	1
HVLS	1.6	FIELD 1401	PROPELLER	BMS	64 RPM	1218 W	DIRECT	3.0 A	1.75 hp	480 V	3	MANU	DIV 26	MANU	DIV 26	24' - 0"	HUNTER	TITAN	1
HVLS	2.1	MULTI-PURPOSE 1312	PROPELLER	BMS	156 RPM	486 W	DIRECT	2.0 A	1.00 hp	480 V	3	MANU	DIV 26	MANU	DIV 26	8' - 0"	HUNTER	ECO	2
HVLS	2.1	MULTI-PURPOSE 1312	PROPELLER	BMS	156 RPM	486 W	DIRECT	2.0 A	1.00 hp	480 V	3	MANU	DIV 26	MANU	DIV 26	8' - 0"	HUNTER	ECO	2
HVLS	3.1	MULTI-PURPOSE 1313	PROPELLER	BMS	156 RPM	486 W	DIRECT	2.0 A	1.00 hp	480 V	3	MANU	DIV 26	MANU	DIV 26	8' - 0"	HUNTER	ECO	2
HVLS	3.1	MULTI-PURPOSE 1313	PROPELLER	BMS	156 RPM	486 W	DIRECT	2.0 A	1.00 hp	480 V	3	MANU	DIV 26	MANU	DIV 26	8' - 0"	HUNTER	ECO	2

GENERAL NOTES:
1. AMCA CERTIFIED
2. COORDINATE WITH STRUCTURAL FOR MOUNTING HARDWARE TYPE.
3. PROVIDE FIRE RELAY KIT FOR INTEGRATION INTO FIRE ALARM SYSTEM.
4. PROVIDE WALL MOUNTED SPEED CONTROLLER, WITH

POWER VENTILATOR SCHEDULE

UNIT IDENTIFICATION								MOTOR					ELECTRICAL					STARTER			DISCONNECT		MOUNTING				
TAG	TAG #	SYSTEM SERVED	FAN TYPE	MAX AIRFLOW	MIN. AIRFLOW	ESP	FAN SPEED	BHP	HP	WATTS	FEI	DRIVE TYPE	MOTOR SPEED	FLA	MCA	MOP	VOLTAGE	PHASE	SCCR	STARTER TYPE	FURNISHED BY	INSTALLED BY	FURNISHED BY	INSTALLED BY	TYPE	CURB HEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
EF	2	AHU-2 RELIEF	UPBLAST	3480 CFM	3480 CFM	0.65 in-wg	741 RPM	0.61 hp	1.00 hp	0 W	1.65	DIRECT	810 RPM	10.3	13	25	120 V	1	5 A	0-10 VDC	MFR	MFR	MFR	MFR	ROOF	24"	GREENHECK	GUE-240-HP-V6	1, 2, 4
EF	1017	FAMILY TOILET 1018 & 1017	DOWNBLAST	140 CFM	140 CFM	0.26 in-wg	980 RPM	0.02 hp	0.28 hp	0 W	-	DIRECT	1725 RPM	2.85	4	15	120 V	1	5 A	0-10 VDC	MFR	MFR	MFR	MFR	ROOF	24"	GREENHECK	G-09T-V6	1, 2, 4
EF	1018	MECH ROOM 1018	UPBLAST	550 CFM	550 CFM	0.54 in-wg	1659 RPM	0.10 hp	0.10 hp	0 W	-	DIRECT	1725 RPM	1.5	2	15	120 V	1	5 A	0-10 VDC	MFR	MFR	MFR	MFR	ROOF	24"	GREENHECK	GUE-090-V6	1, 2, 4
EF	1408	TOILETS 1405 & 1408	INLINE	600 CFM	600 CFM	0.25 in-wg	986 RPM	0.00 hp	0.00 hp	90 W	-	DIRECT	986 RPM	4.1	-	-	120 V	1	5 A	0-10 VDC	MFR	MFR	MFR	MFR	CEILING	0"	GREENHECK	CSP-A700-V6	3, 4, 6
EF	1409	FIRE PUMP ROOM 1409	INLINE	350 CFM	350 CFM	0.25 in-wg	991 RPM	0.00 hp	0.00 hp	60 W	-	DIRECT	991 RPM	2.45	-	-	120 V	1	5 A	0-10 VDC	MFR	MFR	MFR	MFR	CEILING	0"	GREENHECK	CSP-A510-V6	3, 4, 6
EF	1411	MECH ROOM 1411	INLINE	350 CFM	350 CFM	0.25 in-wg	991 RPM	0.00 hp	0.00 hp	60 W	-	DIRECT	991 RPM	2.45	-	-	120 V	1	5 A	0-10 VDC	MFR	MFR	MFR	MFR	CEILING	0"	GREENHECK	CSP-A510-V6	3, 4, 6
EF	1419	TOILETS 1419 & 1420	INLINE	600 CFM	600 CFM	0.25 in-wg	986 RPM	0.00 hp	0.00 hp	90 W	-	DIRECT	986 RPM	4.1	-	-	120 V	1	5 A	0-10 VDC	MFR	MFR	MFR	MFR	CEILING	0"	GREENHECK	CSP-A700-V6	3, 4, 6
EF	1421	BATHROOM 1421 & JC 1422	INLINE	350 CFM	350 CFM	0.25 in-wg	991 RPM	0.00 hp	0.00 hp	60 W	-	DIRECT	991 RPM	2.45	-	-	120 V	1	5 A	0-10 VDC	MFR	MFR	MFR	MFR	CEILING	0"	GREENHECK	CSP-A510-V6	3, 4, 6
EF	2202	CONGESSIONS 2203 & STORAGE 2202	INLINE	350 CFM	350 CFM	0.35 in-wg	1069 RPM	0.00 hp	0.00 hp	70 W	-	DIRECT	1069 RPM	2.45	-	-	120 V	1	5 A	0-10 VDC	MFR	MFR	MFR	MFR	CEILING	0"	GREENHECK	CSP-A510-V6	3, 4, 6
RAF	15	AHU-15 RETURN	INLINE	13750 CFM	6875 CFM	1.50 in-wg	1106 RPM	5.46 hp	10.00 hp	0 W	1.21	DIRECT	1170 RPM	-	-	-	480 V	3	5 A	VFD	TCC	DIV 26	TCC	DIV 26	FLOOR	0"	GREENHECK	QEID-27-100	2, 9
TEF	1	TOILET	DOWNBLAST	2510 CFM	2510 CFM	1.12 in-wg	1318 RPM	0.87 hp	2.00 hp	0 W	1.36	DIRECT	1725 RPM	3.2	4	15	480 V	3	5 A	0-10 VDC	MFR	MFR	MFR	MFR	ROOF	24"	GREENHECK	G-160-V6	1, 2, 4

KEYED NOTES:
1. PROVIDE WITH GRAVITY BACKDRAFT DAMPER.
2. PROVIDE BIRD SCREEN AT INLET AND OUTLET.
3. PROVIDE LOW VOLTAGE MOTORIZED DAMPERS WITH ACTUATORS/MOTORS OUTSIDE OF AIRSTREAM AND PROVIDE END SWITCHES.
4. PROVIDE EC MOTOR WITH 0-10VDC INPUT FOR BMS INTEGRATION.
5. MOUNT FAN ON 4" HOUSEKEEPING PAD WITH 2.5" SPRING VIBRATION ISOLATORS.
6. INLINE FANS SHALL BE SUPPORTED BY SPRING ISOLATOR HANGERS.

VFD SCHEDULE

UNIT IDENTIFICATION		ASSOCIATED EQUIPMENT	QUANTITY	MOTOR DATA			DISCONNECT TYPE	MANUFACTURER	KEYED NOTES
TAG	TAG #			HP	VOLTAGE	PHASE			
VFD	1	BIP-1	1	2 hp	480 V	3	FUSED	ABB	
VFD	2	BIP-2	1	2 hp	480 V	3	FUSED	ABB	
VFD	3	BIP-3	1	2 hp	480 V	3	FUSED	ABB	
VFD	4	BIP-4	1	7.5 hp	480 V	3	FUSED	ABB	
VFD	5	BIP-5	1	7.5 hp	480 V	3	FUSED	ABB	
VFD	6	BIP-6	1	7.5 hp	480 V	3	FUSED	ABB	
VFD	14	RTU-14 WHEEL	1	1 hp	480 V	3	FUSED	ABB	
VFD	15	RAF-15	1	10 hp	480 V	3	FUSED	ABB	

GENERAL NOTES:
1. INSTALL WITHIN 8 FT OF THE EQUIPMENT SERVED. COORDINATE WITH ELECTRICAL CONTRACTOR.
2. UNITS SHALL COME WITH BYPASS AND NEMA 1 ENCLOSURE RATING WHEN MOUNTED INSIDE AND NEMA 4X ENCLOSURE WHEN MOUNTED OUTSIDE.
3. VFD'S SHALL BE PROVIDED BY THE TCC WHEN NOT PROVIDED BY EQUIPMENT MANUFACTURER.

SPLIT-SYSTEM INDOOR UNIT SCHEDULE

UNIT IDENTIFICATION			ASSOCIATED EQUIPMENT	TOTAL CAPACITY	SENSIBLE CAPACITY	EDB	EWB	AIRFLOW	DIMENSION			ELECTRICAL		DISCONNECT		MANUFACTURER	MODEL NO.	KEYED NOTES
TAG	TAG #	AREA SERVED							LENGTH	WIDTH	HEIGHT	VOLTAGE	PHASE	FUNISHED BY	INSTALLED BY			
AC	1	TECH 2103	CU-1	12000 Btu/h	8780 Btu/h	80 °F	67 °F	385 CFM	9' - 0"	10' - 0"	1' - 0"	208 V	1	DIV 26	DIV 26	MITSUBISHI	PKA-A12NL	1
AC	2	TECH 2103 (REDUNDANT)	CU-2	12000 Btu/h	8780 Btu/h	80 °F	67 °F	385 CFM	9' - 0"	10' - 0"	1' - 0"	208 V	1	DIV 26	DIV 26	MITSUBISHI	PKA-A12NL	1
AC	3	ELEC ROOM	CU-3	36181 Btu/h	22401 Btu/h	80 °F	67 °F	990 CFM	5' - 3"	2' - 2"	0' - 10"	208 V	1	DIV 26	DIV 26	MITSUBISHI	PCA-AK36NL	

GENERAL NOTES:
1. BASIS OF DESIGN INDOOR UNIT ELECTRICAL FEED IS POWERED FROM OUTDOOR UNIT. CONTRACTOR TO CONFIRM WITH SUBMITTED MANUFACTURER DATA ON WIRING CONFIGURATION AND COORDINATE WITH ELECTRICAL CONTRACTOR ACCORDINGLY AT NO ADDITIONAL EXPENSE. PROVIDE INTERCONNECTING WIRING BETWEEN INDOOR UNIT AND OUTDOOR UNIT. RUN WIRE IN CONDUIT.
2. PROVIDE WITH DRAIN PAN OVERFLOW SWITCH.
3. PROVIDE WIRED WALL MOUNTED THERMOSTAT.
4. REFRIGERANT TYPE R454B.
5. PROVIDE BACNET CONTROLS CONNECTION FOR BMS MONITORING. PROVIDE STATUS AND ROOM TEMPERATURE TO BMS.
6. UNITS SHALL HAVE SEER2 VALUE OVER 20.

KEYED NOTES:
1. PROVIDE CONDENSATE PUMP, POWERED BY UNIT, SHIPPED LOOSE.

SPLIT-SYSTEM OUTDOOR AIR-COOLED CONDENSING UNIT SCHEDULE

UNIT IDENTIFICATION			COOLING		FAN			ELECTRICAL				DISCONNECT					
TAG	TAG #	ASSOCIATED EQUIPMENT	NOMINAL TONNAGE	DESIGN AMBIENT TEMPERATURE	NO. OF FANS	AIRFLOW	NO. OF COMPRESSORS	MCA	MOCP	VOLTAGE	PHASE	FUNISHED BY	INSTALLED BY	MANUFACTURER	MODEL NO.	KEYED NOTES
CU	1	AC-1	1.0 ton	95 °F	1	1390 CFM	1	16 A	21 A	208 V	1	DIV 26	DIV 26	MITSUBISHI	PUY-AK12NL	
CU	2	AC-2	1.0 ton	95 °F	1	1390 CFM	1	16 A	21 A	208 V	1	DIV 26	DIV 26	MITSUBISHI	PUY-AK12NL	
CU	3	AC-3	3.0 ton	95 °F	2	3810 CFM	1	34 A	56 A	208 V	1	DIV 26	DIV 26	MITSUBISHI	PUY-AK36NL	

GENERAL NOTES:
1. PROVIDE REFRIGERANT PIPING PER MANUFACTURER REQUIREMENTS. CONTRACTOR TO VERIFY REFRIGERANT RUN LENGTHS PRIOR TO ORDERING.
2. PRE-INSULATED LINE SETS ARE NOT ACCEPTABLE. CONTRACTOR SHALL PROVIDE FIELD APPLIED INSULATION PER SPECIFICATIONS.
3. PROVIDE PIPE PORTAL SIMILAR TO PATE PIPE CURB OR PIPE HOOD ASSEMBLY INDICATED IN DETAILS FOR ANY ROOF PIPE PENETRATIONS.
4. PROVIDE 12" NON-PENETRATING EQUIPMENT SUPPORTS (FOR UNITS ON ROOF AND GRADE). SUPPORT STAND ON GRADE SHALL ALSO BE PLACED ON A 4" EQUIPMENT PAD.
5. PROVIDE LOW AMBIENT KIT.

GRILLE, REGISTER, & DIFFUSER SCHEDULE

UNIT IDENTIFICATION						LINEAR DIFFUSER DATA											
TAG	TAG #	TYPE	MAX AIRFLOW	FACE SIZE	NECK SIZE	SLOT LENGTH	SLOT QUANTITY	SLOT WIDTH	MAX PRESSURE	NC	MATERIAL TYPE	MATERIAL FINISH	MOUNTING TYPE	ACCESSORIES	THROW PATTERN	THROW DISTANCE	MANUFACTURER	MODEL NO.	KEYED NOTES
E1	2	PERFORATED RETURN DIFFUSER	125 CFM	12 x 12	8#	0	0	0	0.06 in-wg	<15	STEEL	WHITE	BORDER 3 (T-BAR)	-	N/A	N/A	PRICE	PDDR	
E1	5	PERFORATED RETURN DIFFUSER	175 CFM	24 x 24	8#	0	0	0	0.06 in-wg	<15	STEEL	WHITE	BORDER 3 (T-BAR)	-	N/A	N/A	PRICE	PDDR	
E1	8	PERFORATED RETURN DIFFUSER	250 CFM	24 x 24	10#	0	0	0	0.04 in-wg	<15	STEEL	WHITE	BORDER 3 (T-BAR)	-	N/A	N/A	PRICE	PDDR	
E1	7	PERFORATED RETURN DIFFUSER	385 CFM	24 x 24	12#	0	0	0	0.04 in-wg	<15	STEEL	WHITE	BORDER 3 (T-BAR)	-	N/A	N/A	PRICE	PDDR	
E2	1	LOUVERED GRILLE	50 CFM	NECK+1 3/4	6"x6"	0	0	0	0.01 in-wg	<15	STEEL	WHITE	TYPE F - FLAT FRAME	-	N/A	N/A	PRICE	520	
E2	2	LOUVERED GRILLE	100 CFM	NECK+1 3/4	8"x8"	0	0	0	0.02 in-wg	<15	STEEL	WHITE	TYPE F - FLAT FRAME	-	N/A	N/A	PRICE	520	
E2	3	LOUVERED GRILLE	135 CFM	NECK+1 3/4	10"x10"	0	0	0	0.06 in-wg	17	STEEL	WHITE	TYPE F - FLAT FRAME	-	-	-	PRICE	520	
R1	1	LOUVERED GRILLE	3600 CFM	NECK+1 3/4	40"x24"	0	0	0	0.05 in-wg	32	STEEL	PRIME COAT FOR FIELD PAINT	TYPE F - FLAT FRAME	-	N/A	N/A	PRICE	5102	
R1	2	PERFORATED RETURN DIFFUSER	545 CFM	12x24	22"x10"	0	0	0	0.03 in-wg	<15	STEEL	WHITE	BORDER 3 (T-BAR)	-	N/A	N/A	PRICE	PDDR	
R1	3	PERFORATED RETURN DIFFUSER	1200 CFM	24x24	22"x22"	0	0	0	0.03 in-wg	<15	STEEL	WHITE	BORDER 3 (T-BAR)	-	N/A	N/A	PRICE	PDDR	
R1	4	PERFORATED RETURN DIFFUSER	725 CFM	24 x 24	16#	0	0	0	0.06 in-wg	<15	STEEL	WHITE	BORDER 3 (T-BAR)	-	N/A	N/A	PRICE	PDDR	
R2	1	LOUVERED GRILLE	3600 CFM	NECK+1 3/4	48"x24"	0	0	0	0.10 in-wg	34	STEEL	PRIME COAT FOR FIELD PAINT	TYPE F - FLAT FRAME	-	45° DOUBLE DEFLECTION	N/A	PRICE	520	
R4	1	STEEL GYM GRILLE	6330 CFM	NECK+1 3/4	40"x40"	0	0	0	0.05 in-wg	30	STEEL	WHITE	TYPE F - FLAT FRAME	-	N/A	N/A	PRICE	90	
R4	3	STEEL GYM GRILLE	345 CFM	NECK+1 3/4	12"x10"	0	0	0	0.04 in-wg	16	STEEL	PRIME COAT FOR FIELD PAINT	TYPE F - FLAT FRAME	-	N/A	N/A	PRICE	90	
R5	1	LINEAR BAR GRILLE - FLOOR	150 CFM	48" x 6"	48"X6"	0	0	0	0.03 in-wg	<17	ALUMINUM	METALLIC GREY	FLOOR MOUNTED TO FIRE DAMPER SLEEVE	7/16"PENCIL PROOF SPACING	0°DEFLECTION	N/A	PRICE	LBIPH	1
S1	3	SQUARE PLAQUE DIFFUSER	190 CFM	24 x 24	8#	0	0	0	0.02 in-wg	<15	STEEL	WHITE	BORDER 31 (T-BAR OR SURFACE MOUNT)	-	4-WAY	2-4-7	PRICE	SPD	
S1	4	SQUARE PLAQUE DIFFUSER	100 CFM	24 x 24	6#	0	0	0	0.02 in-wg	<15	STEEL	WHITE	BORDER 31 (T-BAR OR SURFACE MOUNT)	-	4-WAY	1-2-4	PRICE	SPD	
S1	5	SQUARE PLAQUE DIFFUSER	350 CFM	24 x 24	10#	0	0	0	0.03 in-wg	15	STEEL	WHITE	BORDER 31 (T-BAR OR SURFACE MOUNT)	-	4-WAY	3-5-8	PRICE	SPD	
S1	6	SQUARE PLAQUE DIFFUSER	500 CFM	24 x 24	12#	0	0	0	0.03 in-wg	17	STEEL	WHITE	BORDER 31 (T-BAR OR SURFACE MOUNT)	-	4-WAY	5-7-12	PRICE	SPD	
S1	7	SQUARE PLAQUE DIFFUSER	600 CFM	24 x 24	14#	0	0	0	0.02 in-wg	15	STEEL	WHITE	BORDER 31 (T-BAR OR SURFACE MOUNT)	-	4-WAY	5-7-13	PRICE	SPD	
S2	1	LOUVERED GRILLE	75 CFM	NECK+1 3/4	6"x6"	0	0	0	0.01 in-wg	<15	STEEL	PRIME COAT FOR FIELD PAINT	TYPE F - FLAT FRAME	-	45° DOUBLE DEFLECTION	3-4-8	PRICE	520	
S3	1	LINEAR SLOT DIFFUSER	165 CFM	48" x 4-1/4"	T=9	48	2	1	0.06 in-wg	17	ALUMINUM	WHITE	TYPE 14 (T-BAR)	SDB INSUL. PLENUM BOX, BUTTERFLY DAMPER	HORIZONTAL	5-13-20	PRICE	SDS100	
S3	2	LINEAR SLOT DIFFUSER	120 CFM	48" x 4-1/4"	T=9	48	2	1	0.06 in-wg	<15	ALUMINUM	PRIME COAT FOR FIELD PAINT	TYPE S (CONCEALED PLASTER FRAME)	SDB INSUL. PLENUM BOX, BUTTERFLY DAMPER	HORIZONTAL	7-16-20	PRICE	SDS100	
S3	4	LINEAR SLOT DIFFUSER	185 CFM	48" x 4-1/4"	T=9	48	2	1	0.07 in-wg	18	ALUMINUM	PRIME COAT FOR FIELD PAINT	TYPE S (SIDEWALL - FLAT FRAME)	SDB INSUL. PLENUM BOX, BUTTERFLY DAMPER	HORIZONTAL	7-18-23	PRICE	SDS100	
S3	6	LINEAR SLOT DIFFUSER	170 CFM	48"X2-1/4"	5"9	48	1	1	0.06 in-wg	17	ALUMINUM	PRIME COAT FOR FIELD PAINT	TYPE S (CONCEALED PLASTER FRAME)	SDB INSUL. PLENUM BOX, BUTTERFLY DAMPER	HORIZONTAL	5-13-20	PRICE	SDS100	
S3	7	LINEAR SLOT DIFFUSER	130 CFM	48"X4-1/4"	T=9	48	2	1	0.13 in-wg	28	ALUMINUM	BLACK	FREELY SUSPENDED	SDB INSUL. PLENUM BOX, BUTTERFLY DAMPER	HORIZONTAL	5-13-20	PRICE	SDS100	
S4	1	LINEAR BAR GRILLE - FLOOR	100 CFM	48" x 3"	48"X1-1/2"	48	0	0	0.05 in-wg	24	ALUMINUM	METALLIC GREY	FLOOR MOUNTED, 150 BORDER, CONCEALED MOUNTING BRACKET	NSUL. PLENUM BOX, 7/16" PENCIL PROOF SPACING, 27C CORE (50° DEFLECTION), MITERED ENDS	30°DEFLECTION	4-4-4	PRICE	LBIPH	
S4	3	LINEAR BAR GRILLE - FLOOR	110 CFM	42" x 3.5"	42"X2"	42	0	0	0.03 in-wg	<15	ALUMINUM	METALLIC GREY	FLOOR MOUNTED, 150 BORDER, CONCEALED MOUNTING BRACKET	NSUL. PLENUM BOX, 7/16" PENCIL PROOF SPACING, 27C CORE (50° DEFLECTION), MITERED ENDS	30°DEFLECTION	4-4-4	PRICE	LBIPH	
S4	4	LINEAR BAR GRILLE - FLOOR	90 CFM	36" x 3"	36"X1-1/2"	36	0	0	0.03 in-wg	16	ALUMINUM	METALLIC GREY	FLOOR MOUNTED, 150 BORDER, CONCEALED MOUNTING BRACKET	NSUL. PLENUM BOX, 7/16" PENCIL PROOF SPACING, 27C CORE (50° DEFLECTION), MITERED ENDS	30°DEFLECTION	2-2-2	PRICE	LBIPH	
S5	1	NOZZLE DIFFUSER	450 CFM	20"ø	12"ø	0	0	0	0.15 in-wg	15	ALUMINUM	PRIME COAT FOR FIELD PAINT	SM FRAME	-	-	14-24-57	PRICE	ND	
S6	1	LINEAR BAR GRILLE - FLOOR	150 CFM	48" x 6"	48"X6"	0	0	0	0.05 in-wg	<17	ALUMINUM	METALLIC GREY	FLOOR MOUNTED TO FIRE DAMPER SLEEVE	7/16"PENCIL PROOF SPACING	0°DEFLECTION	N/A	PRICE	LBIPH	1
T1	1	LINEAR BAR GRILLE - WALL TRANSFER	100 CFM	NECK+1 3/4	16"x0"	0	0	0	0.03 in-wg	-	ALUMINUM	METALLIC GREY	SIDEWALL - 1000S	7/16"PENCIL PROOF SPACING	0°DEFLECTION	N/A	PRICE	LBIPH	

GENERAL NOTES:
1. REFER TO MECHANICAL FLOOR PLANS AND ARCHITECTURAL FLOOR/CEILING PLANS; COORDINATE FRAME TYPE ACCORDINGLY.
2. PROVIDE FACE ACCESSIBLE DAMPERS WHEN GRD IS LOCATED IN HARD LID CEILING. VERIFY WITH ARCHITECTURAL CEILING PLANS.
3. WHERE RETURN GRILLES ARE NOT FULLY DUCTED, SOUND CANOPIES CAN BE USED IN LIEU OF DUCTED PLENUM RETURN GRILLE-BOOTS (REFER TO DETAIL) .

KEYED NOTES:
1. FIELD FABRICATE INSULATED PLENUM BOX TO HOLD HORIZONTAL FIRE DAMPER. REFER TO KEYED NOTES ON DRAWING.

FABRIC DUCT SCHEDULE

UNIT IDENTIFICATION		INLET AIRFLOW (CFM)	INLET DIAMETER (IN)	FABRIC DUCT LENGTH (FT)	INLET VELOCITY (FPM)	FABRIC DUCT INLET SP (IN WC)	FABRIC		DISPERSION			DISPERSION SET #1				DISPERSION SET #2				ACCESSORIES
TAG	TAG #						TYPE	POROSITY	TYPE	SET #	SIZE (IN)	LOCATION (O'CLOCK)	THROW			SIZE (IN)	LOCATION (O'CLOCK)	THROW		
													50 FPM	100 FPM	150 FPM			50 FPM	100 FPM	150 FPM	
FD	1	25925	56	150.3333		0.50 in-wg	ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	2.75	4:30	50	32	21	1.75	6:30	32	20	13	
FD	3	17015	48	150.3333			ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	2.75	4:30	51	32	21	1.75	6:30	32	20	14	
FD	5	8505	34	150.3333			ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	2.75	4:30	53	33	22	1.75	6:30	34	21	14	
FD	6	25925	56	150.3333		0.50 in-wg	ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	4	4:30	73	46	31	4	1:30	73	46	31	
FD	9	17015	48	150.3333			ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	4	4:30	74	46	31	4	1:30	74	46	31	
FD	10	8505	34	150.3333			ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	4	4:30	77	48	32	4	1:30	77	48	32	
FD	11	25925	56	150.3333		0.50 in-wg	ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	4	4:30	73	46	31	4	1:30	73	46	31	
FD	13	17015	48	150.3333			ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	4	4:30	74	46	31	4	1:30	74	46	31	
FD	15	8505	34	150.3333			ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	4	4:30	77	48	32	4	1:30	77	48	32	
FD	16	25925	56	145		0.50 in-wg	ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	3	4:30	55	34	23	3	1:30	55	34	23	
FD	18	17015	48	145			ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	3	4:30	56	35	23	3	1:30	56	35	23	
FD	20	8505	34	145			ANTIMICROBIAL POLYESTER	0.7 CFM/FT2	ORIFICE	2	3	4:30	58	36	24	3	1:30	58	36	24	

GENERAL NOTES:
1. SYSTEM SHALL ROUND, SUSPENSION TYPE WITH INTERNAL ROOF SYSTEM.
2. BASIS OF DESIGN SHALL BE DUCT SOX - SEDONA-XM NP.
3. FINISH SHALL BE SILVER.

HVAC EXPANSION TANK SCHEDULE

UNIT IDENTIFICATION					SYSTEM FILL VALVE OR GLYCOL PUMP PRESSURE SETTING PSIG	OPERATING PRESSURES		SYSTEM OPERATING TEMPERATURES					TANK DIMENSIONS					
TAG	TAG #	SYSTEM SERVED	SYSTEM VOLUME	TYPE		MIN PRESSURE	MAX PRESSURE	MIN TEMPERATURE	MAX TEMPERATURE	EXPANSION VOLUME	ACCEPTANCE FACTOR	MINIMUM TANK VOLUME	DIAMETER	HEIGHT	UNIT WEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
ET	1	HWH	2300 gal	BLADDER	25.00 psig	25.0 psig	42.0 psig	40 °F	200 °F	21.0 gal	0.3	91 gal	2' - 6"	4' - 9"	1183.00 lbf	BELL & GOSSETT	B500	1
ET	2	HWH	2300 gal	BLADDER	25.00 psig	25.0 psig	42.0 psig	40 °F	200 °F	21.0 gal	0.3	91 gal	2' - 6"	4' - 9"	1183.00 lbf	BELL & GOSSETT	B500	1
ET	3	HWH	2300 gal	BLADDER	25.00 psig	25.0 psig	42.0 psig	40 °F	200 °F	21.0 gal	0.3	91 gal	2' - 6"	4' - 9"	1183.00 lbf	BELL & GOSSETT	B500	1

GENERAL NOTES:
1. PERFORMANCE BASED ON WATER.
2. MOUNT ON 4" HOUSEKEEPING PAD.
3. UNIT SHALL BE ASME RATED.
4. PROVIDE WITH SIGHT GLASS OR BLADDER INTEGRITY MONITOR.
5. EXPANSION TANK TO BE ABLE TO FIT THROUGH A SINGLE DOOR DIMENSION.

KEYED NOTES:
1. SELECTION INPUTS FOR ENTIRE SYSTEM: ADJUSTED SYSTEM VOLUME = 2300 GALS; REQUIRED EXPANSION TANK VOLUME = 291 GALS; MINIMUM TANK VOLUME = 291 GALS.

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NO.
M604

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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RTU-1N VENTILATION AND AIR-BALANCE SCHEDULE

ROOM INFORMATION				ZONE LEVEL OUTDOOR AIR											LOAD OUTPUT/AIR BALANCE							SINGLE SUPPLY				
SYSTEM/ ZONE NAME:	ROOM NAME	OCCUPANCY CATEGORY	FLOOR AREA AZ (FT2)	PEOPLE OUTDOOR AIR RATE RP (CFM/ PERSON)	AREA OUTDOOR AIR RATE RA (CFM/ FT2)	DEFAULT OCCUPANT DENSITY (#/1000 FT2)	DEFAULT PEOPLE (# OF PEOPLE)	FINAL ZONE POPULATION PZ (PEOPLE)	BREATHING ZONE OUTDOOR AIRFLOW (PEOPLE RELATED) (CFM)	BREATHING ZONE OUTDOOR AIRFLOW (AREA RELATED) (CFM)	BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS EZ	DCV ZONE (YES/NO)	OCCUPIED STANDBY MODE (YES/NO)	DCV BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE OUTDOOR AIRFLOW VOZ (CFM)	MAXIMUM AIRFLOW (CFM)	MINIMUM AIRFLOW (CFM)	% TURNDOWN	MAXIMUM RETURN AIRFLOW (CFM)	MINIMUM RETURN AIRFLOW (CFM)	EXHAUST AIRFLOW (CFM)	TRANSFER AIRFLOW (CFM)	SYSTEM TYPE?	ZONE DISCHARGE AIRFLOW VDZ (CFM)	ZONE PRIMARY AIRFLOW VPZ (CFM)	SIMPLIFIED PROCEDURE ZONE MINIMUM PRIMARY AIRFLOW VPZ-MIN (CFM)	ZONE PRIMARY OUTDOOR AIR FRACTION ZPZ	ZONE VENTILATION EFFICIENCY EVZ
RTU-1N / VAV-1204	1204 - PROGRAM	HEALTH CLUB / AEROBICS	350.0	20	0.06	40	15.2	16.0	320.0	22.8	342.9	0.8	YES	YES	342.9	424	650	645	45%	650	645			Single Supply	645	645	642.8	0.86	0.73
RTU-1N / VAV-1201	1201 - TRAINER	OFFICE SPACE	330.0	5	0.06	5	1.7	2.0	10.0	14.8	24.8	0.8	NO	YES	24.8	31	110	60	35%	110	60			Single Supply	60	60	55.4	0.82	0.77
RTU-1N / VAV-1203	1203 - PROGRAM	HEALTH CLUB / AEROBICS	720.0	20	0.06	40	28.8	29.0	580.0	43.2	623.2	0.8	YES	YES	623.2	774	1260	1170	43%	1260	1170			Single Supply	1170	1170	1166.5	0.87	0.72
RTU-1N / VAV-1202	1202 - PROGRAM	HEALTH CLUB / AEROBICS	1400.0	20	0.06	40	54.2	60.0	1200.0	88.8	1288.8	0.8	YES	YES	1288.8	1611	2580	2420	44%	2580	2420			Single Supply	2420	2420	2419.5	0.87	0.72
RTU-1N / VAV-2107	2107 - LOUNGE	BREAK ROOMS (GENERAL)	550.0	5	0.06	25	14.5	15.0	75.0	34.8	109.8	0.8	YES	YES	109.8	137	550	210	38%	550	210			Single Supply	210	210	205.9	0.65	0.74
RTU-1N / VAV-1103E	1103 - LOBBY (EAST)	CORRIDORS	2550.0	0	0.06	0	0.0	0.0	0.0	154.9	154.9	0.8	YES	YES	154.9	194	1500	670	45%	920	90		-580	Single Supply	670	670	240.3	0.24	1.10
RTU-1N / VAV-1102E	1102E - CORRIDOR (EAST)	CORRIDORS	1240.0	0	0.06	0	0.0	0.0	0.0	74.4	74.4	0.8	NO	YES	74.4	93	310	140	45%	310	140			Single Supply	140	140	134.5	0.86	0.73
RTU-1N / VAV-1103E	1115 - STORAGE	STORAGE ROOMS	250.0	0	0.12	0	0.0	0.0	0.0	30.0	30.0	0.8	NO	YES	30.0	38	200	90	45%	200	90			Single Supply	90	90	56.3	0.42	0.91
RTU-1N / VAV-1103W (A,B)	1103 - LOBBY (WEST)	CORRIDORS	2460.0	0	0.06	0	0.0	0.0	0.0	177.8	177.8	0.8	YES	YES	177.8	222	2600	1210	44%	1445	165		-1105	Single Supply	1210	1210	333.0	0.11	1.22
RTU-1N / VAV-1102W (A,B)	1102W - CORRIDOR (WEST)	CORRIDORS	1480.0	0	0.06	0	0.0	0.0	0.0	88.8	88.8	0.8	NO	YES	88.8	111	350	110	69%	350	110			Single Supply	110	110	166.5	0.85	0.74
RTU-1N / VAV-1110	1110 - OFFICE	OFFICE SPACE	220.0	5	0.06	5	1.1	2.0	10.0	13.2	23.2	0.8	NO	YES	23.2	29	200	45	23%	200	45			Single Supply	45	45	43.5	0.84	0.75
RTU-1N / VAV-1111	1111 - RECEPTION	RECEPTION AREAS	230.0	5	0.06	30	6.9	7.0	35.0	13.8	48.8	0.8	YES	YES	48.8	61	210	45	35%	210	45			Single Supply	45	45	41.5	0.84	0.75
RTU-1N / VAV-1111	1104 - OPEN OFFICE	OFFICE SPACE	255.0	5	0.06	5	1.3	2.0	10.0	15.3	25.3	0.8	NO	YES	25.3	32	260	255	46%	260	255			Single Supply	255	255	47.4	0.12	1.21
RTU-1N / VAV-1108	1108 - CONFERENCE	CONFERENCE / MEETING	480.0	5	0.06	50	21.5	22.0	110.0	28.8	138.8	0.8	YES	YES	138.8	174	470	145	31%	470	145			Single Supply	255	255	254.9	0.87	0.72
RTU-1N / VAV-1114	1114 - CHECK-IN	RECEPTION AREAS	360.0	5	0.06	30	10.8	11.0	55.0	21.6	76.6	0.8	YES	YES	76.6	96	330	280	85%	330	280			Single Supply	280	280	143.6	0.34	1.09
RTU-1N / VAV-2101	2101 - UPPER LOBBY	CORRIDORS	2430.0	0	0.06	0	0.0	0.0	0.0	145.8	145.8	0.8	NO	YES	145.8	186	1450	290	20%	1140	0		-240	Single Supply	290	290	279.0	0.84	0.75
RTU-1N / VAV-2105	2105 - WOMENS	EXHAUST ONLY	440.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.8	NO	NO	0.0	0	150	150	100%	0	0	525	375	Single Supply	150	150	0.0	0.00	1.34
RTU-1N / VAV-2105	2106 - JANITOR CLOSET	EXHAUST ONLY	40.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.8	NO	NO	0.0	0	0	0	0	0	0	50	50	Single Supply	0	0	0.0		
RTU-1N / VAV-2105	2104 - MENS	EXHAUST ONLY	350.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.8	NO	NO	0.0	0	150	150	100%	0	0	525	375	Single Supply	150	150	0.0	0.00	1.34
RTU-1N / VAV-1107	1107 - WOMENS	EXHAUST ONLY	500.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.8	NO	NO	0.0	0	150	150	100%	0	0	525	375	Single Supply	150	150	0.0	0.00	1.34
RTU-1N / VAV-1107	1106 - MENS	EXHAUST ONLY	380.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.8	NO	NO	0.0	0	150	150	100%	0	0	600	450	Single Supply	150	150	0.0	0.00	1.34
RTU-1N / VAV-1107	1105 - JANITORS CLOSET	EXHAUST ONLY	50.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.8	NO	NO	0.0	0	0	0	0	0	0	50	50	Single Supply	0	0	0.0		
RTU-1N / VAV-1104	1104 - OFFICE	OFFICE SPACE	180.0	5	0.06	5	0.9	1.0	5.0	10.8	15.8	0.8	YES	YES	15.8	20	100	20	20%	100	20			Single Supply	30	30	29.6	0.86	0.73
RTU-1N / VAV-2102	2102 - OFFICE	OFFICE SPACE	190.0	5	0.06	5	0.9	1.0	5.0	11.4	16.4	0.8	YES	YES	16.4	20	100	20	20%	100	20			Single Supply	30	30	28.3	0.90	0.81
TOTALS:			18035.0				162.6	168.0		983	3405				420	4280	13980	8548	62%	11305	6020	2575	0		8125	8125			

VENTILATION SUMMARY (BASED ON ASHRAE 62.1-2019)	
SYSTEM AREA AS (FT2)	18035.0
ESTIMATED SYSTEM POPULATION PS (PEOPLE)	168.00
ZONE POPULATION ΣPZ (PEOPLE)	168.00
OCCUPANT DIVERSITY D	1.00
UNCORRECTED OUTDOOR AIR INTAKE VOU (CFM)	3405.30
TOTAL SYSTEM SUPPLY AIRFLOW (CFM)	14000
DESIGN PRIMARY AIRFLOW VPS (CFM)	8125
PROCEDURE TYPE	SIMPLIFIED

SIMPLIFIED PROCEDURE (BASED ON ASHRAE 62.1-2019)	
SYSTEM VENTILATION EFFICIENCY EV	0.75
OUTDOOR AIR INTAKE VOT (CFM)	4544
SYSTEM OUTDOOR AIR PERCENTAGE	32%
NORMATIVE PROCEDURE (BASED ON ASHRAE 62.1-2019)	
AVERAGE OUTDOOR AIR FRACTION XS	0.34
SYSTEM VENTILATION EFFICIENCY EV	0.72
OUTDOOR AIR INTAKE VOT (CFM)	4722
SYSTEM OUTDOOR AIR PERCENTAGE	34%

ENERGY RECOVERY (ASHRAE 90.1-2019 SECTION 6.5.6)	
CLIMATE ZONE	5A
OPERATES ≥ 8000 HOURS PER YEAR? (Y/N)	N
OUTDOOR AIR PERCENTAGE AT FULL DESIGN AIRFLOW	32%
MINIMUM SUPPLY AIRFLOW FOR ENERGY RECOVERY	5500
DO ANY EXCEPTIONS APPLY? (Y/N)	N
IS ENERGY RECOVERY REQUIRED?	Y

CO2 CONTROL SETTINGS	
SETTING	OA CFM
MINIMUM OUTSIDE AIR RATE (CFM) (AREA, DCV, UNOCCUPIE...	3000
DESIGN OUTDOOR AIR RATE	4600

RTU-2N VENTILATION AND AIR-BALANCE SCHEDULE

ROOM INFORMATION				VENTILATION AIR									
SYSTEM/ ZONE NAME:	ROOM NAME	OCCUPANCY CATEGORY	FLOOR AREA AZ (FT2)	PEOPLE OUTDOOR AIR RATE RP (CFM/ PERSON)	AREA OUTDOOR AIR RATE RA (CFM/ FT2)	DEFAULT OCCUPANT DENSITY (#/1000 FT2)	DEFAULT PEOPLE (# OF PEOPLE)	PEOPLE OVERRIDE (# OF PEOPLE)	FINAL ZONE POPULATION PZ (PEOPLE)	BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS EZ	ZONE OUTDOOR AIRFLOW VOZ (CFM)	DESIGN OUTDOOR AIRFLOW (CFM)
RTU-2N	1112 - Multi-Purpose	MULTI-USE ASSEMBLY	1680	7.5	0.06	100	168.0	112.0	112.0	940.8	0.8	1176	1200
RTU-2N	1113 - Multi-Purpose	MULTI-USE ASSEMBLY	2840	7.5	0.06	100	284.0	189.0	189.0	1587.9	0.8	1985	2000
													3200

DOAS 1 THRU 4 VENTILATION AND AIR-BALANCE SCHEDULE

ROOM INFORMATION				VENTILATION AIR									
SYSTEM/ ZONE NAME:	ROOM NAME	OCCUPANCY CATEGORY	FLOOR AREA AZ (FT2)	PEOPLE OUTDOOR AIR RATE RP (CFM/ PERSON)	AREA OUTDOOR AIR RATE RA (CFM/ FT2)	DEFAULT OCCUPANT DENSITY (#/1000 FT2)	DEFAULT PEOPLE (# OF PEOPLE)	PEOPLE OVERRIDE (# OF PEOPLE)	FINAL ZONE POPULATION PZ (PEOPLE)	BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS EZ	ZONE OUTDOOR AIRFLOW VOZ (CFM)	DESIGN OUTDOOR AIRFLOW (CFM)
DOAS-1 THRU 4	1201 - FIELD	GYM, STADIUM (PLAY AREA)	121650	20	0.18	7	851.6	2385.0	2385.0	64791.0	0.8	81248	81300
DOAS-1 THRU 4	1205 - WOMENS	EXHAUST ONLY	280	0	0	0	0.0		0.0	0.0	0.8	0	
DOAS-1 THRU 4	1206 - MENS	EXHAUST ONLY	280	0	0	0	0.0		0.0	0.0	0.8	0	
DOAS-1 THRU 4	1208 - FIRE PUMP	ELECTRICAL EQUIPMENT ROOMS	240	0	0.06	0	0.0		0.0	14.4	0.8	18	50
DOAS-1 THRU 4	1209 - ELECTRICAL	ELECTRICAL EQUIPMENT ROOMS	360	0	0.06	0	0.0		0.0	21.6	0.8	27	50
DOAS-1 THRU 4	1210 - MECHANICAL	ELECTRICAL EQUIPMENT ROOMS	370	0	0.06	0	0.0		0.0	22.2	0.8	28	50
DOAS-1 THRU 4	1211 - MECHANICAL	ELECTRICAL EQUIPMENT ROOMS	720	0	0.06	0	0.0		0.0	43.2	0.8	54	100
DOAS-1 THRU 4	1212 - STORAGE	STORAGE ROOMS	720	0	0.12	0	0.0		0.0	86.4	0.8	108	150
DOAS-1 THRU 4	1213 - STORAGE	STORAGE ROOMS	720	0	0.12	0	0.0		0.0	86.4	0.8	108	150
DOAS-1 THRU 4	1214 - STORAGE	STORAGE ROOMS	720	0	0.12	0	0.0		0.0	86.4	0.8	108	150
DOAS-1 THRU 4	1215 - STORAGE	STORAGE ROOMS	720	0	0.12	0	0.0		0.0	86.4	0.8	108	150
DOAS-1 THRU 4	1216 - STORAGE	STORAGE ROOMS	720	0	0.12	0	0.0		0.0	86.4	0.8	108	150
DOAS-1 THRU 4	1217 - STORAGE	STORAGE ROOMS	720	0	0.12	0	0.0		0.0	86.4	0.8	108	150
DOAS-1 THRU 4	1218 - MENS	EXHAUST ONLY	280	0	0	0	0.0		0.0	0.0	0.8	0	
DOAS-1 THRU 4	1219 - WOMENS	EXHAUST ONLY	280	0	0	0	0.0		0.0	0.0	0.8	0	
DOAS-1 THRU 4	1220 - WOMENS	EXHAUST ONLY	280	0	0	0	0.0		0.0	0.0	0.8	0	
DOAS-1 THRU 4	1221 - WOMENS	EXHAUST ONLY	360	0	0	0	0.0		0.0	0.0	0.8	0	
DOAS-1 THRU 4	1222 - LIFT STORAGE	STORAGE ROOMS	520	0	0.12	0	0.0		0.0	62.4	0.8	78	100
DOAS-1 THRU 4	2101 - UPPER LOBBY	LOBBIES (PUBLIC ASSEMBLY SPACES)	2000	5	0.06	150	300.0		300.0	1620.0	0.8	2025	2100
DOAS-1 THRU 4	2202 - CONCESSIONS	KITCHEN (COOKING)	280	7.5	0.12	20	5.2		6.0	76.2	0.8	95	100
DOAS-1 THRU 4	2203 - CONCESSION STORAGE	KITCHEN (COOKING)	180	7.5	0.12	20	3.6		4.0	51.6	0.8	65	100
DOAS-1 THRU 4	2204 - TIMING	OFFICE SPACE	180	5	0.06	5	0.9		1.0	15.5	0.8	20	100
DOAS-1 THRU 4	2205 - GALLERY SEATING	AUDITORIUM SEATING AREA	9,470	5	0.06	150	1420.5		1421.0	7673.2	0.8	9592	10000
													100150

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL SCHEDULES - VENTILATION - NEW BUILDING

SHEET NO.
M605

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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RTU-1 VENTILATION AND AIR-BALANCE SCHEDULE

ROOM INFORMATION				VENTILATION AIR								
SYSTEM/ ZONE NAME:	ROOM NAME	OCCUPANCY CATEGORY	FLOOR AREA AZ (FT2)	PEOPLE OUTDOOR AIR RATE RP (CFM/ PERSON)	AREA OUTDOOR AIR RATE RA (CFM/ FT2)	DEFAULT OCCUPANT DENSITY (#/1000 FT2)	DEFAULT PEOPLE (# OF PEOPLE)	PEOPLE OVERRIDE (# OF PEOPLE)	FINAL ZONE POPULATION PZ (PEOPLE)	BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS EZ	ZONE OUTDOOR AIRFLOW VOZ (CFM)	DESIGN OUTDOOR AIRFLOW (CFM)
RTU-1	WOMEN'S LOCKER 1060	LOCKER ROOM	1164	0	0	0	0.0		0.0	0.0	0.8	585	1050
RTU-1	BREAK 1061	BREAK ROOMS (GENERAL)	109	5	0.06	25	2.8		3.0	21.3	0.8	27	150
RTU-1	OFFICE 1057	OFFICE SPACE	295	5	0.06	5	1.5		2.0	27.7	0.8	35	250
RTU-1	MEN'S LOCKER	LOCKER ROOM	1140	0	0	0	0.0		0.0	0.0	0.8	570	1050
RTU-1	CORRIDOR 1069	CORRIDORS	836	0	0.06	0	0.0		0.0	50.2	0.8	65	350
RTU-1	STORAGE 1054	OCCUPIABLE STORAGE ROOMS FOR DRY MATERIALS	157	5	0.06	2	0.3		1.0	14.4	0.8	18	150
RTU-1	STORAGE 1056	OCCUPIABLE STORAGE ROOMS FOR DRY MATERIALS	141	5	0.06	2	0.3		1.0	13.5	0.8	17	150
													3150

AHU-2 VENTILATION AND AIR-BALANCE SCHEDULE

ROOM INFORMATION				ZONE LEVEL OUTDOOR AIR													LOAD OUTPUT/AIR BALANCE						SINGLE SUPPLY				
SYSTEM/ ZONE NAME:	ROOM NAME	OCCUPANCY CATEGORY	FLOOR AREA AZ (FT2)	PEOPLE OUTDOOR AIR RATE RP (CFM/ PERSON)	AREA OUTDOOR AIR RATE RA (CFM/ FT2)	DEFAULT OCCUPANT DENSITY (#/1000 FT2)	DEFAULT PEOPLE (# OF PEOPLE)	PEOPLE OVERRIDE (# OF PEOPLE)	FINAL ZONE POPULATION PZ (PEOPLE)	BREATHING ZONE OUTDOOR AIRFLOW (PEOPLE RELATED) (CFM)	BREATHING ZONE OUTDOOR AIRFLOW (AREA RELATED) (CFM)	BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS EZ	DCV ZONE (YES/NO)	OCCUPIED STANDBY MODE (YES/NO)	ZONE OUTDOOR AIRFLOW OVERRIDE (CFM)	ZONE OUTDOOR AIRFLOW VOZ (CFM)	MAXIMUM AIRFLOW (CFM)	MINIMUM AIRFLOW (CFM)	% TURNDOWN	MAXIMUM RETURN AIRFLOW (CFM)	MINIMUM RETURN AIRFLOW (CFM)	SYSTEM TYPE?	ZONE DISCHARGE AIRFLOW VDZ (CFM)	ZONE PRIMARY AIRFLOW VPZ (CFM)	SIMPLIFIED PROCEDURE ZONE MINIMUM PRIMARY AIRFLOW VPZ-MIN (CFM)	ZONE PRIMARY OUTDOOR AIR FRACTION ZPZ	ZONE VENTILATION EFFICIENCY EVZ
AHU-2	AEROBICS 2002	HEALTH CLUB / AEROBICS	975.0	20	0.06	40	23.0		23.0	460.0	34.5	494.5	0.8	YES	YES		618	1300	930	72%	1300	930	Single Supply	930	930	921.2	0.66	0.83
AHU-2	AEROBICS 2004	HEALTH CLUB / AEROBICS	860.0	20	0.06	40	34.4		35.0	700.0	51.6	751.6	0.8	YES	YES		940	1750	1410	81%	1750	1410	Single Supply	1410	1410	1404.3	0.67	0.83
AHU-2	CORRIDOR	CORRIDORS	423.0	0	0.06	0	0.0		0.0	0.0	25.4	25.4	0.8	NO	YES		32	250	150	60%	250	150	Single Supply	150	150	47.6	0.21	1.24
AHU-2	STORAGE 2111	OCCUPIABLE STORAGE ROOMS FOR DRY MATERIALS	88.0	5	0.06	2	0.2		1.0	5.0	5.1	10.1	0.8	NO	YES		13	75	50	67%	75	50	Single Supply	50	50	18.9	0.28	1.25
AHU-2	STORAGE 2113	OCCUPIABLE STORAGE ROOMS FOR DRY MATERIALS	88.0	5	0.06	2	0.2		1.0	5.0	5.1	10.1	0.8	NO	YES		13	75	50	67%	75	50	Single Supply	50	50	18.9	0.28	1.25
TOTALS:			2028.0				91.1		60.0			1242				0	1615	3450	2940	75%	3450	2940		2940	2940			

VENTILATION SUMMARY (BASED ON ASHRAE 62.1-2019)	
SYSTEM AREA AS (FT2)	2028.0
ESTIMATED SYSTEM POPULATION PS (PEOPLE)	60.00
ZONE POPULATION ΣPZ (PEOPLE)	60.00
OCCUPANT DIVERSITY D	1.00
UNCORRECTED OUTDOOR AIR INTAKE VOU...	1291.88
TOTAL SYSTEM SUPPLY AIRFLOW (CFM)	3450
DESIGN PRIMARY AIRFLOW VPS (CFM)	2590
PROCEDURE TYPE	SIMPLIFIED

SIMPLIFIED PROCEDURE (BASED ON ASHRAE 62.1-2019)	
SYSTEM VENTILATION EFFICIENCY EV	0.75
OUTDOOR AIR INTAKE VOT (CFM)	1722
SYSTEM OUTDOOR AIR PERCENTAGE	50%
NORMATIVE PROCEDURE (BASED ON ASHRAE 62.1-2019)	
AVERAGE OUTDOOR AIR FRACTION XS	0.50
SYSTEM VENTILATION EFFICIENCY EV	0.83
OUTDOOR AIR INTAKE VOT (CFM)	1592
SYSTEM OUTDOOR AIR PERCENTAGE	45%

ENERGY RECOVERY (ASHRAE 90.1-2019 SECTION 6.5.6)	
CLIMATE ZONE	5A
OPERATES ≥ 8000 HOURS PER YEAR? (Y/N)	N
OUTDOOR AIR PERCENTAGE AT FULL DESIGN AIRFLOW	50%
MINIMUM SUPPLY AIRFLOW FOR ENERGY RECOVERY	4500
DO ANY EXCEPTIONS APPLY? (Y/N)	N
IS ENERGY RECOVERY REQUIRED?	N

CO2 CONTROL SETTINGS	
SETTING	OA CFM
AREA BASED OUTSIDE AIR RATE (CFM)	476
DESIGN OUTDOOR AIR RATE	1722

AHU-16 & AHU-17 VENTILATION AND AIR-BALANCE SCHEDULE

ROOM INFORMATION				VENTILATION AIR									
SYSTEM/ ZONE NAME:	ROOM NAME	OCCUPANCY CATEGORY	FLOOR AREA AZ (FT2)	PEOPLE OUTDOOR AIR RATE RP (CFM/ PERSON)	AREA OUTDOOR AIR RATE RA (CFM/ FT2)	DEFAULT OCCUPANT DENSITY (#/1000 FT2)	DEFAULT PEOPLE (# OF PEOPLE)	PEOPLE OVERRIDE (# OF PEOPLE)	FINAL ZONE POPULATION PZ (PEOPLE)	BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS EZ	ZONE OUTDOOR AIRFLOW VOZ (CFM)	DESIGN OUTDOOR AIRFLOW (CFM)
AHU-16 & 17	GYMNASTICS 1215	HEALTH CLUB / AEROBICS	3480	20	0.06	40	139.0		139.0	2987.0	0.8	3109	3800
AHU-16 & 17	GYM 1211	GYM, STADIUM (PLAY AREA)	22050	20	0.18	7	154.4		198.0	7068.0	0.8	8836	9000
													12800

RTU-3 VENTILATION AND AIR-BALANCE SCHEDULE

ROOM INFORMATION				VENTILATION AIR									
SYSTEM/ ZONE NAME:	ROOM NAME	OCCUPANCY CATEGORY	FLOOR AREA AZ (FT2)	PEOPLE OUTDOOR AIR RATE RP (CFM/ PERSON)	AREA OUTDOOR AIR RATE RA (CFM/ FT2)	DEFAULT OCCUPANT DENSITY (#/1000 FT2)	DEFAULT PEOPLE (# OF PEOPLE)	PEOPLE OVERRIDE (# OF PEOPLE)	FINAL ZONE POPULATION PZ (PEOPLE)	BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS EZ	ZONE OUTDOOR AIRFLOW VOZ (CFM)	DESIGN OUTDOOR AIRFLOW (CFM)
RTU-3	POOL LOBBY 1069	RECEPTION AREAS	1225	5	0.06	30	36.8		37.0	258.5	0.8	325	500
RTU-3	EX OFFICE 1066B	OFFICE SPACE	215	5	0.06	5	1.4		2.0	26.7	0.8	33	50
													550

RTU-14 VENTILATION AND AIR-BALANCE SCHEDULE

ROOM INFORMATION				VENTILATION AIR									
SYSTEM/ ZONE NAME:	ROOM NAME	OCCUPANCY CATEGORY	FLOOR AREA AZ (FT2)	PEOPLE OUTDOOR AIR RATE RP (CFM/ PERSON)	AREA OUTDOOR AIR RATE RA (CFM/ FT2)	DEFAULT OCCUPANT DENSITY (#/1000 FT2)	DEFAULT PEOPLE (# OF PEOPLE)	PEOPLE OVERRIDE (# OF PEOPLE)	FINAL ZONE POPULATION PZ (PEOPLE)	BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS EZ	ZONE OUTDOOR AIRFLOW VOZ (CFM)	DESIGN OUTDOOR AIRFLOW (CFM)
RTU-14	LOCKER ROOM 1130	LOCKER ROOM	1838	0	0	0	0.0		0.0	0.0	0.8	955	3490
RTU-14	OFFICE 1144	OFFICE SPACE	109	5	0.06	5	0.9	1.0	1.0	16.1	0.8	20	350
RTU-14	TRAINING 1146	OFFICE SPACE	260	5	0.06	5	1.3	2.0	2.0	25.6	0.8	32	510
RTU-14	TEAM LOCKER ROOM 1145	LOCKER ROOM	2325	0	0	0	0.0		0.0	0.0	0.8	1163	3800
RTU-14	LOCKER ROOM 1134	LOCKER ROOM	1838	0	0	0	0.0		0.0	0.0	0.8	955	3490
RTU-14	TEAM LOCKER ROOM 1150	LOCKER ROOM	2325	0	0	0	0.0		0.0	0.0	0.8	1163	3800
RTU-14	OFFICE 1134	OFFICE SPACE	105	5	0.06	5	0.9	1.0	1.0	16.1	0.8	20	350
RTU-14	TRAINING 1133	OFFICE SPACE	260	5	0.06	5	1.3	2.0	2.0	25.6	0.8	32	510
RTU-14	CONCESSIONS 14	BREAK ROOMS (GENERAL)	286	5	0.06	25	7.2		8.0	57.2	0.8	71	275
RTU-14	STORAGE 15	OCCUPIABLE STORAGE ROOMS FOR DRY MATERIALS	88	5	0.06	2	0.2		1.0	10.3	0.8	13	75
RTU-14	STORAGE 16	OCCUPIABLE STORAGE ROOMS FOR DRY MATERIALS	171	5	0.06	2	0.3		1.0	15.3	0.8	19	175
RTU-14	STORAGE 17	OCCUPIABLE STORAGE ROOMS FOR DRY MATERIALS	206	5	0.06	2	0.4		1.0	17.4	0.8	22	175
													18000

AHU-15 VENTILATION AND AIR-BALANCE SCHEDULE

ROOM INFORMATION				ZONE LEVEL OUTDOOR AIR														LOAD OUTPUT/AIR BALANCE							SINGLE SUPPLY				
SYSTEM/ ZONE NAME:	ROOM NAME	OCCUPANCY CATEGORY	FLOOR AREA AZ (FT2)	PEOPLE OUTDOOR AIR RATE RP (CFM/ PERSON)	AREA OUTDOOR AIR RATE RA (CFM/ FT2)	DEFAULT OCCUPANT DENSITY (#/1000 FT2)	DEFAULT PEOPLE (# OF PEOPLE)	PEOPLE OVERRIDE (# OF PEOPLE)	FINAL ZONE POPULATION PZ (PEOPLE)	BREATHING ZONE OUTDOOR AIRFLOW (PEOPLE RELATED) (CFM)	BREATHING ZONE OUTDOOR AIRFLOW (AREA RELATED) (CFM)	BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE AIR DISTRIBUTION EFFECTIVENESS EZ	DCV ZONE (YES/NO)	OCCUPIED STANDBY MODE (YES/NO)	DCV BREATHING ZONE OUTDOOR AIRFLOW VBZ (CFM)	ZONE OUTDOOR AIRFLOW OVERRIDE (CFM)	ZONE OUTDOOR AIRFLOW VOZ (CFM)	MAXIMUM AIRFLOW (CFM)	MINIMUM AIRFLOW (CFM)	% TURNDOWN	MAXIMUM RETURN AIRFLOW (CFM)	MINIMUM RETURN AIRFLOW (CFM)	SYSTEM TYPE?	ZONE DISCHARGE AIRFLOW VDZ (CFM)	ZONE PRIMARY AIRFLOW VPZ (CFM)	SIMPLIFIED PROCEDURE ZONE MINIMUM PRIMARY AIRFLOW VPZ-MIN (CFM)	ZONE PRIMARY OUTDOOR AIR FRACTION ZPZ	ZONE VENTILATION EFFICIENCY EVZ
AHU-15 - VAV-1	WRESTLING 1209	HEALTH CLUB / WEIGHT	2845.0	20	0.06	10	24.0		24.0	480.0	193.7	673.7	0.8	YES	NO	217.1		942	4000	2000	50%	4000	2000	Single Supply	2000	2000	1413.2	0.47	0.86
AHU-15 - VAV-2	OFFICE 1101	OFFICE SPACE	180.0	5	0.06	5	0.9		1.0	5.0	11.3	16.3	0.8	NO	YES	16.3		22	500	250	50%	500	250	Single Supply	250	250	30.5	0.06	1.25
AHU-15 - VAV-2	OFFICE 1106	OFFICE SPACE	275.0	5	0.06	5	1.4		2.0	10.0	16.5	26.5	0.8	NO	YES	26.5		33	500	250	50%	500	250	Single Supply	250	250	49.7	0.13	1.20
AHU-15 - VAV-3	EVENT MANAGER 1105	OFFICE SPACE	185.0	5	0.06	5	0.9		1.0	5.0	11.1	16.1	0.8	NO	YES	16.1		20	350	175	50%	350	175	Single Supply	175	175	30.2	0.12	1.21
AHU-15 - VAV-3	STORAGE 1126	OFFICE SPACE	139.0	5	0.06	5	0.7		1.0	5.0	8.1	13.1	0.8	NO	YES	13.1		16	250	125	50%	250	125	Single Supply	125	125	24.6	0.13	1.20
AHU-15 - VAV-4	SOUTH LOBBY 1103	RECEPTION AREAS	1009.0	5	0.06	30	30.2		31.0	155.0	60.3	215.3	0.8	YES	YES	0.0		264	2400	1200	50%	2400	1200	Single Supply	1200	1200	403.7	0.22	1.11
AHU-15 - VAV-4	TICKETS 1104	OFFICE SPACE	40.0	5	0.06	5	0.2		1.0	5.0	2.4	7.4	0.8	NO	YES	7.4		9	150	75	50%	150	75	Single Supply	75	75	13.9	0.12	1.21
AHU-15 - VAV-5	GYM MEZZANINE	GYM, STADIUM (PLAY AREA)	2940.0	20	0.18	7	20.2		21.0	420.0	520.2	940.2	0.8	YES	NO	650.3		1179	3600	1800	50%	3600	1800	Single Supply	1800	1800	1162.9	0.68	0.88
AHU-15 - VAV-6	NORTH LOBBY 1123	RECEPTION AREAS	1315.0	5	0.06	30	34.5		40.0	200.0	78.4	278.4	0.8	YES	YES	0.0		344	2000	1000	50%	2000	1000	Single Supply	1000	1000	522.4	0.39	0.85
TOTALS:			8428.0				122.9		127.0			2267				967	0	2834	13750	6875	50%	13750	6875		6875	6875			

VENTILATION SUMMARY (BASED ON ASHRAE 62.1-2019)	
SYSTEM AREA AS (FT2)	8428.0
ESTIMATED SYSTEM POPULATION PS (PEOPLE)	127.00
ZONE POPULATION ΣPZ (PEOPLE)	127.00
OCCUPANT DIVERSITY D	1.00
UNCORRECTED OUTDOOR AIR INTAKE VOU (CFM)	2267.46
TOTAL SYSTEM SUPPLY AIRFLOW (CFM)	13750
DESIGN PRIMARY AIRFLOW VPS (CFM)	6875
PROCEDURE TYPE	NORMATIVE

SIMPLIFIED PROCEDURE (BASED ON ASHRAE 62.1-2019)	
SYSTEM VENTILATION EFFICIENCY EV	0.75
OUTDOOR AIR INTAKE VOT (CFM)	3023
SYSTEM OUTDOOR AIR PERCENTAGE	22%
NORMATIVE PROCEDURE (BASED ON ASHRAE 62.1-2019)	
AVERAGE OUTDOOR AIR FRACTION XS	0.33
SYSTEM VENTILATION EFFICIENCY EV	0.86
OUTDOOR AIR INTAKE VOT (CFM)	3350
SYSTEM OUTDOOR AIR PERCENTAGE	24%

ENERGY RECOVERY (ASHRAE 90.1-2019 SECTION 6.5.6)	
CLIMATE ZONE	5A
OPERATES ≥ 8000 HOURS PER YEAR? (Y/N)	N
OUTDOOR AIR PERCENTAGE AT FULL DESIGN AIRFLOW	24%
MINIMUM SUPPLY AIRFLOW FOR ENERGY RECOVERY	16000
DO ANY EXCEPTIONS APPLY? (Y/N)	N
IS ENERGY RECOVERY REQUIRED?	N

CO2 CONTROL SETTINGS	
SETTING	OA CFM
AREA BASED OUTSIDE AIR RATE (CFM)	2024
DESIGN OUTDOOR AIR RATE	3350

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CONSTRUCTION DOCUMENTS	07.30.2026

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
PROFESSIONAL ENGINEER

07/30/2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL SCHEDULES - VENTILATION - EXIST BLDG

SHEET NO.
M606

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A2L REFRIGERANT CHARGE LIMITS FOR HIGH PROBABILITY AIR CONDITIONERS, HEAT PUMPS, AND DEHUMIDIFIER SYSTEMS

ROOM NAME	EQUIPMENT TAG	AREA (SF)	CEILING HEIGHT (FT)	ADJACENT SPACE VOLUME (FT3)	SA/RA DUCTWORK VOLUME (FT3)	RA PLENUM VOLUME (FT3)	VOLUME (FT3)	OCCUPANCY ADJUSTMENT FACTOR, FOCC	REFRIGERANT NAME	SAFETY CLASSIFICATION	CONCENTRATION FACTOR, CF	LOWER FLAMMABILITY LIMIT, LFL (LB/1000FT3)	MAXIMUM EFFECTIVE DISPERSAL VOLUME CHARGE, EDVC (LB)	EQUIPMENT REFRIGERANT CHARGE (LB)	REFRIGERANT PIPING LENGTH (FT)	PIPING CHARGE (OZ/FT)	ESTIMATED SYSTEM REFRIGERANT CHARGE, MS (LB)	COMPLIANT?
BREAK 1014	RTU-1	96	9		3009.6		3873.6	1.0	R-454B	A2L	0.5	18.5	35.8	22.0	0.0	0.0	22.0	YES
STORAGE 2006	AHU-2	60	15.75	4605	584.6		6117.6	1.0	R-454B	A2L	0.5	18.5	56.6	22.0	104.0	0.4	24.6	YES
EX OFFICE 1150	RTU-3	298.41	9		298.6		2988.29	1.0	R-32	A2L	0.5	14.1	28.2	15.6	0.0	0.0	15.6	YES
OFFICE 2302	RTU-1N	111	8			10254	11142	1.0	R-32	A2L	0.5	14.1	106.4	52.9	0.0	0.0	52.9	YES
STORAGE 1315	RTU-2N	201	13.92	65360	901		67086.92	1.0	R-32	A2L	0.5	14.1	640.5	34.5	0.0	0.0	34.5	YES

GENERAL NOTES:
1. CALCULATION BASED ON ASHRAE 15-2022-SECTION 7.5.2.1 & 7.6.1.1 INCLUDING ASHRAE 15-2022 ADDENDA E & ASHRAE 34-2022 ADDENDA A.
2. SPREADSHEET APPLIES ONLY TO A2L REFRIGERANTS WITH EITHER AIR CIRCULATION INITIATED BY REFRIGERANT DETECTION SYSTEM COMPLYING WITH SECTION 7.6.2.4 OR CONTINUOUS AIR CIRCULATION.
3. WHERE APPLICABLE FOR DUCTED SYSTEMS, SUPPLY DUCT/RETURN DUCT/RETURN PLENUM VOLUME HAS BEEN ACCOUNTED FOR IN VOLUME CALCULATION.
4. FOR DUCTED SYSTEMS, CALCULATION IS BASED ON THE SMALLEST ROOM SERVED BY THE SYSTEM INDICATED.

A2L REFRIGERANT CHARGE LIMITS FOR HIGH PROBABILITY AIR CONDITIONERS, HEAT PUMPS, AND DEHUMIDIFIER SYSTEMS W/O DETECTION SYSTEM

ROOM NAME * NOTE 4	EQUIPMENT IDENTIFICATION	AREA (SF)	EQUIPMENT OUTLET HEIGHT (FT) * NOTE 5	VOLUME (FT3)	OCCUPANCY ADJUSTMENT FACTOR, FOCC	REFRIGERANT NAME	SAFETY CLASSIFICATION	LOWER FLAMMABILITY LIMIT, LFL (LB/1000FT3)	MAXIMUM RELEASABLE CHARGE (LB)	REFRIGERANT CONCENTRATION LIMIT, RCL (LB/1000 FT3)	MAXIMUM EFFECTIVE DISPERSAL VOLUME CHARGE, EDVC (LB)	EQUIPMENT REFRIGERANT CHARGE (LB)	REFRIGERANT PIPING LENGTH (FT)	PIPING CHARGE (OZ/FT)	INSTALLED SYSTEM REFRIGERANT CHARGE, MS (LB)	EXCEEDS MAX. REFRIGERANT CHARGE LIMIT?	SECTION 7.5.2.1 EXEMPT?	COMPLIANT?
TECH 2103	AC-1	88	9	812	1.0	R-454B	A2L	18.5	170.2	4.6	2.8	4.4	24.0	0.3	4.8	YES	YES	YES
TECH 2103	AC-2	88	9	812	1.0	R-454B	A2L	18.5	170.2	4.6	2.8	4.4	24.0	0.3	4.8	YES	YES	YES
ELEC ROOM	AC-3	655	9	5245	1.0	R-454B	A2L	18.5	170.2	4.6	27.1	9.9	32.0	0.6	11.1	NO	YES	YES

GENERAL NOTES:
1. CALCULATION BASED ON ASHRAE 15-2022-SECTION 7.5.2.1 & 7.6.1.2 INCLUDING ASHRAE 15-2022 ADDENDA E & ASHRAE 34-2022 ADDENDA H
2. SPREADSHEET APPLIES ONLY TO A2L REFRIGERANTS WITHOUT EITHER AIR CIRCULATION INITIATED BY REFRIGERANT DETECTION SYSTEM COMPLYING WITH SECTION 7.6.2.4 OR CONTINUOUS AIR CIRCULATION.
3. FOR MDEF, USE TABLE 7-1. FOR AREAS AND HEIGHTS IN BETWEEN THE VALUES LISTED, LINEAR INTERPOLATION OR THE NEXT LOWER VALUE SHALL BE USED.
4. FOR DUCTED SYSTEMS, CALCULATION IS BASED ON THE SMALLEST ROOM SERVED BY THE SYSTEM INDICATED.
5. THE HEIGHT SHALL BE THE LOWEST POINT OF ANY OPENING IN THE SUPPY AIR DUCT, RETURN AIR DUCT, OR THE EQUIPMENT PROVIDING AIR CIRCULATION.
6. EXCEPTION 7.5.2.1: RESTRICTIONS DO NOT APPLY TO UNIT SYSTEMS HAVING REFRIGERANT QUANTITIES LESS THAN 22 LBS IN COMMERCIAL OCCUPANCIES.

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CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL SCHEDULES - REFRIGERANT CALCULATIONS

SHEET NO.
M607

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201081679
REGISTERED PROFESSIONAL
07/30/2026

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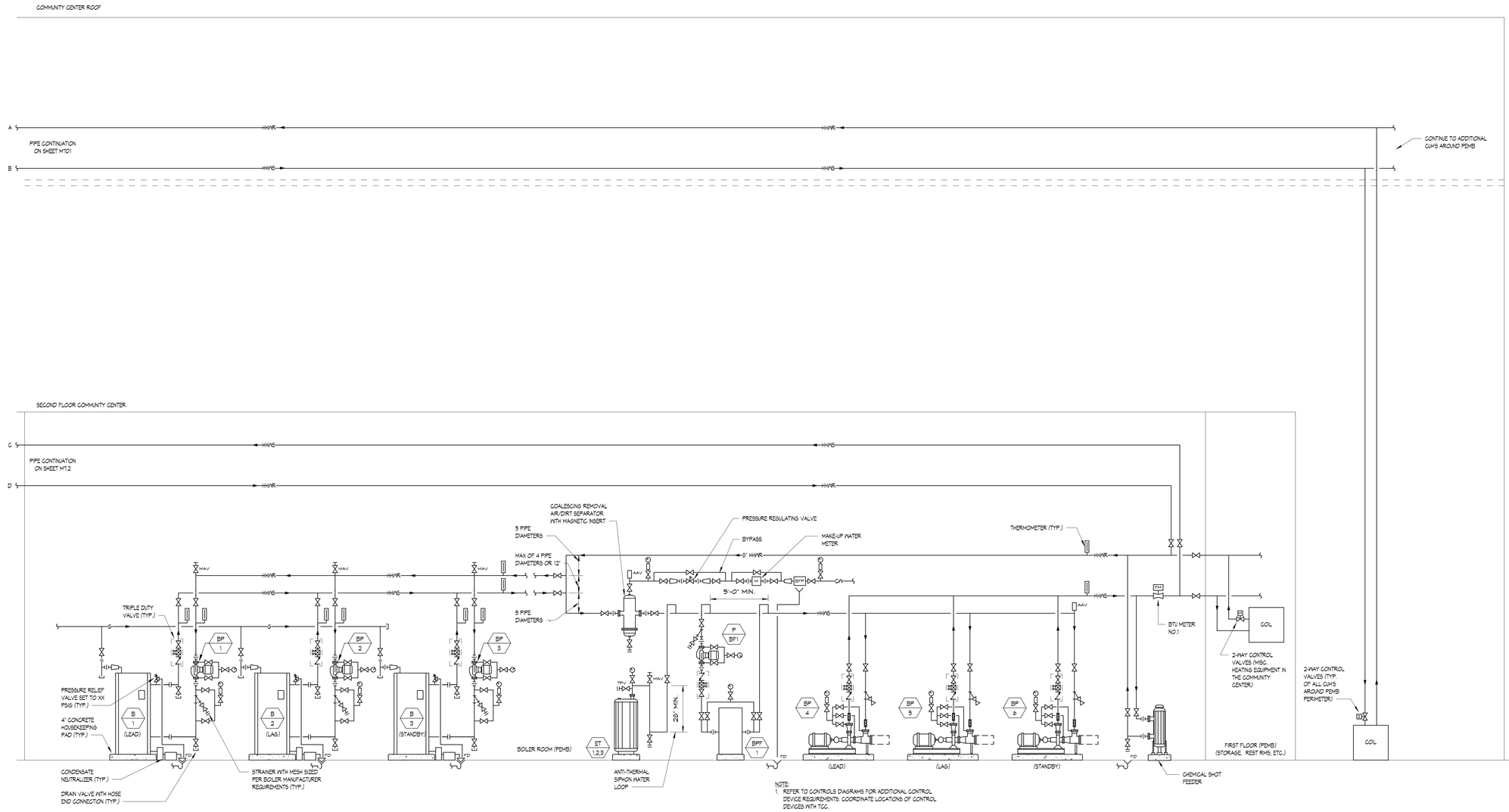

NOTE:
1. REFER TO CONTROLS DIAGRAMS FOR ADDITIONAL CONTROL DEVICE REQUIREMENTS. COORDINATE LOCATIONS OF CONTROL DEVICES WITH TCC.

HEATING HOT WATER SYSTEM
PIPING DIAGRAM - PART A

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SHEET TITLE
MECHANICAL RISER DIAGRAM

SHEET NO.
M700

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STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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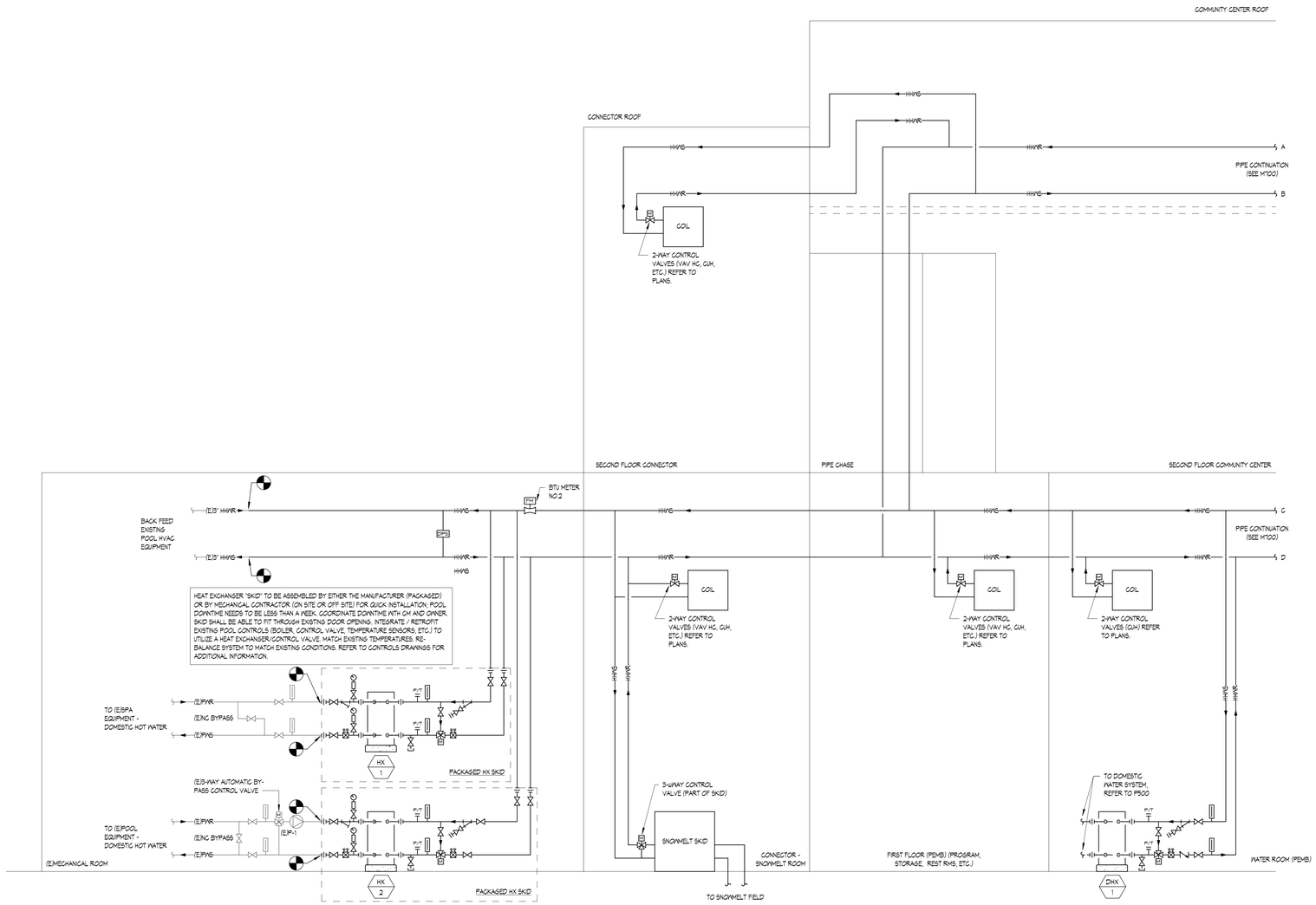

HEATING HOT WATER SYSTEM PIPING DIAGRAM - PART B

NOT TO SCALE

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SHEET TITLE

MECHANICAL RISER DIAGRAM

SHEET NO.

M701

STATE OF MICHIGAN
THERESA LYN CARD
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07/30/2026

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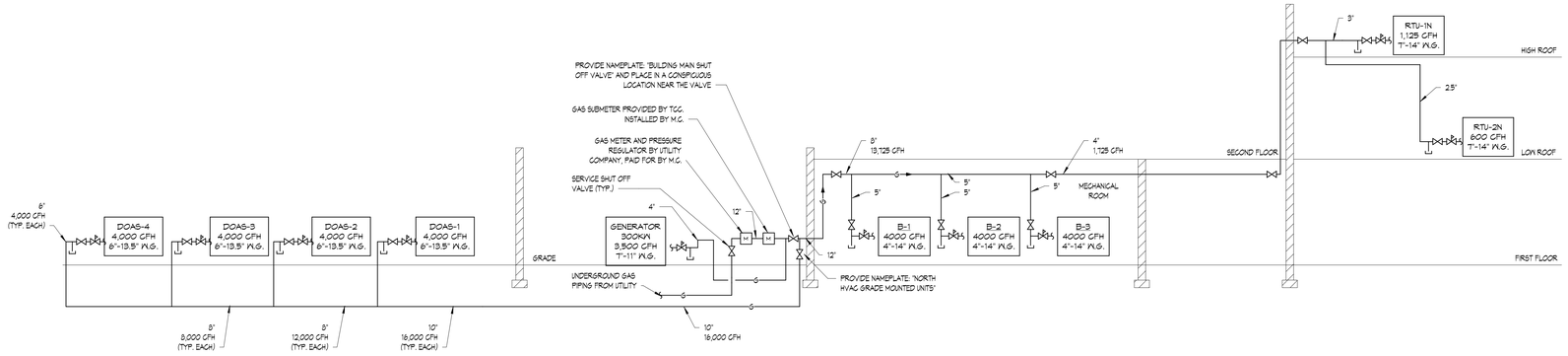
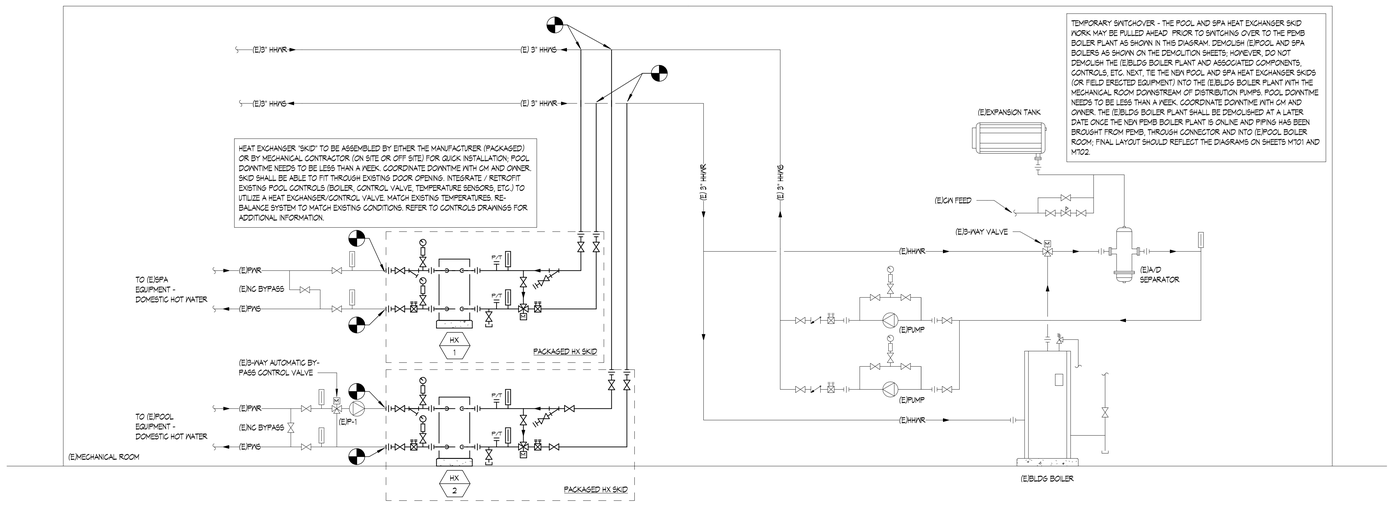


GAS LOAD SUMMARY	
EQUIPMENT ID	CFH
B-1	4,000
B-2	4,000
B-3	4,000
GENERATOR	3,500
DOAS-1	4,000
DOAS-2	4,000
DOAS-3	4,000
DOAS-4	4,000
RTU-1N	1,125
RTU-2N	600
TOTAL	33,225

NOTES:
1. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE GAS LOAD AND ELEVATED PRESSURE REQUIREMENTS WITH LOCAL UTILITY COMPANY.
2. CONTRACTOR SHALL VERIFY ALL EQUIPMENT CONNECTION REQUIREMENTS (SIZES, LOCATIONS, TYPES, PRESSURES, ETC.) PRIOR TO COMMENCEMENT OF WORK.
3. MIN. 11" W.C. DELIVERY PRESSURE. PIPING IS SIZED FOR MAXIMUM PRESSURE DROP OF 0.5" W.C. BASED ON A TOTAL DEVELOPED LENGTH OF 550 FT (RTU-2N), 300 FT (GENERATOR) AND 125 FT (DOAS-4). SCHEDULE 40 PIPE.
4. CONTRACTOR TO PROVIDE GAS REGULATORS TO EACH PIECE OF EQUIPMENT AS REQUIRED BY UTILITY FOR MAX PRESSURE REQUIRED BY UTILITY.

NATURAL GAS PIPING DIAGRAM

NOT TO SCALE



POOL HEATING HOT WATER SYSTEM PIPING DIAGRAM - TEMPORARY SWITCHOVER

NOT TO SCALE

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JOB NO. 2600.41F

SHEET TITLE
MECHANICAL RISER DIAGRAM

SHEET NO.
M702

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201081679
07/30/2026

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BUILDING CODE INFORMATION

BUILDING CODE:	MICHIGAN BUILDING CODE 2021
PLUMBING CODE:	MICHIGAN PLUMBING CODE 2021
MECHANICAL CODE:	MICHIGAN MECHANICAL CODE 2021
ENERGY CODE:	MICHIGAN UNIFORM ENERGY CODE 2021
FIRE CODE:	INTERNATIONAL FIRE CODE 2021
FUEL GAS CODE:	INTERNATIONAL FUEL GAS CODE 2021
ELECTRICAL CODE:	MICHIGAN ELECTRICAL CODE 2023
NFPA STANDARDS:	NFPA 13 & 20 2016 NFPA 101 WITH BFS AMENDMENTS 2012
ICC/ANSI STANDARDS:	ICC/ANSI A117.1 ACCESSIBLE AND USABLE BUILDING AND FACILITIES 2017
ADA STANDARDS:	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA-AG)

GENERAL SYMBOLS

- EXISTING CONSTRUCTION
- DEMOLITION
- NEW CONSTRUCTION
- NEW KEYNOTE TAG
- DEMOLITION KEYNOTE TAG
- EQUIPMENT TAG
- TYPE-NO.
  NECK'D
  CFM-NO.
  DIFFUSER TAG
- ELEVATION
- WALL SECTION (1 / A101)
- BUILDING SECTION (DTL # / SHEET #)
- PLAN/SECTION DETAIL (1 / A101)
- NEW CONNECTION

CONTROLS SYMBOLS

- 2-WAY CONTROL VALVE (ELECTRONIC)
- 2-WAY CONTROL VALVE (PNUEMATIC)
- 3-WAY CONTROL VALVE (ELECTRONIC)
- 3-WAY CONTROL VALVE (PNUEMATIC)
- ANALOG INPUT
- ANALOG OUTPUT
- ANALOG VALUE
- AUXILIARY CONTACTOR
- BAS CONTGROLLER
- BIPOLAR IONIZATION
- BMS CONTROLLER
- BTU METER
- CO_2 SENSOR
- CO_2 STAT
- CO SENSOR
- CO STAT
- CONTROL MODULE
- CONTROLLER
- CURRENT INPUT
- CURRENT SENSING RELAY
- CURRENT SWITCH
- CURRENT TRANSDUCER
- DAMPER
- DAMPER POSITION
- DIFFERENTIAL PRESSURE PROBE
- DIFFERENTIAL PRESSURE SENSOR
- DIFFERENTIAL PRESSURE TRANSDUCER
- DIGITAL INPUT
- DIGITAL OUTPUT
- DIGITAL OUTPUT
- DISCONNECT SWITCH
- DOOR SWITCH
- ELECTRONICALLY COMMUTATED MOTOR
- ELECTRIC TO PNEUMATIC SWITCH
- EMERGENCY PUSH BUTTON
- ENABLE / DISABLE
- END SWITCH
- FLOW MEASURING STATION
- FLOW METER
- FLOW SWITCH
- FREEZESTAT
- HUMIDISTAT
- HUMIDITY SENSOR
- LIMIT SWITCH
- MOTOR
- MOTOR ACTUATOR
- MOTOR STARTER
- NO SENSOR
- OCCUPANCY SENSOR
- PIPE WELL
- PIPE WELL
- PRESSURE SWITCH
- PROPE
- AIRFLOW MEASURING STATION
- AVERAGING PROPE
- PROPE (FREEZE)
- RELAY
- ROTATION MONITORING SENSOR
- SMOKE DETECTOR
- START / STOP
- STATIC PRESSURE SENSOR
- TEMPERATURE SENSOR
- TEMPERATURE SENSOR WITH GUARD
- THERMOSTAT
- TIME DELAY RELAY
- VALVE
- VALVE POSITION
- VARIABLE FREQUENCY DRIVE
- VIRTUAL POINT
- VOLTAGE INPUT
- VOLTAGE OUTPUT

CONTROLS RISER SYMBOLS

- INPUT / OUTPUT POINTS
- VAV TERMINAL UNIT CONTROLLER
- EQUIPMENT CONTROLLER
- PLANT CONTROLLER
- BUILDING CONTROLLER / SUPERVISORY CONTROLLER/ JACE
- POWER
- PROTOCOL TYPE
- FIREWALL
- VPN
- ROUTER
- INTERNET
- WIRELESS ACCESS POINT
- FACILITY SERVER W/ INTEGRATION SOFTWARE
- LOCAL OPERATOR WORK STATION
- REMOTE OPERATOR WORK STATION
- MANAGED SWITCH
- SWITCH

EQUIPMENT SYMBOLS

- COOLING COIL (CHW)
- COOLING COIL (DX)
- HEATING COIL (ELECTRIC)
- HEATING COIL (GAS)
- HEATING COIL (HHW)
- HEATING COIL (REHEAT)
- AIR AND DIRT SEPARATOR
- CHEMICAL SHOT FEEDER
- EXPANSION TANK (VERTICAL)
- ENERGY RECOVERY WHEEL
- GLYCOL FILL STATION
- SIDE STREAM FILTER
- FILTER
- FILTER W/ DPT
- FAN (CENTRIFUGAL)
- FAN (PLENUM)
- FAN (PROP)
- PUMP (CIRCULATION)
- PUMP (END SUCTION)
- PUMP (IN-LINE)
- PUMP (SUMP)

HVAC SYMBOLS

- BALANCING DAMPER
- FIRE DAMPER (HORIZONTAL)
- FIRE DAMPER (VERTICAL)
- COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
- COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
- SMOKE DAMPER
- SUPPLY DIFFUSER
- RETURN DIFFUSER
- EXHAUST DIFFUSER
- OPPOSED BLADE DAMPER (MOTORIZED)
- OPPOSED BLADE DAMPER (MOTORIZED) W/ END SWITCH
- VAV DAMPER (MOTORIZED)
- PARALLEL BLADE DAMPER (MOTORIZED)
- PARALLEL BLADE DAMPER (MOTORIZED) W/ END SWITCH

ABBREVIATIONS

(E)	EXISTING
°F	DEGREES FAHRENHEIT
2D	TWO-DIMENSIONAL
3D	THREE-DIMENSIONAL
AAC	ADVANCED APPLICATION CONTROLLER
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
ABV	ABOVE
AC	AIR CONDITIONING
ACB	ACTIVE CHILLED BEAM
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
ACFM	ABSOLUTE CUBIC FEET PER MINUTE
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AFM	AIRFLOW MEASURING DEVICE
AFMS	AIRFLOW MEASURING STATION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
ALT	ALTERNATOR
AO	ANALOG OUTPUT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
APPROX	APPROXIMATE
AS	AIR SEPARATOR
ASC	APPLICATION SPECIFIC CONTROLLER
ASR	AUTOMATIC SPRINKLER RISER
AX	AUXILIARY CONTACT
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BC	BUILDING CONTROLLER
BD	BACKDRAFT DAMPER
BDD	BACKDRAFT DAMPER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
CA	COMBUSTION AIR
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CB	CHILLED BEAM
CBCHW	CHILLED BEAM CHILLED WATER
CBHW	CHILLED BEAM HOT WATER
CC	COOLING COIL
CCDT	COOLING COIL DISCHARGE TEMPERATURE
CDSR	CONDENSER
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CURRENT INPUT
CIRC	CIRCULATING
CLG	COOLING
CM	CONTROL MODULE
CO	CLEAN OUT
CO2	CARBON DIOXIDE
COMP	COMPRESSOR
CONC	CONCRETE
COND	CONDENSATE
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CP	CONDENSATE PUMP
CR	CONTROL RELAY
CS	CLEAN STEAM
CSFD	COMBINATION SMOKE/FIRE DAMPER
CSR	CURRENT SWITCH OR CURRENT SENSING RELAY
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D	DAMPER
DAT	DRIP & TRAP
DB	DRY BULB TEMPERATURE
DBA	DECIBELS (A-WEIGHTED SCALE)
DBT	DRY BULB TEMPERATURE °F
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREES
DF	DIESEL FUEL
DI	DIGITAL INPUT
DIA	DIAMETER
DN	DOWN
DO	DIGITAL OUTPUT
DP	DIFFERENTIAL PRESSURE
DPS	DIFFERENTIAL PRESSURE SENSOR
DPT	DEW POINT TEMPERATURE °F
DTC	DRAIN TILE CONNECTION
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DX	DIRECT EXPANSION
EA	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECM	ELECTRONICALLY COMMUTATED MOTOR
ED	ENABLE / DISABLE
EDB	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	ETHYLENE GLYCOL WATER SOLUTION
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
EN	ENABLE / DISABLE
ENT	ENTERING
EP	ELECTRIC TO PNEUMATIC RELAY
EQ	EQUIVALENT
ERU	ENERGY RECOVERY UNIT
ES	END SWITCH
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EV	EXHAUST VALVE
EWB	ENTERING WET BULB TEMPERATURE
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERAL
F	FAHRENHEIT
F	FIRE PROTECTION SYSTEM - WET
F-DRY	FIRE PROTECTION SYSTEM - DRY
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAH	FAHRENHEIT
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FD/SD	COMBINATION FIRE AND SMOKE DAMPER
FDAT	FAN DISCHARGE AIR TEMPERATURE
FDC	FIRE DEPARTMENT CONNECTION
FFD	FUNNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FH	FUME HOOD
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FL	FLUE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONNECTION
FLR	FLOOR
FM	FLOW METER
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
FR	FIELD RELAY
FS	FLOW SWITCH
FSD	FIRE & SMOKE DAMPER
FT	FEET or FOOT
FTR	FIN TUBE RADIATION
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
FZ	FREEZESTAT
G	GLYCOL
GA	GAUGE
GAL	GALLONS
GCF	GARAGE CIRCULATION FAN
GCO	GRADE CLEAN OUT
GEF	GARAGE EXHAUST FAN
GIF	GARAGE INTAKE FAN
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRAINS
H	HEIGHT
HB	HOSE BIBB
HC	HEATING COIL
HEX	HEAT EXCHANGER
HG	MERCURY
HHW	HEATING HOT WATER
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HI	HIGH
HL	HIGH LEVEL
HO	HUB OUTLET
HP	HORSE POWER
HR	HOUR
HTG	HEATING
HUM	HUMIDIFIER
HVAC	HEATING VENTILATING AND AIR CONDITIONING
HYD	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IFB	INTEGRAL FACE AND BY-PASS
IN	INCHES
INST	INSTALLED
INV	INVERT
IPLV	INTEGRATED PART LOAD VALUE
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATTS
KWH	KILOWATT HOURS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS	POUNDS
LBS/HR	POUNDS PER HOUR
LBSHR	POUNDS PER HOUR
LCP	LOCAL CONTROL PANEL
LDB	LEAVING DRY BULB TEMPERATURE
LEF	LAB EXHAUST FAN
LL	LOW LEVEL
LO	LOW
LP	LOW POINT
LRA	LOCKED ROTOR AMPERES
LV	LEVEL
LVG	LEAVING
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBH	1000 BTU/HR
MC	MECHANICAL CONTRACTOR
MCA	MAXIMUM CURRENT AMPACITY
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MFR	MANUFACTURER
MH	MANHOLE
MHP	MOTOR HORSEPOWER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOCP	MAXIMUM OVER CURRENT PROTECTION
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)
MOCP	MAXIMUM OVER-CURRENT PROTECTION
MS	MOTOR STARTER
MSI	MASTER SYSTEMS INTEGRATER
MTG	MOUNTING
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NC	NOISE CRITERIA
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NPLV	NON STANDARD PART LOAD VALUE
NPSH	NET POSITIVE SUCTION HEAD
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
OAH	OUTDOOR AIR HUMIDITY
OAT	OUTDOOR AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER / CENTER TO CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
OPR	OPERATING
ORS	OVERFLOW ROOF SUMP
OSBY	OUTSIDE SCREEN AND YOKE
OV	OUTLET VELOCITY
OWS	OPERATOR WORK STATION
P	PUMP
PC	PLUMBING CONTRACTOR
PCB	PASSIVE CHILLED BEAM
PD	PRESSURE DROP (FEET OF WATER)
PG	PROPYLENE GLYCOL WATER SOLUTION
PH	PHASE
PHDT	PREHEAT DISCHARGE TEMPERATURE
PICGV	PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE
PMCS	POWER MONITORING & CONTROL SYSTEM
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRV	PRESSURE REGULATING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PSI(G)	POUNDS PER SQUARE INCH (GAUGE)
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE Q
P/T	PRESSURE / TEMPERATURE PORT
QTY	QUANTITY
RA	RETURN/RELIEF AIR
RAH	RETURN AIR HUMIDITY
RAT	RETURN AIR TEMPERATURE
RC	ROOF CONDUCTOR
RE	REFERENCE
RELA	RELIEF AIR
REQD	REQUIRED
RET	RETURN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RUNNING LOAD AMPS
RLF	RELIEF
RLMS	REFRIGERANT LEAK MONITORING SYSTEM
ROT	ROTATION MONITORING SENSOR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
RS	ROOF SUMP
RTU	ROOFTOP UNIT
S	SOLENOID
SA	SUPPLY AIR
SAN	SANITARY WASTE
SC	SELF CONTAINED UNIT
SCFM	STANDARD CUBIC FEET PER MINUTE
SD	SMOKE DAMPER/SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS	SENSIBLE
SF	SQUARE FEET
SG	SPECIFIC GRAVITY
SH	SHOWER
SL	SOUND LINING
SMW	SNOW MELT WATER
SP	STATIC PRESSURE (INCHES OF WATER)
SPD	SPEED
SPL	SOUND POWER LEVEL
SPS	STATIC PRESSURE SENSOR
SQ	SQUARE
SS	STAINLESS STEEL
STM	STEAM
SV	SUPPLY VALVE
SW	SWITCH
T	TEMPERATURE
T & P	TEMPERATURE AND PRESSURE
TAB	TESTING, ADJUSTING AND BALANCING
TC	TEMPERATURE CONTROL
TCC	TEMPERATURE CONTROLS CONTRACTOR
TEF	TOILET EXHAUST FAN
TH	THERMOSTAT
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TP	TOTAL PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
UR	URINAL
V	VOLTAGE/VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VIFB	VERTICAL INTEGRAL FACE AND BYPASS
VL	VALVE
VLP	VALVE POSITION
VO	VOLTAGE OUTPUT
VP	VIRTUAL POINT
VS	VIBRATION SWITCH
VTR	VENT THRU ROOF
W	WATTS/WIDTH
WAV	WASTE AND VENT
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WG	WATER GAUGE
WH	WALL HYDRANT
WMS	WIRE MESH SCREEN
YCO	YARD CLEAN OUT

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
CONTROLS DATA SHEET

SHEET NO.
M800

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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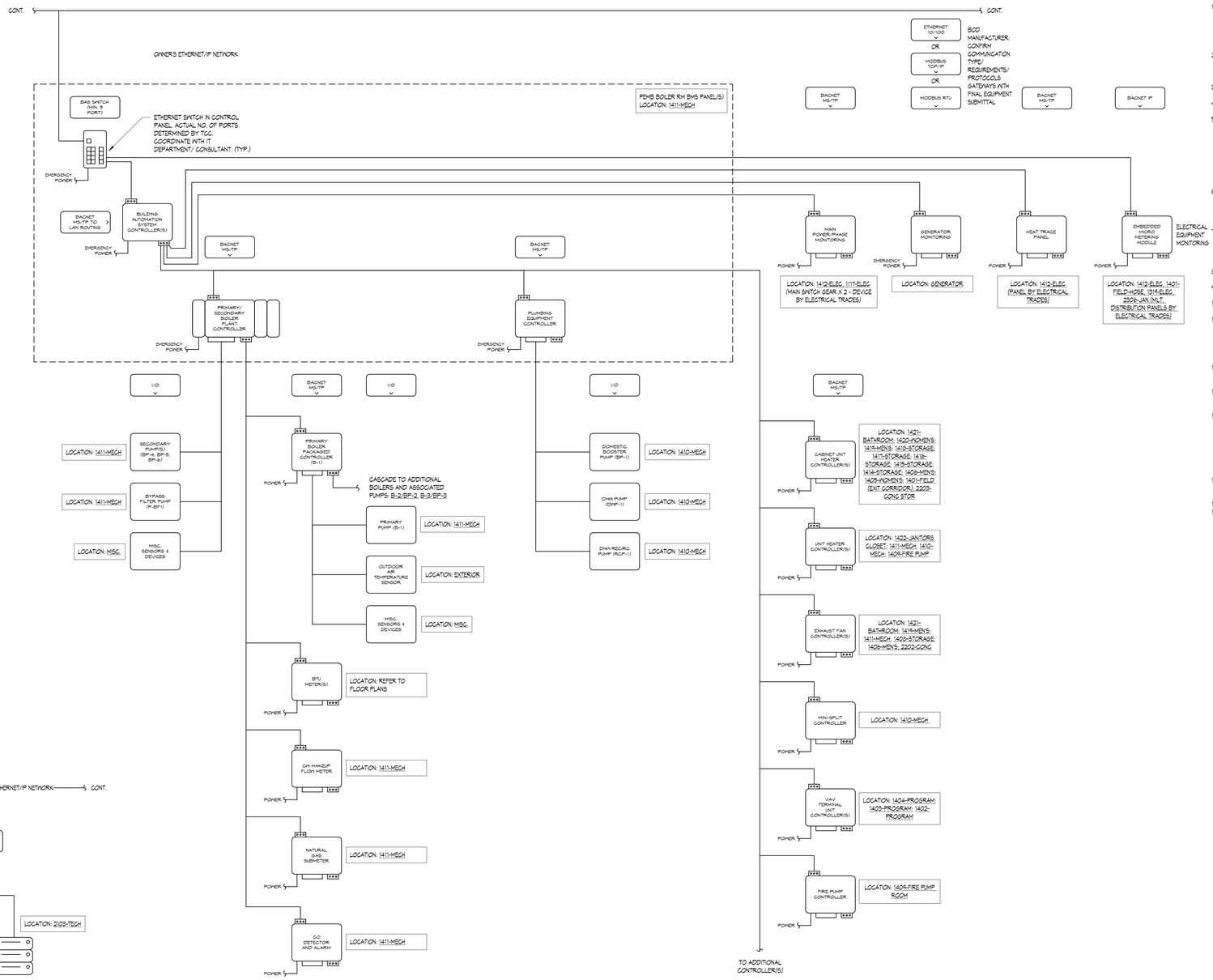

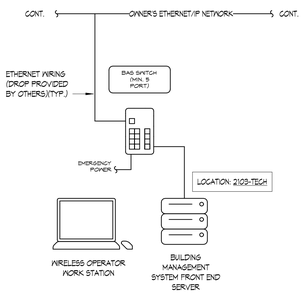

CONTROLS RISER DIAGRAM (FRONT-END SERVER)

NOT TO SCALE

CONTROLS RISER DIAGRAM (PEMB BOILER RM PANEL(S) - 1423)

NOT TO SCALE

BUILDING AUTOMATION SYSTEM RISER GENERAL NOTES - APPLICABLE TO ALL DIAGRAMS:

1. SCOPE SUMMARY: PROVIDE NEW BAS FRONT END SERVER. PROVIDE NEW BAS GATEWAYS/ENGINES/JACES. PROVIDE NEW IT DROP AT EACH PANEL LOCATION INDICATED OR AS REQUIRED PER TCC FINAL NETWORK LAYOUT/CONFIGURATION (TCC NETWORK LAYOUT CAN BE MORE BACNET MS/TP OR BACNET IP CENTRIC DESIGN AT THEIR DISCRETION) . PROVIDE NEW EQUIPMENT CONTROLLERS; 1-TO-1 UNLESS OTHERWISE SHOWN ABOVE. PROVIDE LOW VOLTAGE POWER SUPPLIES / TRANSFORMERS (15 AMP JB BY ELECTRICAL). ALL PANELS ASSOCIATED WITH PUMPS OR OTHER PIECES OF EQUIPMENT INTENDED TO RUN ON THE GENERATOR SHALL BE WIRED TO EMERGENCY POWER. ALL EXISTING CONTROLLERS TO BE REMOVED AND REPLACED. REMOVE ALL PNEUMATIC SYSTEMS COMPLETE (INCLUDING COMPRESSOR AND FILTER DRYER (TO BE RETURNED TO OWNER), PNEUMATIC TUBING, ETC. ADDITIONALLY, REPLACE EXISTING SENSORS, VALVES/DAMPER ACTUATORS, STATS, AND OTHER DEVICES THROUGHOUT THE EXISTING BUILDING.
2. NETWORK TOPOLOGY, CONFIGURATION, AND ORDER OF CONTROLLER CONNECTIONS ARE DIAGRAMMATIC. THESE DRAWINGS DEPICT THE DESIGN INTENT ONLY OF THE CONTROLS NETWORK. CONTROL SYSTEM SUBMITTAL DRAWINGS SHALL REFLECT THE ACTUAL AS-BUILT CONDITIONS, INCLUDING ORDER IN WHICH CONTROLLERS ARE CONNECTED WITHIN THE NETWORK. ADDITIONAL INDIVIDUAL ELEMENTS/POINTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; FIREWALLS; ETC.) MAY NOT BE SHOWN ON CONTROLS DRAWINGS; REFER TO THE DETAILS, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL DEVICES AND INSTRUCTIONS THAT ARE REQUIRED IN THE CONSTRUCTION OF THESE SYSTEMS. AN ANTICIPATED NETWORK RISER DIAGRAM IS REQUIRED DURING SUBMITTALS AND AN AS-BUILT NETWORK DIAGRAM SHALL BE SUBMITTED AT CLOSE OUT.
3. NETWORK CABLE LENGTHS SHALL BE LIMITED TO THE FOLLOWING: MS/TP (EIA-485 BASED) MAY GO UP TO 4,000 (WITH REPEATERS). BACNET IP UTILIZING CAT5/6 SHALL BE LIMITED TO 300FT (100M). IF LONGER ETHERNET RUNS ARE NEEDED, THE GAMECHANGER CAT6 CABLE CAN BE USED TO RAN UP TO 656FT FOR 10GB OR 850FT FOR 10MB. ADDITIONALLY, CONTROLLERS AND CABLE LENGTHS SHALL BE SUCH THAT IF A SINGLE CONTROLLER IN A DAISY-CHAINED CONNECTION GOES DOWN, COMMUNICATION SHALL NOT BE INHIBITED BETWEEN THE TWO ADJACENT CONTROLLERS AND LENGTHS SHALL NOT EXCEED WHAT IS STATED ABOVE.
4. REFER TO PLANS, SCHEDULES, ETC. FOR QUANTITIES.
5. TEMPERATURE CONTROLS CONTRACTOR IS RESPONSIBLE FOR A FULLY FUNCTION AND INTEGRATED CONTROLS SYSTEM COMPRISED OF ALL NECESSARY COMPONENTS, CONTROLLERS, PROTOCOLS, ETC.
6. THE MISC. SENSORS AND DEVICES INPUT/OUTPUT SYMBOL REFERS TO I/O POINTS THROUGHOUT THE SYSTEM WHICH WOULD INCLUDE BUT NOT LIMITED TO VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS, RELAYS AND CONTRACTORS, SWITCHES, TRANSDUCERS; GENERAL ALARMS, ETC. REFER TO CONTROLS DIAGRAMS AND SOO.
7. SINGLE LINE SHOWN FOR DIAGRAMMATIC PURPOSES AND RELATIONSHIP. PROVIDE WIRING PER SPECIFICATION.
8. ALL CONTROLS TO BE HOUSED IN BMS PANELS OR ENCLOSURES. QUANTITY OF PANELS TO BE REQUIRED BY TCC. REFER TO NOTES ABOVE AND IN DRAWINGS.
9. A (*) ON THE CONTROLLER NAME INDICATES A NEW CONTROLLER WILL BE PROVIDED AND WILL FEED SOME OR ALL EXISTING EQUIPMENT. ASSUMPTION FOR EXISTING EQUIPMENT IS VALVES AND DAMPER ACTUATORS, SENSORS, WIRING, ETC. WILL BE REPLACED IN ADDITION TO PROVIDING A NEW CONTROLLER.
10. REFER TO MECHANICAL PIPING FLOOR PLANS FOR ADDITIONAL INFORMATION ON THERMOSTATS, CONTROLS VALVES, ECT.

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS
3. DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL
4. COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM 3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
5. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION 5. TCC/MSI TO COORDINATE WITH THE OWNERS IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNERS IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MS TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNERS IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS. SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE

MECHANICAL CONTROLS RISER

SHEET NO.

M801

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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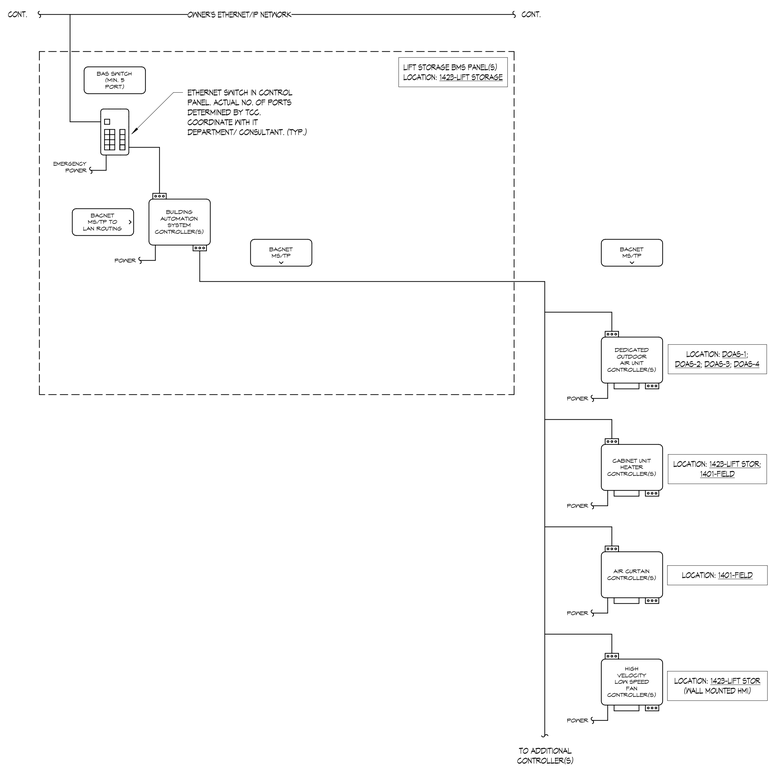
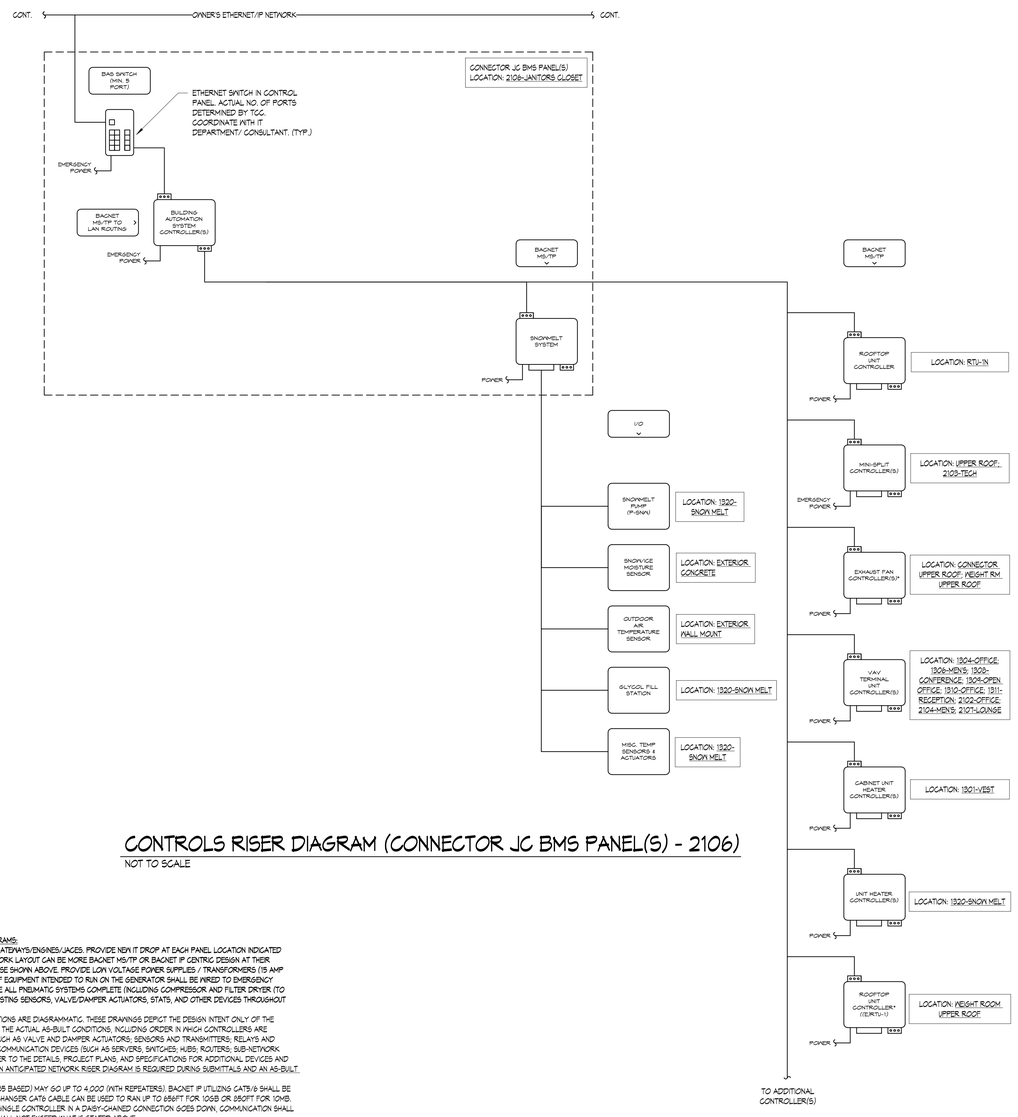


CONTROLS RISER DIAGRAM (LIFT STORAGE PANEL(S) - 1423)

NOT TO SCALE



CONTROLS RISER DIAGRAM (CONNECTOR JC BMS PANEL(S) - 2106)

NOT TO SCALE

BUILDING AUTOMATION SYSTEM RISER GENERAL NOTES - APPLICABLE TO ALL DIAGRAMS:

1. SCOPE SUMMARY: PROVIDE NEW BAS FRONT END SERVER. PROVIDE NEW BAS GATEWAYS/ENGINES/JACES. PROVIDE NEW IT DROP AT EACH PANEL LOCATION INDICATED OR AS REQUIRED PER TGC FINAL NETWORK LAYOUT/CONFIGURATION (TGC NETWORK LAYOUT CAN BE MORE BACNET MS/TP OR BACNET IP CENTRIC DEPEDING AT THEIR DISCRETION). PROVIDE NEW EQUIPMENT CONTROLLERS; 1-TO-1 UNLESS OTHERWISE SHOWN ABOVE. PROVIDE LOW VOLTAGE POWER SUPPLIES / TRANSFORMERS (15 AMP JB BY ELECTRICAL). ALL PANELS ASSOCIATED WITH PUMPS OR OTHER PIECES OF EQUIPMENT INTENDED TO RUN ON THE GENERATOR SHALL BE WIRED TO EMERGENCY POWER. ALL EXISTING CONTROLLERS TO BE REMOVED AND REPLACED. REMOVE ALL PNEUMATIC SYSTEMS COMPLETE (INCLUDING COMPRESSOR AND FILTER DRYER (TO BE RETURNED TO OWNER), PNEUMATIC TUBING, ETC. ADDITIONALLY, REPLACE EXISTING SENSORS, VALVE/DAMPER ACTUATORS, STATS, AND OTHER DEVICES THROUGHOUT THE EXISTING BUILDING.
2. NETWORK TOPOLOGY, CONFIGURATION, AND ORDER OF CONTROLLER CONNECTIONS ARE DIAGRAMMATIC. THESE DRAWINGS DEPICT THE DESIGN INTENT ONLY OF THE CONTROLS NETWORK. CONTROL SYSTEM SUBMITTAL DRAWINGS SHALL REFLECT THE ACTUAL AS-BUILT CONDITIONS, INCLUDING ORDER IN WHICH CONTROLLERS ARE CONNECTED WITHIN THE NETWORK. ADDITIONAL INDIVIDUAL ELEMENTS/POINTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; FIREWALLS, ETC.) MAY NOT BE SHOWN ON CONTROLS DRAWINGS. REFER TO THE DETAILS, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL DEVICES AND INSTRUCTIONS THAT ARE REQUIRED IN THE CONSTRUCTION OF THESE SYSTEMS. AN ANTICIPATED NETWORK RISER DIAGRAM IS REQUIRED DURING SUBMITTALS AND AN AS-BUILT NETWORK DIAGRAM SHALL BE SUBMITTED AT CLOSE OUT.
3. NETWORK CABLE LENGTHS SHALL BE LIMITED TO THE FOLLOWING: MS/TP (EIA-485 BASED) MAY GO UP TO 4,000 (WITH REPEATERS). BACNET IP UTILIZING CAT5/6 SHALL BE LIMITED TO 300FT (100M). IF LONGER ETHERNET RUNS ARE NEEDED, THE GAMECHANGER CAT6 CABLE CAN BE USED TO RAN UP TO 656FT FOR 10GB OR 850FT FOR 10MB. ADDITIONALLY, CONTROLLERS AND CABLE LENGTHS SHALL BE SUCH THAT IF A SINGLE CONTROLLER IN A DAISY-CHAINED CONNECTION GOES DOWN, COMMUNICATION SHALL NOT BE INHIBITED BETWEEN THE TWO ADJACENT CONTROLLERS AND LENGTHS SHALL NOT EXCEED WHAT IS STATED ABOVE.
4. REFER TO PLANS, SCHEDULES, ETC. FOR QUANTITIES.
5. TEMPERATURE CONTROLS CONTRACTOR IS RESPONSIBLE FOR A FULLY FUNCTION AND INTEGRATED CONTROLS SYSTEM COMPRISED OF ALL NECESSARY COMPONENTS, CONTROLLERS, PROTOCOLS, ETC.
6. THE MISC. SENSORS AND DEVICES INPUT/OUTPUT SYMBOL REFERS TO I/O POINTS THROUGHOUT THE SYSTEM WHICH WOULD INCLUDE BUT NOT LIMITED TO VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; GENERAL ALARMS, ETC. REFER TO CONTROLS DIAGRAMS AND SOO.
7. SINGLE LINE SHOWN FOR DIAGRAMMATIC PURPOSES AND RELATIONSHIP. PROVIDE WIRING PER SPECIFICATION.
8. ALL CONTROLS TO BE HOUSED IN BMS PANELS OR ENCLOSURES. QUANTITY OF PANELS TO BE REQUIRED BY TGC. REFER TO NOTES ABOVE AND IN DRAWINGS.
9. A (*) ON THE CONTROLLER NAME INDICATES A NEW CONTROLLER WILL BE PROVIDED AND WILL FEED SOME OR ALL EXISTING EQUIPMENT. ASSUMPTION FOR EXISTING EQUIPMENT IS VALVES AND DAMPER ACTUATORS, SENSORS, WIRING, ETC. WILL BE REPLACED IN ADDITION TO PROVIDING A NEW CONTROLLER.
10. REFER TO MECHANICAL PIPING FLOOR PLANS FOR ADDITIONAL INFORMATION ON THERMOSTATS, CONTROLS VALVES, ECT.

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TGC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS
3. DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TGC IS RESPONSIBLE TO PROVIDE ALL
4. COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM 3. TGC TO CONFIRM INITIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
5. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR
6. ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION 5. TGC/MSI TO COORDINATE WITH THE OWNERS IT DEPARTMENT AND IT CONTRACTOR AS
7. REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNERS IT NETWORK. TGC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TGC/MSI TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TGC, AND OWNERS IT DEPARTMENT AT TIME OF SUBMITTAL.
8. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH 2X120V CONTROL POWER AT EACH, REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TGC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
9. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
10. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
11. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR TIME DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
12. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT& NETWORK) SHALL BE INCLUDED ON GRAPHICS.
13. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
14. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
15. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
16. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS; SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) AND OCCUPANCY OVERRIDE WITH NO DISPLAY. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
17. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
18. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

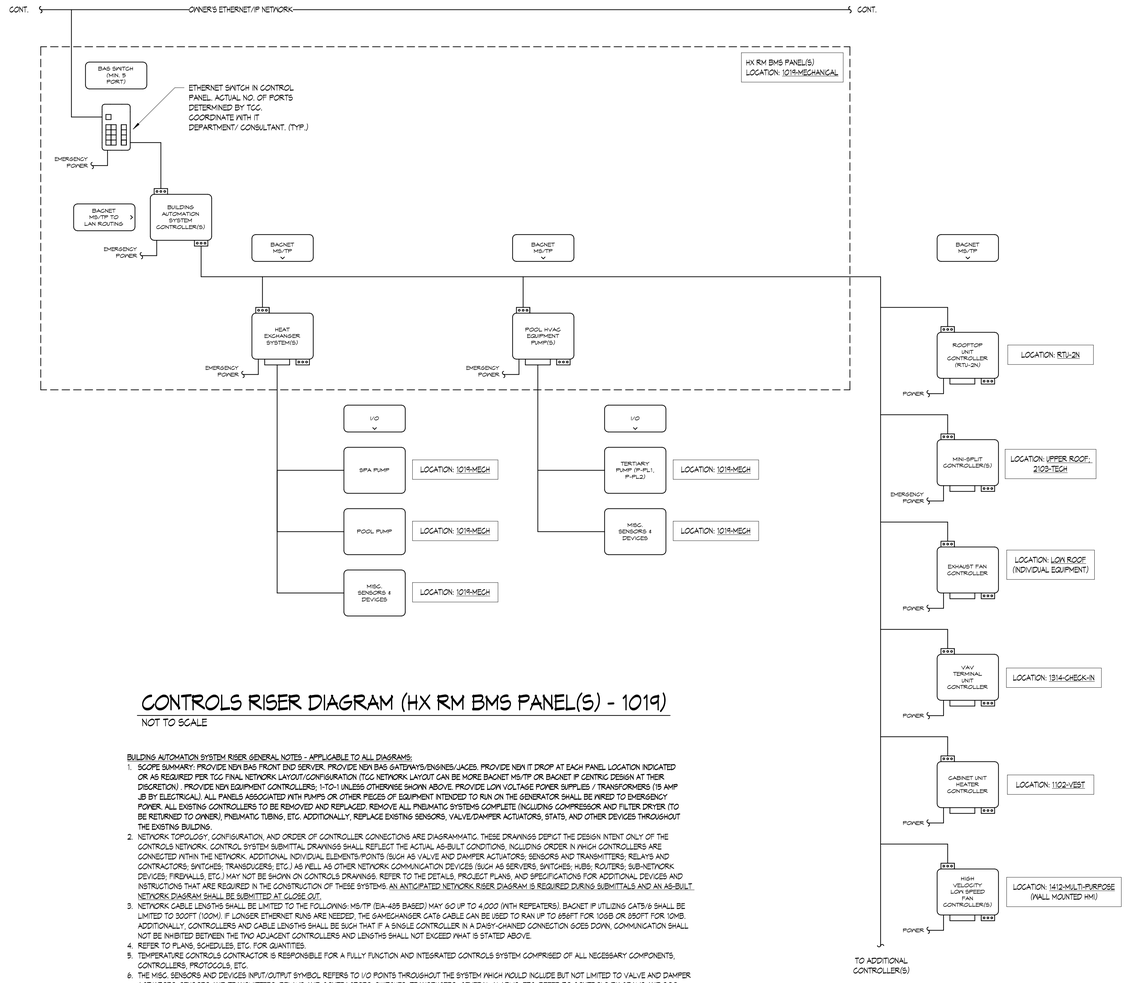
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS RISER

SHEET NO.
M802

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026



CONTROLS RISER DIAGRAM (HX RM BMS PANEL(S) - 1019)

NOT TO SCALE

BUILDING AUTOMATION SYSTEM RISER GENERAL NOTES - APPLICABLE TO ALL DIAGRAMS:

1. SCOPE SUMMARY: PROVIDE NEW BAS FRONT END SERVER. PROVIDE NEW BAS GATEWAYS/ENGINES/JACES. PROVIDE NEW IT DROP AT EACH PANEL LOCATION INDICATED OR AS REQUIRED PER TCC FINAL NETWORK LAYOUT/CONFIGURATION (TCC NETWORK LAYOUT CAN BE MORE BACNET MS/TP OR BACNET IP CENTRIC DESIGN AT THEIR DISCRETION) . PROVIDE NEW EQUIPMENT CONTROLLERS; 1-TO-1 UNLESS OTHERWISE SHOWN ABOVE. PROVIDE LOW VOLTAGE POWER SUPPLIES / TRANSFORMERS (15 AMP JB BY ELECTRICAL). ALL PANELS ASSOCIATED WITH PUMPS OR OTHER PIECES OF EQUIPMENT INTENDED TO RUN ON THE GENERATOR SHALL BE WIRED TO EMERGENCY POWER. ALL EXISTING CONTROLLERS TO BE REMOVED AND REPLACED. REMOVE ALL PNEUMATIC SYSTEMS COMPLETE (INCLUDING COMPRESSOR AND FILTER DRYER. ITO BE RETURNED TO OWNER). PNEUMATIC TUBING, ETC. ADDITIONALLY, REPLACE EXISTING SENSORS, VALVE/DAMPER ACTUATORS, STATS, AND OTHER DEVICES THROUGHOUT THE EXISTING BUILDING.
2. NETWORK TOPOLOGY, CONFIGURATION, AND ORDER OF CONTROLLER CONNECTIONS ARE DIAGRAMMATIC. THESE DRAWINGS DEPICT THE DESIGN INTENT ONLY OF THE CONTROLS NETWORK. CONTROL SYSTEM SUBMITTAL DRAWINGS SHALL REFLECT THE ACTUAL AS-BUILT CONDITIONS, INCLUDING ORDER IN WHICH CONTROLLERS ARE CONNECTED WITHIN THE NETWORK. ADDITIONAL INDIVIDUAL ELEMENTS/POINTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; FIREWALLS, ETC.) MAY NOT BE SHOWN ON CONTROLS DRAWINGS. REFER TO THE DETAILS, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL DEVICES AND INSTRUCTIONS THAT ARE REQUIRED IN THE CONSTRUCTION OF THESE SYSTEMS. AN ANTICIPATED NETWORK RISER DIAGRAM IS REQUIRED DURING SUBMITTALS AND AN AS-BUILT NETWORK DIAGRAM SHALL BE SUBMITTED AT CLOSE OUT.
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4. REFER TO PLANS, SCHEDULES, ETC. FOR QUANTITIES.
5. TEMPERATURE CONTROLS CONTRACTOR IS RESPONSIBLE FOR A FULLY FUNCTION AND INTEGRATED CONTROLS SYSTEM COMPRISED OF ALL NECESSARY COMPONENTS, CONTROLLERS, PROTOCOLS, ETC.
6. THE MISC. SENSORS AND DEVICES INPUT/OUTPUT SYMBOL REFERS TO I/O POINTS THROUGHOUT THE SYSTEM WHICH WOULD INCLUDE BUT NOT LIMITED TO VALVE AND DAMPER ACTUATORS, SENSORS AND TRANSMITTERS, RELAYS AND CONTRACTORS, SWITCHES, TRANSDUCERS, GENERAL ALARMS, ETC. REFER TO CONTROLS DIAGRAMS AND SOO.
7. SINGLE LINE SHOWN FOR DIAGRAMMATIC PURPOSES AND RELATIONSHIP. PROVIDE WIRING PER SPECIFICATION.
8. ALL CONTROLS TO BE HOUSED IN BMS PANELS OR ENCLOSURES. QUANTITY OF PANELS TO BE REQUIRED BY TCC. REFER TO NOTES ABOVE AND IN DRAWINGS.
9. A (*) ON THE CONTROLLER NAME INDICATES A NEW CONTROLLER WILL BE PROVIDED AND WILL FEED SOME OR ALL EXISTING EQUIPMENT. ASSUMPTION FOR EXISTING EQUIPMENT IS VALVES AND DAMPER ACTUATORS, SENSORS, WIRING, ETC. WILL BE REPLACED IN ADDITION TO PROVIDING A NEW CONTROLLER.
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2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS
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6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR TIME DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS. SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) WITH NO DISPLAY. SET-POINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS RISER

SHEET NO.
M803

THERESA LYN CARD
ENGINEER
No. 6201061679
STATE OF MICHIGAN

07/30/2026

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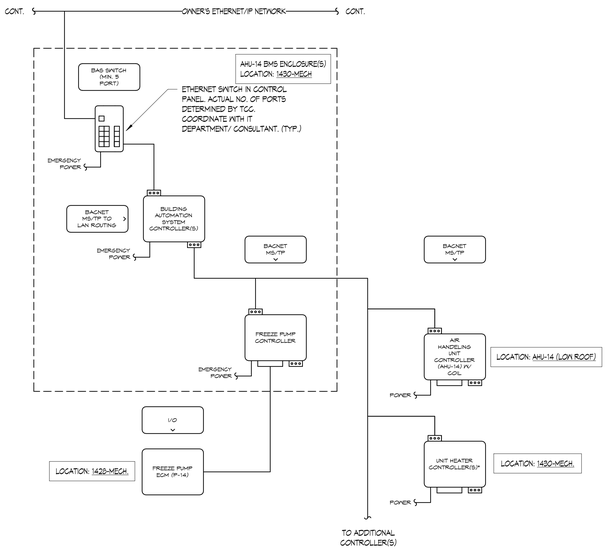
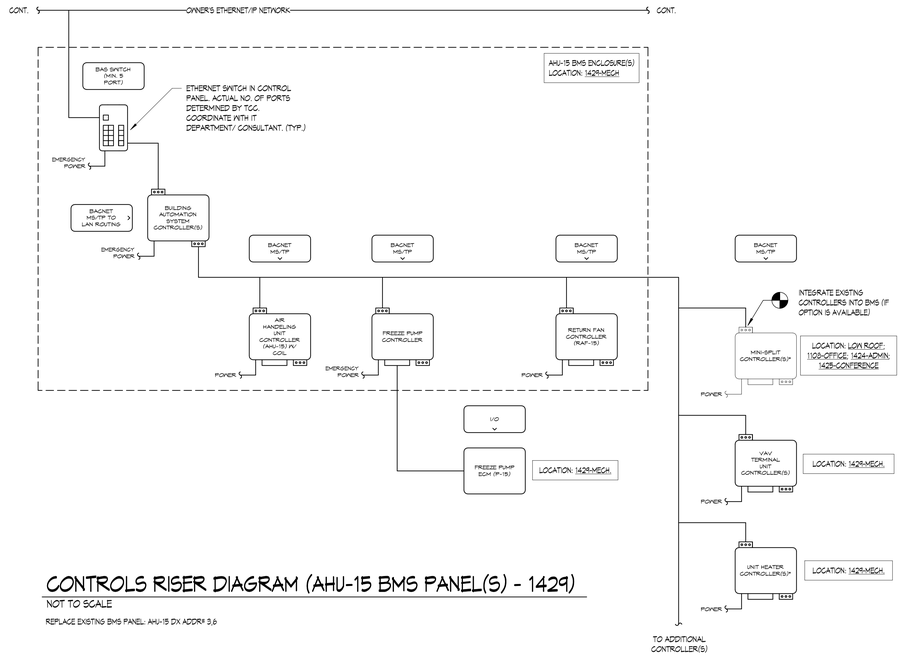


CONTROLS RISER DIAGRAM (AHU-14 BMS PANEL(S) - 1428)

NOT TO SCALE

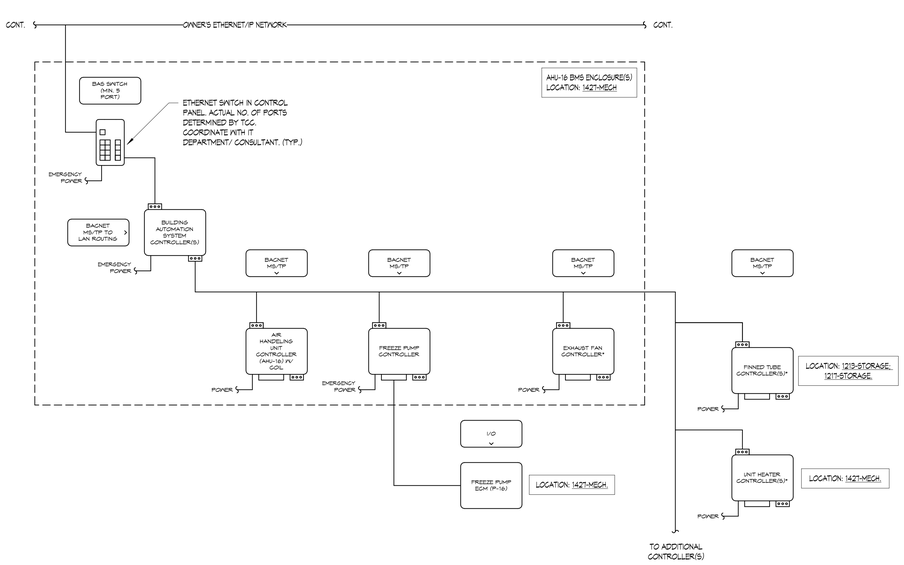
REPLACE EXISTING BMS PANEL: AHU-14 DX ADDR# 2/7



CONTROLS RISER DIAGRAM (AHU-15 BMS PANEL(S) - 1429)

NOT TO SCALE

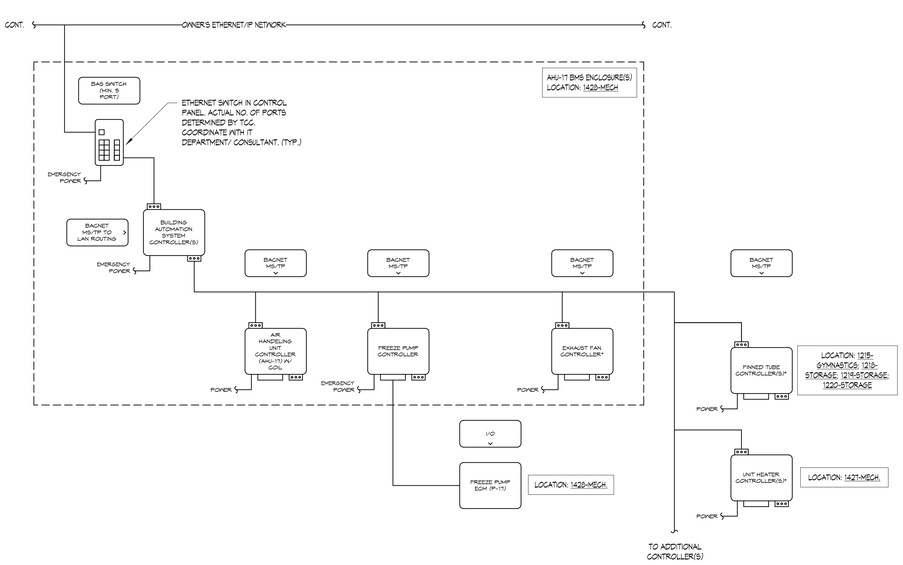
REPLACE EXISTING BMS PANEL: AHU-15 DX ADDR# 3,6



CONTROLS RISER DIAGRAM (AHU-16 BMS PANEL(S) - 1427)

NOT TO SCALE

REPLACE EXISTING BMS PANEL: AHU-16 UNT ADDR# 4



CONTROLS RISER DIAGRAM (AHU-17 BMS PANEL(S) - 1428)

NOT TO SCALE

REPLACE EXISTING BMS PANEL: AHU-17 UNT ADDR# 5

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
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4. COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
5. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MSI TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT4 NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS. SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

BUILDING AUTOMATION SYSTEM RISER GENERAL NOTES - APPLICABLE TO ALL DIAGRAMS:

1. SCOPE SUMMARY: PROVIDE NEW BAS FRONT END SERVER. PROVIDE NEW BAS GATEWAYS/ENGINES/JACES. PROVIDE NEW IT DROP AT EACH PANEL LOCATION INDICATED OR AS REQUIRED PER TCC FINAL NETWORK LAYOUT/CONFIGURATION (TCC NETWORK LAYOUT CAN BE MORE BACNET MS/TP OR BACNET IP CENTRIC DESIGN AT THEIR DISCRETION). PROVIDE NEW EQUIPMENT CONTROLLERS, 1-TO-1 UNLESS OTHERWISE SHOWN ABOVE. PROVIDE LOW VOLTAGE POWER SUPPLIES / TRANSFORMERS (15 AMP JB BY ELECTRICAL). ALL PANELS ASSOCIATED WITH PUMPS OR OTHER PIECES OF EQUIPMENT INTENDED TO RUN ON THE GENERATOR SHALL BE WIRED TO EMERGENCY POWER. ALL EXISTING CONTROLLERS TO BE REMOVED AND REPLACED. REMOVE ALL PNEUMATIC SYSTEMS COMPLETE (INCLUDING COMPRESSOR AND FILTER DRYER (TO BE RETURNED TO OWNER), PNEUMATIC TUBING, ETC. ADDITIONALLY, REPLACE EXISTING SENSORS, VALVE/DAMPER ACTUATORS, STATS, AND OTHER DEVICES THROUGHOUT THE EXISTING BUILDING.
2. NETWORK TOPOLOGY, CONFIGURATION, AND ORDER OF CONTROLLER CONNECTIONS ARE DIAGRAMMATIC. THESE DRAWINGS DEPICT THE DESIGN INTENT ONLY OF THE CONTROLS NETWORK. CONTROL SYSTEM SUBMITTAL DRAWINGS SHALL REFLECT THE ACTUAL AS-BUILT CONDITIONS, INCLUDING ORDER IN WHICH CONTROLLERS ARE CONNECTED WITHIN THE NETWORK. ADDITIONAL INDIVIDUAL ELEMENTS/POINTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; FIREWALLS, ETC.) MAY NOT BE SHOWN ON CONTROLS DRAWINGS. REFER TO THE DETAILS, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL DEVICES AND INSTRUCTIONS THAT ARE REQUIRED IN THE CONSTRUCTION OF THESE SYSTEMS. AN ANTICIPATED NETWORK RISER DIAGRAM IS REQUIRED DURING SUBMITTALS AND AN AS-BUILT NETWORK DIAGRAM SHALL BE SUBMITTED AT CLOSE OUT.
3. NETWORK CABLE LENGTHS SHALL BE LIMITED TO THE FOLLOWING: MS/TP (EIA-485 BASED) MAY GO UP TO 4,000 (WITH REPEATERS). BACNET IP UTILIZING CAT5/6 SHALL BE LIMITED TO 300FT (100M). IF LONGER ETHERNET RUNS ARE NEEDED, THE GAMECHANGER CAT6 CABLE CAN BE USED TO RAN UP TO 656FT FOR 10GB OR 850FT FOR 10MB. ADDITIONALLY, CONTROLLERS AND CABLE LENGTHS SHALL BE SUCH THAT IF A SINGLE CONTROLLER IN A DAISY-CHAINED CONNECTION GOES DOWN, COMMUNICATION SHALL NOT BE INHIBITED BETWEEN THE TWO ADJACENT CONTROLLERS AND LENGTHS SHALL NOT EXCEED WHAT IS STATED ABOVE.
4. REFER TO PLANS, SCHEDULES, ETC. FOR QUANTITIES.
5. TEMPERATURE CONTROLS CONTRACTOR IS RESPONSIBLE FOR A FULLY FUNCTION AND INTEGRATED CONTROLS SYSTEM COMPRISED OF ALL NECESSARY COMPONENTS, CONTROLLERS, PROTOCOLS, ETC.
6. THE MISC. SENSORS AND DEVICES INPUT/OUTPUT SYMBOL REFERS TO I/O POINTS THROUGHOUT THE SYSTEM WHICH WOULD INCLUDE BUT NOT LIMITED TO VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS, RELAYS AND CONTRACTORS, SWITCHES, TRANSDUCERS, GENERAL ALARMS, ETC. REFER TO CONTROLS DIAGRAMS AND SOO.
7. SINGLE LINE SHOWN FOR DIAGRAMMATIC PURPOSES AND RELATIONSHIP. PROVIDE WIRING PER SPECIFICATION.
8. ALL CONTROLS TO BE HOUSED IN BMS PANELS OR ENCLOSURES. QUANTITY OF PANELS TO BE REQUIRED BY TCC. REFER TO NOTES ABOVE AND IN DRAWINGS.
9. A (*) ON THE CONTROLLER NAME INDICATES A NEW CONTROLLER WILL BE PROVIDED AND WILL FEED SOME OR ALL EXISTING EQUIPMENT. ASSUMPTION FOR EXISTING EQUIPMENT IS VALVES AND DAMPER ACTUATORS, SENSORS, WIRING, ETC. ALL BE REPLACED IN ADDITION TO PROVIDING A NEW CONTROLLER.
10. REFER TO MECHANICAL PIPING FLOOR PLANS FOR ADDITIONAL INFORMATION ON THERMOSTATS, CONTROLS VALVES, ECT.

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KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS RISER

SHEET NO.
M804

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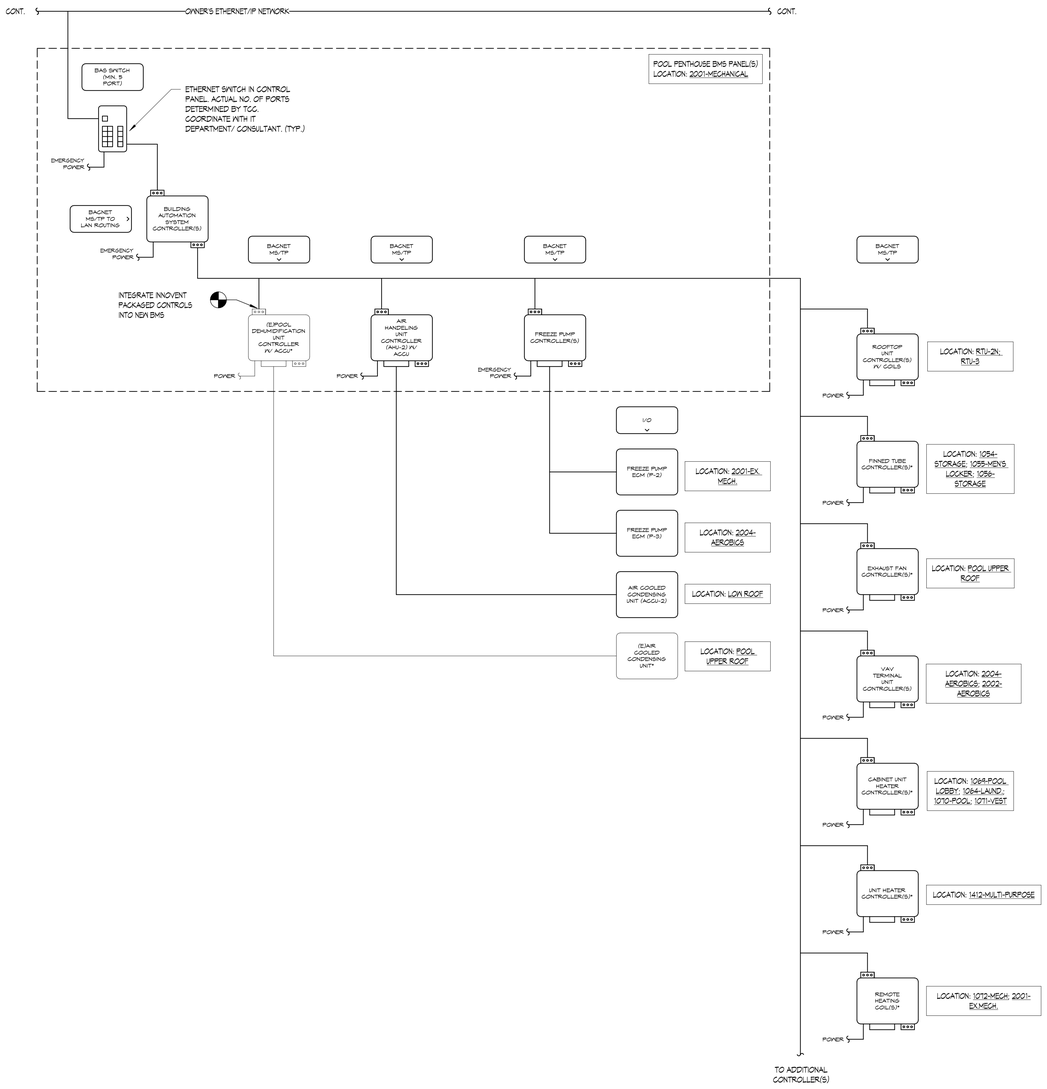
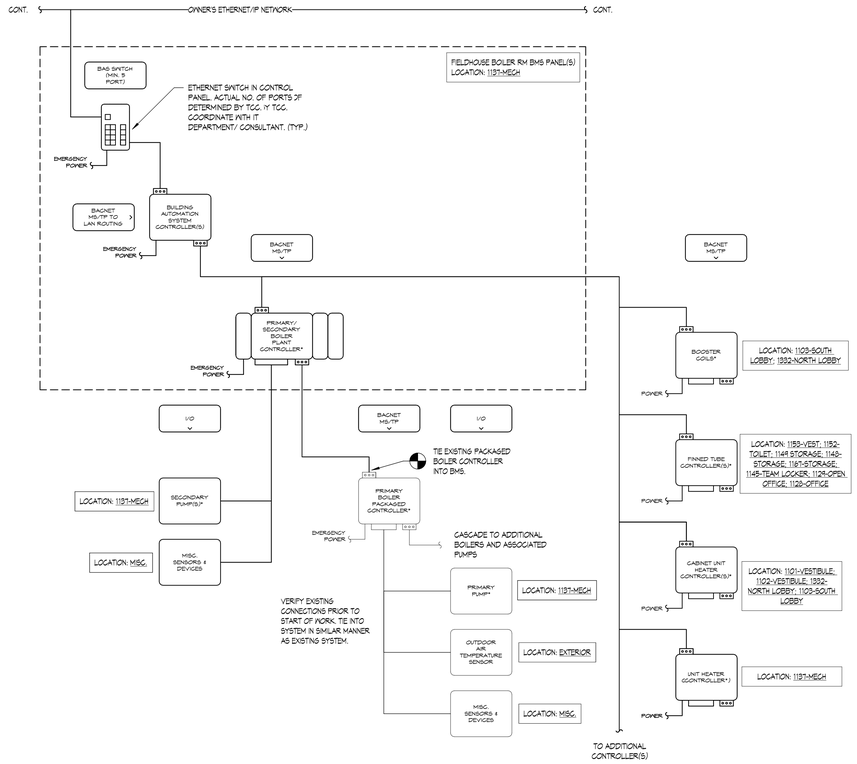
STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201081679
07/30/2026



CONTROLS RISER DIAGRAM (POOL PENTHOUSE BMS PANEL(S) - 2001)

NOT TO SCALE



CONTROLS RISER DIAGRAM (FIELDHOUSE BOILER RM BMS PANEL(S)-1137)

NOT TO SCALE

REPLACE EXISTING BMS PANEL(S): NCM-3 BOILER DX ADDR#1

BUILDING AUTOMATION SYSTEM RISER GENERAL NOTES - APPLICABLE TO ALL DIAGRAMS:

1. SCOPE SUMMARY: PROVIDE NEW BAS FRONT END SERVER. PROVIDE NEW BAS GATEWAYS/ENGINES/JACES. PROVIDE NEW IT DROP AT EACH PANEL LOCATION INDICATED OR AS REQUIRED PER TCG FINAL NETWORK LAYOUT/CONFIGURATION (TCG NETWORK LAYOUT CAN BE MORE BACNET MS/TP OR BACNET IP CENTRIC DESIGN AT THEIR DISCRETION) . PROVIDE NEW EQUIPMENT CONTROLLERS; 1-TO-1 UNLESS OTHERWISE SHOWN ABOVE. PROVIDE LON VOLTAGE POWER SUPPLIES / TRANSFORMERS (15 AMP JB BY ELECTRICAL). ALL PANELS ASSOCIATED WITH PUMPS OR OTHER PIECES OF EQUIPMENT INTENDED TO RUN ON THE GENERATOR SHALL BE WIRED TO EMERGENCY POWER. ALL EXISTING CONTROLLERS TO BE REMOVED AND REPLACED. REMOVE ALL PNEUMATIC SYSTEMS COMPLETE (INCLUDING COMPRESSOR AND FILTER DRYER. ITO BE RETURNED TO OWNER), PNEUMATIC TUBING, ETC. ADDITIONALLY, REPLACE EXISTING SENSORS, VALVE/DAMPER ACTUATORS, STATS, AND OTHER DEVICES THROUGHOUT THE EXISTING BUILDING.
2. NETWORK TOPOLOGY, CONFIGURATION, AND ORDER OF CONTROLLER CONNECTIONS ARE DIAGRAMMATIC. THESE DRAWINGS DEPICT THE DESIGN INTENT ONLY OF THE CONTROLS NETWORK. CONTROL SYSTEM SUBMITTAL DRAWINGS SHALL REFLECT THE ACTUAL AS-BUILT CONDITIONS, INCLUDING ORDER IN WHICH CONTROLLERS ARE CONNECTED WITHIN THE NETWORK. ADDITIONAL INDIVIDUAL ELEMENTS/POINTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; FIREWALLS; ETC.) MAY NOT BE SHOWN ON CONTROLS DRAWINGS. REFER TO THE DETAILS, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL DEVICES AND INSTRUCTIONS THAT ARE REQUIRED IN THE CONSTRUCTION OF THESE SYSTEMS. AN ANTICIPATED NETWORK RISER DIAGRAM IS REQUIRED DURING SUBMITTALS AND AN AS-BUILT NETWORK DIAGRAM SHALL BE SUBMITTED AT CLOSE OUT.
3. NETWORK CABLE LENGTHS SHALL BE LIMITED TO THE FOLLOWING: MS/TP (EIA-485 BASED) MAY GO UP TO 4,000 (WITH REPEATERS). BACNET IP UTILIZING CAT5/6 SHALL BE LIMITED TO 300FT (100M). IF LONGER ETHERNET RUNS ARE NEEDED, THE GAMECHANGER CAT6 CABLE CAN BE USED TO RAN UP TO 656FT FOR 10GB OR 850FT FOR 10MB. ADDITIONALLY, CONTROLLERS AND CABLE LENGTHS SHALL BE SUCH THAT IF A SINGLE CONTROLLER IN A DAISY-CHAINED CONNECTION GOES DOWN, COMMUNICATION SHALL NOT BE INHIBITED BETWEEN THE TWO ADJACENT CONTROLLERS AND LENGTHS SHALL NOT EXCEED WHAT IS STATED ABOVE.
4. REFER TO PLANS, SCHEDULES, ETC. FOR QUANTITIES.
5. TEMPERATURE CONTROLS CONTRACTOR IS RESPONSIBLE FOR A FULLY FUNCTION AND INTEGRATED CONTROLS SYSTEM COMPRISED OF ALL NECESSARY COMPONENTS, CONTROLLERS, PROTOCOLS, ETC.
6. THE MISC. SENSORS AND DEVICES INPUT/OUTPUT SYMBOL REFERS TO I/O POINTS THROUGHOUT THE SYSTEM WHICH WOULD INCLUDE BUT NOT LIMITED TO VALVE AND DAMPER ACTUATORS, SENSORS AND TRANSMITTERS, RELAYS AND CONTRACTORS, SWITCHES, TRANSDUCERS, GENERAL ALARMS, ETC. REFER TO CONTROLS DIAGRAMS AND SOO.
7. SINGLE LINE SHOWN FOR DIAGRAMMATIC PURPOSES AND RELATIONSHIP. PROVIDE WIRING PER SPECIFICATION.
8. ALL CONTROLS TO BE HOUSED IN BMS PANELS OR ENCLOSURES. QUANTITY OF PANELS TO BE REQUIRED BY TCG. REFER TO NOTES ABOVE AND IN DRAWINGS.
9. A (*) ON THE CONTROLLER NAME INDICATES A NEW CONTROLLER WILL BE PROVIDED AND WILL FEED SOME OR ALL EXISTING EQUIPMENT. ASSUMPTION FOR EXISTING EQUIPMENT IS VALVES AND DAMPER ACTUATORS, SENSORS, WIRING, ETC. WILL BE REPLACED IN ADDITION TO PROVIDING A NEW CONTROLLER.
10. REFER TO MECHANICAL PIPING FLOOR PLANS FOR ADDITIONAL INFORMATION ON THERMOSTATS, CONTROLS VALVES, ECT.

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCG/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS
3. DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCG IS RESPONSIBLE TO PROVIDE ALL
4. COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.3. TCG TO CONFIRM INITIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
5. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR
6. ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.5. TCG/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS
7. REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCG/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCG/MSI TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCG, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
8. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH 2X120V CONTROL POWER AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCG RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
9. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
10. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
11. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR TIME DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
12. ALL POINTS SHOWN ON THE DIAGRAM (DIRECTS NETWORK) SHALL BE INCLUDED ON GRAPHICS.
13. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
14. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
15. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
16. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS; SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) AND OCCUPANCY OVERRIDE WITH NO DISPLAY. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL
17. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
18. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.

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KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS RISER

SHEET NO.
M805

THERESA LYN CARD
ENGINEER
No. 6201061873
STATE OF MICHIGAN
07/30/2026

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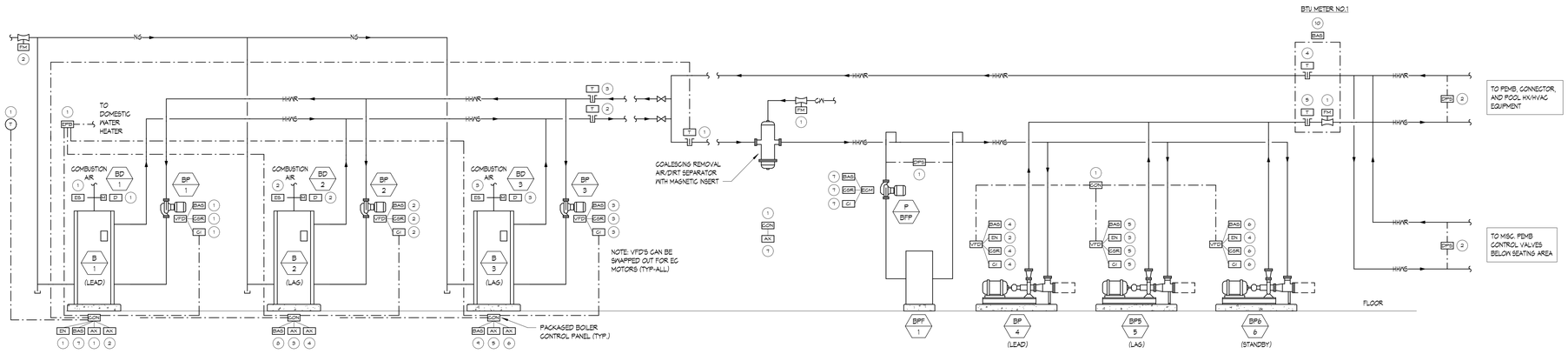

SEQUENCE OF OPERATION

GENERAL:
THE BOILER PLANT IS VARIABLE PRIMARY/ VARIABLE SECONDARY CONFIGURATION CONSISTING OF THREE (3) EQUALLY SIZED BOILERS, EACH SIZED FOR 50% OF THE HEATING LOAD WITH ONE UNIT BEING REDUNDANT. THE BOILERS SHALL INCLUDE PACKAGE CONTROLS AND BE WIRED TOGETHER PER MANUFACTURER INSTRUCTION. EACH BOILER SHALL HAVE A DEDICATED PRIMARY HEATING HOT WATER PUMP. EACH WITH A VFD TIED INTO THEIR RESPECTIVE BOILERS CONTROL PANEL. THREE (3) SECONDARY HEATING HOT WATER PUMPS ARE SIZED FOR 50% TOTAL DEMAND FLOW WITH ONE BEING REDUNDANT, HAVE VFDS, HAVE PACKAGED PARALLEL PUMPING CONTROLS, AND MODULATE TO MAINTAIN SYSTEM DIFFERENTIAL PRESSURE. REMOTE 3-WAY VALVES ARE USED TO PREVENT PUMP DEADHEAD IN LOW DEMAND CONDITIONS.

BOILER PLANT STAGING AND OPERATION:

THE BOILER CONTROLS SHALL BE PROVIDED BY THE MANUFACTURER AND SHALL BE RESPONSIBLE FOR CONTROLLING ALL BOILER FUNCTIONS INCLUDING, BUT NOT LIMITED TO, LEAD/LAG/STANDBY STAGING, EQUAL START/STOP TIMES, MONITORING/SETTING SYSTEM TEMPERATURE SETPOINTS, TEMPERATURE RESETS (T&R), PRIMARY PUMP MODULATION, AND FIRING RATE MODULATION. THE MANUFACTURER SHALL PROVIDE ALL NECESSARY DEVICES TO INTERFACE WITH THE BAS VIA BACNET.

THE BOILER PLANT/BAS SHALL INCLUDE AN ENABLING/DISABLE SCHEDULE THAT ALLOWS OPERATORS TO TURN-ON AND LOCK-OUT THE BOILER PLANT DURING ON-HOURS AND OFF-HOURS RESPECTIVELY.

START/STOP TIMES:

TO PREVENT SHORT CYCLING, THE BOILER PLANT SHALL HAVE A MINIMUM RUN TIME OF AT LEAST 15 MINS (ADJ.) SIMILARLY, ONCE DISABLED, THE BOILER PLANT SHALL BE OFF FOR A MINIMUM OF 15 MINS. (ADJ.) OR LONGER IF RECOMMENDED BY BOILER MANUFACTURER.

BOILERS SHALL BE LEAD/LAG/STANDBY AND ROTATED TO MAINTAIN EVEN WEAR. DURATION SHALL BE SET, ADJUSTED, AND MONITORED ON THE BAS.

ENABLE BOILER PLANT:

ENABLE BOILER PLANT WHEN THE NUMBER OF HEATING-HOT WATER PLANT REQUESTS EXCEEDS 5 REQUESTS (ADJ.) FROM ASSOCIATED HWV CONTROL VALVES, THE OAT IS LESS THAN OR EQUAL TO 70°F (ADJ.), AND THE ENABLING SCHEDULE IS ACTIVE.

WHEN THE BOILER PLANT IS ENABLED, STAGE ON THE LEAD PRIMARY HWV PUMP AND SECONDARY HWV PUMPS PER SEQUENCES BELOW. ONCE ASSOCIATED LEAD PRIMARY PUMP HAS PROVEN ON AND FLOW IS SENSED THROUGH THE LEAD BOILER, FIRE THE LEAD BOILER.

DISABLE BOILER PLANT:
WHEN THE BOILER PLANT IS DISABLED, SHUT OFF ENABLED BOILER(S). THEN DISABLE ASSOCIATED PRIMARY HWV PUMPS PER SEQUENCE. LASTLY, DISABLE SECONDARY HWV PUMPS PER SEQUENCE.

DISABLE THE BOILER PLANT WHEN THE NUMBER OF HEATING-HOT WATER PLANT REQUESTS IS LESS THAN 5 REQUESTS (ADJ.) FOR ASSOCIATED HWV CONTROL VALVES FOR 3 MINS. (ADJ.), THE OAT IS ABOVE 70°F (ADJ.), AND THE ENABLING SCHEDULE IS INACTIVE.

BOILERS (B-1, B-2 & B-3):

PRIOR TO ANY BOILER FIRING, THE ASSOCIATED BOILERS COMBUSTION AIR DAMPER SHALL OPEN. IF THE BOILER IS COMMANDED TO FIRE BUT THE DAMPER ISN'T OPEN, AS INDICATED BY AN END SWITCH, THE BOILER SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE LAG OR STANDBY BOILER SHALL FIRE PER SEQUENCE INDICATED BELOW.

BOILER CONTROLS SHALL STAGE AND MODULATE BOILERS AS FOLLOWS (OR SIMILAR PER BOILER MANUFACTURERS STANDARD OPERATING PROCEDURES):

1. WHEN THE LEAD BOILER IS ENABLED AND FLOW IS SENSED THROUGH THE BOILER, THE LEAD BOILER SHALL MODULATE THE FIRING RATE TO MAINTAIN THE HWV SUPPLY TEMPERATURE AT SETPOINT. ADDITIONAL BOILERS MAY BE STAGED ON, STAGED OFF, AND CAPACITIES MODULATED AS REQUIRED TO MOST EFFICIENTLY MEET THE TEMPERATURE SETPOINT.
2. IF THE LEAD BOILER FAILS TO START, THE BOILER CONTROL PANEL SHALL OPERATE THE LAG BOILER IN PLACE OF THE FAILED LEAD BOILER, AND THE STANDBY BOILER SHALL OPERATE AS THE LAG BOILER TO MEET HEATING DEMAND AND AN ALARM SHALL BE GENERATED AT THE BAS.
3. IF THE LAG BOILER FAILS TO START ON COMMAND, THE BOILER CONTROL PANEL SHALL OPERATE THE STANDBY BOILER IN PLACE OF THE FAILED LAG BOILER TO MEET HEATING DEMAND AND AN ALARM SHALL BE GENERATED AT THE BAS.

PRIMARY PUMP (VARIABLE FLOW CONTROL)

THE PRIMARY BOILER PUMPS SHALL BE MODULATED BY THEIR ASSOCIATED BOILER CONTROLLERS. IF THE FINAL BOILER SUBMITTAL DOES NOT ALLOW FOR MODULATION CONTROL, FOLLOW MANUFACTURER SEQUENCES AND WIRE ACCORDING TO MANUFACTURER REQUIREMENTS AND/OR PROVIDE SIMILAR SEQUENCING BELOW CONTROLLED BY THE BAS.

ENABLE THE PRIMARY PUMP WHEN THE ASSOCIATED BOILER IS ENABLED. DISABLE PRIMARY PUMPS OTHERWISE. AFTER BOILER FIRING IS DISABLED, THE ASSOCIATED PRIMARY PUMP SHALL CONTINUE TO RUN FOR 5 MINS (ADJ.) BEFORE BEING DISABLED TO MOVE RESIDUAL HEAT OUR OF THE BOILER HEAT EXCHANGER.

IF ANY PRIMARY PUMP FAILS, DISABLE ASSOCIATED BOILER AND GENERATE AN ALARM AT THE BAS. MOVE TO STANDBY BOILER.

THE PUMPS STATUS SHALL BE PROVIDED THROUGH THE VFD.

THE BOILER CONTROLLER SHALL VARY THE SPEED OF ITS ASSOCIATED PUMP TO (1) MAINTAIN MINIMUM FLOW THROUGH THE BOILER (REFER TO SCHEDULE, ADJ.) AND MINIMUM FLOW FOR THE PUMP (20%, ADJ.); (2) MAINTAIN A MINIMUM DELTA-T ACROSS THE HEAT EXCHANGER (REFER TO BOILER DESIGN DELTA-T, ADJ.); AND (3) PREVENT HIGH LIMIT LOCKOUTS (200°F, ADJ.) WHEN THE FLOW IN THE PRIMARY LOOP IS EXTREMELY LOW (I.E. INCREASE PUMP FLOW AS BOILER SUPPLY TEMPERATURE APPROACHES HIGH LIMIT). A SYSTEM SUPPLY TEMPERATURE SHALL BE HARD-WIRED INTO ONE OF THE BOILER CONTROLLERS.

SECONDARY PUMPS

SECONDARY PUMPS SHALL BE CONFIGURED LEAD/LAG/STANDBY AND ROTATED TO MAINTAIN EVEN WEAR. DURATION SHALL BE SET, ADJUSTED, AND MONITORED ON THE BMS.

ENABLE LEAD SECONDARY PUMP WHEN THE PLANT IS ENABLED AND ANY LOAD SERVED BY THE PUMP IS GENERATING A HEATING HOT WATER PLANT REQUEST. DISABLE THE LEAD PUMP OTHERWISE.

IF THE LEAD SECONDARY PUMP FAILS TO START, THE BAS SHALL OPERATE THE STANDBY PUMP IN PLACE OF THE FAILED LEAD PUMP, AND AN ALARM SHALL BE GENERATED AT THE BMS. IF THE STANDBY PUMP FAILS TO START, THE BAS SHALL OPERATE THE LAG PUMP IN PLACE OF THE FAILED STANDBY PUMP, AND AN ALARM SHALL BE GENERATED AT THE BMS.

THE PUMPS STATUS SHALL BE PROVIDED THROUGH THE VFD AND VERIFIED WITH A CURRENT SWITCH.

SECONDARY HW PUMPS SHALL BE CONTROLLED/STAGED THROUGH THE PUMP MANUFACTURER PROVIDED PARALLEL PUMPING CONTROLLER. PARALLEL PUMPING CONTROLLER SHALL OPERATE TO MAINTAIN DIFFERENTIAL PRESSURE BY OPERATING THE IDEAL NUMBER OF PUMPS (STAGING), ADJUSTING PUMP VFD SPEEDS (VARIABLE FLOW), AS WELL AS OPERATING PUMPS MOST EFFICIENTLY (ENERGY SAVINGS).

PUMP SPEED SHALL BE CONTROLLED TO MAINTAIN DIFFERENTIAL PRESSURE SETPOINT (AS DETERMINED BY THE BALANCING CONTRACTOR). ALL ENABLED PUMPS RECEIVE THE SAME SPEED SIGNAL. LOOP OUTPUT SHALL BE MAPPED FROM 0% AT MINIMUM PUMP SPEED (20% ADJ.) TO 100% AT PUMP MAXIMUM SPEED (REFER TO SCHEDULE) WHERE MULTIPLE DP SENSORS EXIST, PUMPS SHALL BE CONTROLLED TO THE HIGHEST SIGNAL OUTPUT (WORST CASE) OF ALL THE LOOP DP SENSORS.

HEATING HOT WATER SUPPLY TEMPERATURE RESET: REFER TO ASHRAE GUIDELINE 36 SECTION 5.1.14, AND 5.21.4. DELETE SECTION IF NOT APPLICABLE.

TIR LOGIC SHALL RESET THE SETPOINT (I.E. STATIC PRESSURE SETPOINT, TEMPERATURE SETPOINT, ETC.) BETWEEN THE MINIMUM SETPOINT AND MAXIMUM SETPOINT.

WHILE IN UNOCCUPIED MODE, THE SYSTEMS SETPOINT SHALL BE SET TO THE SYSTEMS INITIAL SETPOINT.

WHEN PLACED IN OCCUPIED MODE, THE EQUIPMENT IS PROVEN ON, AND AFTER AN INITIAL TIME DELAY, THE TIR LOGIC SHALL GRADUALLY REDUCE THE SETPOINT BY THE TRIM AMOUNT EVERY TIME STEP WHILE THE DOWNSTREAM ZONE, SYSTEM, OR EQUIPMENTS CUMULATIVE REQUESTS ARE BELOW THE REQUEST LIMIT. REFER TO THE VAV TERMINAL UNIT CONTROLS SEQUENCE OF OPERATIONS.

IF THE NUMBER OF CUMULATIVE REQUESTS EXCEEDS THE REQUEST LIMIT, RESPOND BY INCREASING THE SETPOINT IN INCREMENTS EQUAL TO MULTIPLYING THE RESPONSE AMOUNT BY THE NUMBER OF REQUESTS GENERATED EVERY TIME STEP, BUT NEVER EXCEEDING THE MAX. RESPONSE AMOUNT. EVERY TIME STEP REGARDLESS OF REQUEST COUNT, CONTINUE UNTIL THERE ARE LESS REQUESTS GENERATED THAN THE REQUEST LIMIT VALUE ALLOWS. AFTER SUCH EVENTS AND AFTER ANOTHER TIME DELAY, THE TIR LOGIC SHALL RESUME.

THE BAS SHALL GENERATE A RUNNING TOTAL OF THE REQUESTS GENERATED BY EACH ZONE TO IDENTIFY ZONES EXCESSIVELY DRIVING THE RESET LOGIC. IF A ZONE IS CAUSING ERRONEOUS RESULTS, THE WEIGHTED IMPORTANCE MULTIPLIER VALUE MAY BE SET TO 0.

INITIAL SETPOINT (TEMPERATURE):	140°F (ADJ.)
MAXIMUM SETPOINT (TEMPERATURE):	180°F (ADJ.)
MINIMUM SETPOINT (TEMPERATURE):	90°F (ADJ.)
TIME DELAY:	10 MINS
TIME STEP:	5 MINS
TRIM AMOUNT:	-2°F (ADJ.)
RESPONSE AMOUNT:	+3°F (ADJ.)
MAX RESPONSE AMOUNT:	+7°F (ADJ.)
REQUEST LIMIT:	5

BTU METERS:

BTU METERS SHALL BE PROVIDED AS INDICATED ON FLOOR PLANS AND/OR RISER DIAGRAMS. INTENT IS TO PROVIDE FLOW READINGS AND TEMPERATURE MEASUREMENTS AT SPECIFIC POINTS THROUGHOUT THE SYSTEM TO TREND AND VERIFY PROPER OPERATION.

PROVIDE AN ALARM TO BMS IF TEMPERATURE HWHS READING IS GREATER THAN +/- 10°F OF CURRENT HWV SETPOINT OR IF THERE ARE TEN (10) OR MORE HEATING REQUESTS FROM HEATING CONTROL VALVES DOWNSTREAM OF FLOW METER FOR 15 MINS (ADJ.) OR GREATER WITH NO CHANGE OR REDUCING FLOW RATE THROUGH METER. TGC TO MAP OUT ON BMS WHICH CONTROL VALVES ARE ASSOCIATED WITH WHAT BTU METER.

MONITOR, ALARM, AND SAFETIES

THE FOLLOWING SHALL BE MONITORED, TRENDED, AND SHOWN GRAPHICALLY ON THE BAS (AT A MINIMUM). INFORMATION READ AT BAS AND COLLECTED SHOULD INCLUDE INSTANANEOUS DATA, YEAR-TO-DATE DATA, AND PREVIOUS YEAR DATA:

BOILER
1. BOILER STATUS, STAGING, AND ALARMS
2. BOILER RUN TIMES AND START/STOPS
3. BOILER ENTERING AND LEAVING WATER TEMPERATURES
4. BOILER LOW AND HIGH LIMITS
5. SYSTEM SUPPLY WATER TEMPERATURE
6. GAS DEMAND, USAGE, AND PEAK
7. HWV DEMAND, USAGE, AND PEAK

PUMPS
1. PRIMARY PUMP SPEED, STATUS, AND ALARMS
2. SECONDARY PUMPS SPEED, STATUS, AND ALARMS
3. BYPASS FILTER PUMP SPEED, STATUS, AND ALARMS

SYSTEM
1. ALL TEMPERATURE POINTS INDICATED ON THE DIAGRAM
2. OUTDOOR AIR TEMPERATURE
3. SYSTEM DIFFERENTIAL PRESSURES
4. BYPASS FILTER DIFFERENTIAL PRESSURE
5. BTU METER & SYSTEM FLOW RATE

THE BOILER CONTROL PANEL(S) SHALL INDICATE ALL ALARMS TO THE BAS

AN EMERGENCY PUSH BUTTON LOCATED IN THE BOILER ROOM DISABLES THE BOILERS/ BOILERS CONTROLS. ADDITIONALLY, ALL ASSOCIATED PUMPS SHALL BE DISABLED EITHER FROM THE BOILER CONTROLLER OR BY THE BAS.

CO DETECTION AND ALARM PACKAGED SYSTEM SHALL BE PROVIDED IN THE BOILER ROOM TO DISABLE THE BOILER PLANT.

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M3.6

	HARDWARE							SOFTWARE		FAIL MODE			ALARM		
	ID DATA		POINT TYPE												
POINT NAME	TAG	NO.	AI	AO	BI	BO	AV	BV	TREND	SHOW ON GRAPHIC	FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM	ALARM LIMIT	REMARKS
HWV MULTI-BOILER PLANT (VARIABLE PRIMARY/ VARIABLE SECONDARY)																	
B-1 BOILER BAS NETWORK CONNECTION	BAS	7								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
B-1 COMBUSTION AIR DAMPER	D	1		■						■		■					120V DAMPER BY MANUFACTURER. COORDINATE POWER WITH ELECTRICAL. DAMPER TO BE ON EMERGENCY POWER WERE BOILER IS ON EMERGENCY POWER.
B-1 COMBUSTION AIR DAMPER END SWITCH	ES	1	■							■					■		
B-1 ENABLE/DISABLE	EN	1				■			COV	■							
B-1 GENERAL ALARM STATUS	AX	1			■					■					■		
B-1 RUNTIME STATUS	AX	2			■				COV	■					■		
B-2 BOILER BAS NETWORK CONNECTION	BAS	8								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
B-2 COMBUSTION AIR DAMPER	D	2		■						■		■					120V DAMPER BY MANUFACTURER. COORDINATE POWER WITH ELECTRICAL. DAMPER TO BE ON EMERGENCY POWER WERE BOILER IS ON EMERGENCY POWER.
B-2 COMBUSTION AIR DAMPER END SWITCH	ES	2	■							■					■		
B-2 GENERAL ALARM STATUS	AX	3			■					■					■		
B-2 RUNTIME STATUS	AX	4			■				COV	■					■		
B-3 BOILER BAS NETWORK CONNECTION	BAS	9								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
B-3 COMBUSTION AIR DAMPER	D	3		■						■		■					120V DAMPER BY MANUFACTURER. COORDINATE POWER WITH ELECTRICAL. DAMPER TO BE ON EMERGENCY POWER WERE BOILER IS ON EMERGENCY POWER.
B-3 COMBUSTION AIR DAMPER END SWITCH	ES	3	■							■					■		
B-3 GENERAL ALARM STATUS	AX	5			■					■					■		
B-3 RUNTIME STATUS	AX	6			■				COV	■					■		
BP-1 BAS NETWORK CONNECTION	BAS	1								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
BP-1 SPEED CONTROL	CI	1		■						■							0-10V DIRECT OUTPUT FROM BOILER CONTROL PANEL TO BOILER PUMP
BP-1 STATUS	CSR	1			■				COV	■					■		
BP-2 SPEED CONTROL	CI	2		■						■							0-10V DIRECT OUTPUT FROM BOILER CONTROL PANEL TO BOILER PUMP
BP-2 STATUS	CSR	2			■				COV	■					■		
BP-2 VFD NETWORK CONNECTION	BAS	2								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
BP-3 SPEED CONTROL	CI	3		■						■							0-10V DIRECT OUTPUT FROM BOILER CONTROL PANEL TO BOILER PUMP
BP-3 STATUS	CSR	3			■				COV	■					■		
BP-3 VFD NETWORK CONNECTION	BAS	3								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
BP-4 ENABLE/DISABLE	EN	2				■				■							
BP-4 SPEED CONTROL	CI	4		■						■							
BP-4 STATUS	CSR	4			■				COV	■					■		
BP-4 VFD NETWORK CONNECTION	BAS	4								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
BP-5 ENABLE/DISABLE	EN	3				■				■							
BP-5 SPEED CONTROL	CI	5		■						■							
BP-5 STATUS	CSR	5			■				COV	■					■		
BP-5 VFD NETWORK CONNECTION	BAS	5								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
BP-6 ENABLE/DISABLE	EN	4				■				■							
BP-6 SPEED CONTROL	CI	6		■						■							
BP-6 STATUS	CSR	6			■				COV	■					■		
BP-6 VFD NETWORK CONNECTION	BAS	6								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
BTU METER NO.1 HWV FLOW METER	FM	1	■						1 MINS	■							
BTU METER NO.1 HWHR TEMPERATURE	T	4	■						1 MINS	■							
BTU METER NO.1 HWHS TEMPERATURE	T	5	■						1 MINS	■							
BTU METER NO.1 NETWORK CONNECTION	BAS	10								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
CO DETECTOR & ALARM INPUT	AX	7			■				COV	■					■		
CO DETECTOR & ALARM PANEL	GCN	1								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
EMERGENCY SHUT-OFF	EPB	1			■					■							
HWHR TEMPERATURE (BOILER SIDE)	T	3	■						1 MINS	■							
HWHS TEMPERATURE (BOILER SIDE)	T	2	■						1 MINS	■							
LEAD BOILER HWHS TEMPERATURE	T	1	■						1 MINS	■							TIE SYSTEM SUPPLY TEMPERATURE DIRECTLY INTO BOILER CONTROL PANEL
MAKE-UP WATER FLOW METER	FM	1	■						1 MINS	■							
NG FLOW METER	FM	2	■						1 MINS	■							
OUTDOOR AIR TEMPERATURE SENSOR	T	1	■						10 MINS	■							LOCATE WEATHER STATION IN FULLY SHADDED LOCATION AWAY FROM THERMAL MASS BODIES
P-BFP BMS NETWORK CONNECTION	BAS	7								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
P-BFP SPEED CONTROL	CI	7		■						■							
P-BFP STATUS	CSR	7			■				COV	■					■		
PARALLEL PUMPING CONTROLLER	GCN	1								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS

HHW MULTI-BOILER PLANT (VARIABLE PRIMARY/ VARIABLE SECONDARY) CONTROLS DIAGRAM

NOT TO SCALE

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TGC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TGC IS RESPONSIBLE TO PROVIDE ALL COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.
3. TGC TO CONFIRM INITIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
4. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.
5. TGC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TGC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TGC/MSI TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TGC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH 24VAC/V CONTROL POWER AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TGC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR TIME DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT& NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS; SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) AND OCCUPANCY OVERRIDE WITH NO DISPLAY. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS (PEMB BOILER PLANT)

SHEET NO.
M806

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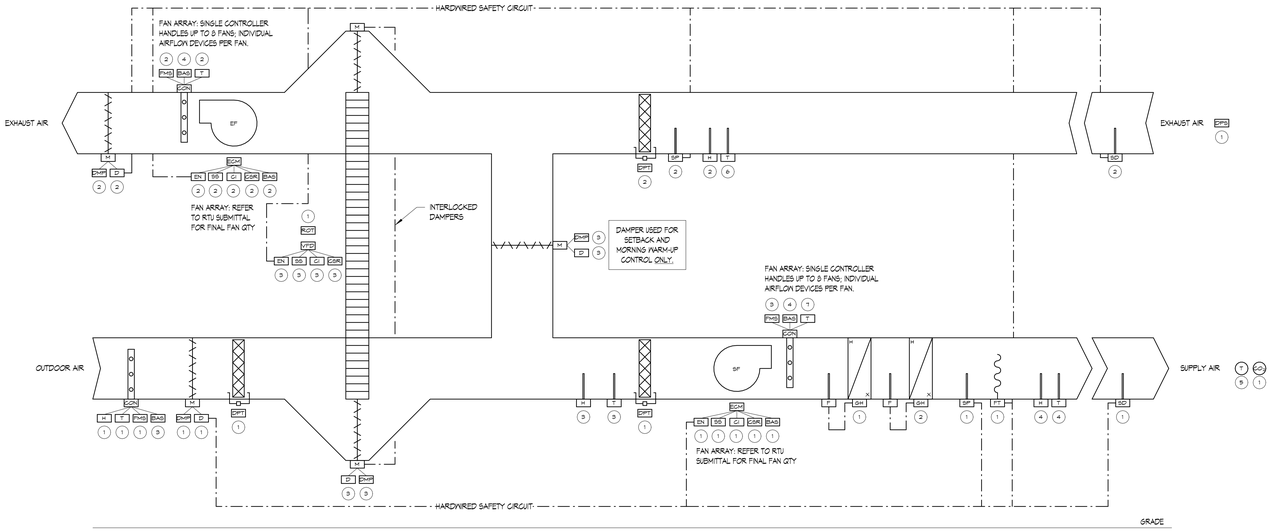

SEQUENCE OF OPERATION

GENERAL:

IMPORTANT: THE DOAS UNITS ARE INTENDED TO RUN IN UNISON WITH EACH OTHER; THEY ARE NOT TO BE STAGED NOR ARE ANY OF THEM CONSIDERED REDUNDANT. IF ANY OUTDOOR AIRFLOW MEASURING DEVICE OR EXHAUST AIRFLOW MEASURING DEVICE, COIL DISCHARGE AIR TEMPERATURE, OR OCCUPIED SETPOINT (TEMPERATURE OR CO2) ARE OUTSIDE OF +/-10% OF ANY OTHER UNITS VALUES, GENERATE AN ALARM REPORT AT THE BMS FLAGGING DIFFERENCES FOR INVESTIGATION. DO NOT DISABLE ANY UNITS.

THE SINGLE-ZONE VAV DEDICATED OUTDOOR AIR UNIT (W/ GAS FIRED HEATING AND ERW) SEQUENCES PROVIDED ARE INTENDED TO BE PERFORMANCE BASED. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY USING DIFFERENT UNDERLYING LOGIC WILL BE ACCEPTABLE. THE SEQUENCES AND REQUIREMENTS ARE BASED IN PART ON ASHRAE GUIDELINE 36-2021, ASHRAE 62.1-2016, ASHRAE 90.1-2013, AND MMG-2021. CONTRACTOR TO REFER STANDARDS AS REQUIRED TO MEET INTENT.

CONTROLS ARE TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR.

ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, PID GAINS, ETC. LISTED IN THE SEQUENCE SHALL BE ADJUSTABLE BY THE OWNER. ADDITIONALLY, ALL POINT VALUES SHALL BE OVERRIDABLE (FOR TESTING AND COMMISSIONING PURPOSES). EXCEPTION BEING, THOSE POINTS WHICH WOULD EFFECT EQUIPMENT OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER ELECTRONIC COMMUTATED MOTORS OR WITH VARIABLE FREQUENCY DRIVES; REFER TO SCHEDULES AND SPECS FOR MOTOR TYPES.

SAFETIES HARD-WIRED INTO THE FANS VFDS INDICATE GENERAL INTENT FOR ENABLING/DISABLING VFD UPON SIGNAL FROM THE ASSOCIATED DEVICE (I.E. SMOKE DETECTORS, FREEZESTATS, HIGH/LOW PRESSURE SWITCHES, ETC.) TTG TO PROVIDE ALL NECESSARY TUBING, WIRING, CONTACTORS/RELAYS, ETC. FOR FULLY FUNCTIONAL SYSTEM.

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 55ºF. MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 85ºF.

SETPOINTS:

OCCUPIED COOLING SETPOINT:	75ºF (ADJ.) (ONLY WHEN ECONOMIZER IS ABLE TO BRING AIR IN BETWEEN 50ºF AND 65ºF.
OCCUPIED HEATING SETPOINT:	70ºF (ADJ.)
UNOCCUPIED COOLING SETPOINT:	NONE
UNOCCUPIED HEATING SETPOINT:	60ºF (ADJ.)

VERIFY ALL SETPOINTS WITH OWNER.

SETPOINT SHALL ALWAYS MAINTAIN A 5ºF DEADBAND AND TEMPERATURE CONTROLS SHALL HAVE SETPOINT OVERLAP RESTRICTIONS.

OPERATING MODES:

EACH UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES: (1) OCCUPIED MODE, (2) WARM-UP MODE, (4) SETBACK MODE, (5) ECONOMIZER 'COOLING MODE', AND (5) UNOCCUPIED MODE.

UNOCCUPIED MODE: DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER (D-1) AND EXHAUST AIR DAMPER (D-2) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-3) SHALL BE OPEN; THE FANS SHALL BE STOPPED; THE TEMPERATURE CONTROLS LOOP SHALL BE IN DEADBAND.

SETBACK MODE: WHILE IN UNOCCUPIED MODE, IF THE UNIT FALLS-BELOW ITS UNOCCUPIED HEATING SETPOINT, THE UNIT SHALL ENTER SETBACK MODE UNTIL THE ZONE IS 3ºF ABOVE THE UNOCCUPIED SETPOINT VALUE. DURING SETBACK MODE, THE OUTDOOR AIR (D-1) AND EXHAUST AIR DAMPER (D-2) SHALL BE CLOSED, THE RETURN AIR DAMPER (D-3) SHALL BE 100% OPEN.

WARM-UP MODE: PROVIDE A CALCULATED OPTIMIZED START ALGORITHM USED FOR BUILDING WARM-UP MODE. IN WARM-UP MODE, THE OUTDOOR AIR DAMPER (D-1) AND EXHAUST AIR DAMPER (D-2) SHALL BE CLOSED; THE RETURN AIR DAMPER SHALL BE 100% OPEN. THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MAXIMUM DISCHARGE AIR TEMPERATURE. WARM-UP MODE SHALL SWITCH TO OCCUPIED MODE ONCE THE ZONE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR SCHEDULED OCCUPIED TIME IS REACHED.

NOTE: GH WILL BE THE FIRST STAGE OF WARM-UP - IF TEMPERATURES STAY NEUTRAL OR CONTINUE TO FALL WITH GHS N PEMB RUNNING, ACTIVATE UNITS.

OCCUPIED MODE: ENTER OCCUPIED MODE WHEN THE TIME OF DAY SCHEDULE STARTS OCCUPIED MODE; OR IF PLACED IN OCCUPIED MODE MANUALLY; OR IF WARM-UP HAS REACHED OCCUPIED TEMPERATURE.

SUPPLY FAN ARRAY CONTROL:

THE SUPPLY FAN ARRAY SHALL RUN WHEN THE SYSTEM IS OPERATING IN ALL MODES EXCEPT UNOCCUPIED MODE.

UPON PROOF OF SUCCESSFUL START AND OPERATION OF THE SUPPLY FAN ARRAY, THE OUTDOOR AIR DAMPER (D-1) AND EXHAUST AIR DAMPER (D-2) SHALL FULLY OPEN AND THE RETURN AIR DAMPER (D-3) SHALL FULLY CLOSE.

THE SUPPLY FAN ARRAY SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE AHU CONTROLLER (OR BAS) WHEN IN AUTO.

THE SUPPLY FAN ARRAY SHALL GO TO ITS MINIMUM SPEEDS INITIALLY (AS DETERMINED BY TAB, REFER TO SCHEDULE FOR MINIMUM AIRFLOW). THEN FAN ARRAYS SPEED SHALL BE MODULATED UP AS REQUIRED TO MAINTAIN THE WORSE CASE CONDITION OF EITHER: (1) MAINTAINING SPACE TEMPERATURE OR (2) MAINTAINING MINIMUM OUTDOOR AIR REQUIREMENTS (BASED ON OCCUPANCY COUNT (I.E. CO2)).

PROVIDE A RAMP FUNCTION TO PREVENT CHANGES IN FAN SPEED OF MORE THAN 10% PER MIN.

THE SUPPLY FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

(1) SPACE TEMPERATURE CONTROL:

AS SPACE TEMPERATURE DECREASES, THE UNIT SHALL MODULATE THE NG BURNERS TO MAINTAIN OCCUPIED HEATING SETPOINT. THE HEATING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE MAXIMUM DISCHARGE AIR TEMPERATURE , AT WHICH POINT, BOTH THE MECHANICAL HEATING SYSTEM AND THE SUPPLY FAN ARRAY WILL MODULATE UP TOGETHER TO MAINTAIN OCCUPIED HEATING SETPOINT AND MAXIMUM DISCHARGE AIR TEMPERATURE .

AS SPACE TEMPERATURE BEGINS TO INCREASE, THE PROCESS SHALL WORK IN REVERSE ORDER.

(2) MINIMUM OUTDOOR AIR CONTROL:

AMBIENT CO2 READING IN LOCAL AREA SHALL BE DETERMINED AND INPUT INTO THE BMS. ASSUMPTION AND SEQUENCE BELOW ASSUME 400 PPM CO2. ADJUST AS REQUIRED.

UPON RISING CO2 CONCENTRATION LEVEL ABOVE 1300 PPM (900 PPM ABOVE AMBIENT - ASHRAE 62.1-2022), THE SUPPLY FAN ARRAY SHALL INCREASE AIRFLOW UNTIL CO2 LEVELS ARE BELOW 1200 PPM. THE SUPPLY FAN SHALL NOT GO PAST ITS MAXIMUM SCHEDULED AIRFLOW RATE.

INVERSELY, UPON FALLING CO2 CONCENTRATION LEVELS BELOW 1100 PPM, THE SUPPLY FAN ARRAY SHALL DECREASE AIRFLOW UNTIL CO2 CONCENTRATION LEVELS ARE AT 1200 PPM. THE SUPPLY FAN ARRAY SHALL NOT GO PAST ITS MINIMUM SCHEDULED AIRFLOW RATE.

DEAD BAND OCCURS BETWEEN CO2 CONCENTRATION LEVELS BETWEEN 1100 PPM AND 1200 PPM.

OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN OUTDOOR AIRFLOW MEASURING DEVICE.

EXHAUST FAN ARRAY CONTROL:

THE EXHAUST FAN ARRAY SHALL BE ENABLED WHEN THE ASSOCIATED SUPPLY FAN ARRAY IS PROVEN ON.

START, STOP, AND MODULATE THE EXHAUST FAN TO MAINTAIN BUILDING STATIC PRESSURE (DPS-1) AT A SETPOINT OF 0.5 IN W.C.

THE EXHAUST FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

STATIC PRESSURE SENSOR SHALL BE LOCATED INTELLIGENTLY WITHIN THE PEMB.

ECONOMIZER 'COOLING' MODE CONTROL:

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE AND THE TEMPERATURE IS ABOVE OCCUPIED COOLING SETPOINT, THE UNIT SHALL MODULATE THE ERW, THE ERW BYPASS DAMPERS, AND THE SUPPLY FAN ARRAY TO MAINTAIN THE OCCUPIED COOLING SETPOINT USING THE COOLER OUTDOOR AIR. DISCHARGE AIR TEMPERATURE SHALL FLOAT BETWEEN 50ºF AND 70ºF. THE ECONOMIZER (IN CONJUNCTION WITH THE ERW) IS THE ONLY STAGE OF COOLING.

NOTE: VENTILATION REQUIREMENTS SUPERSEDE ECONOMIZER CONTROL AIRFLOW MINIMUMS.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE EXCEEDS EXHAUST AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75ºF, THE SUPPLY FAN ARRAY SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION. THE BYPASS DAMPERS SHALL BE CLOSED.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45ºF, THE SUPPLY FAN(S) SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION. THE BYPASS DAMPER SHALL BE CLOSED.

ECONOMIZER SECTION SHALL HAVE FAULT DETECTION AND DIAGNOSTICS.

ENTHALPY WHEEL CONTROL:

DURING UNOCCUPIED MODE, THE ENTHALPY WHEEL SHALL BE STOPPED.

IN OCCUPIED MODE, IF THE OUTDOOR AIR ENTHALPY (CALCULATED) IS GREATER THAN THE RETURN AIR ENTHALPY (CALCULATED) OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75ºF, THE UNIT SHALL MODULATE THE ENTHALPY WHEEL TO MAX SPEED. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF COOLING.

IN OCCUPIED MODE, WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE DISCHARGE AIR TEMPERATURE, THE ENTHALPY WHEEL SHALL MODULATE SPEED TO MAINTAIN REQUIRED DISCHARGE TEMPERATURE. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF HEATING.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

FIRE ALARM MODE CONTROL: THE SUPPLY FAN SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL. SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE RESET MANUALLY AT THE UNIT.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. THE FREEZE STAT SHALL AUTOMATICALLY ATTEMPT TO RESET. IF THE STAT TRIPS AGAIN AND/OR FAILS TO RESET THREE (3) TIMES WITHIN A 24 HOUR PERIOD, THE UNIT SHALL GENERATE A NEW ALARM AND REQUIRED A MANUALLY RESET.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN AND EXHAUST FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BMS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BMS. REFER TO FAN ARRAY SEQUENCES FOR ADDITIONAL INFORMATION.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED AS LONG AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

VALVE POSITION: KNOWLEDGE OF VALVE POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING POINT ACTUATOR CAN BE USED AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF VALVE POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5ºF FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BMS.

PROVIDE AIR-ECONOMIZER FAULT DETECTION AND DIAGNOSTICS.

SUPPLY AIR TEMPERATURE: IF THE SUPPLY AIR TEMPERATURE AS MEASURED BY THE DISCHARGE AIR TEMPERATURE SENSOR (T-4) IS OUTSIDE THE RANGE OF 50ºF OR 100ºF FOR MORE THAN 10 MINS, DEENERGIZE UNIT FANS AND GENERATE AN ALARM AT THE BMS.

ROTATION ALARM: IF THE ENERGY RECOVERY WHEEL FAILS TO ROTATE WHEN INDICATED BY THE ROT SENSOR, GENERATE AN ALARM AT THE BAS.

DEDICATED OUTDOOR AIR UNIT (GAS & ERW) CONTROLS DIAGRAM

NOT TO SCALE

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.
3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
4. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.
5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MSI TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT# NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS; SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (CSTF) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M8.1

POINT NAME	TAG	NO.	HARDWARE: AI	AO	BI	BO	AV	BV	SOFTWARE: TREND	SHOW ON GRAPHIC	FAIL MODE: FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM	ALARM LIMIT	REMARKS
DEDICATED OUTDOOR AIR UNIT (GAS & ERW)																	
AFMS BMS NETWORK CONNECITON	BAS	3															MS/TP
ERW BYPASS DAMPER POSITION FEEDBACK	DMP	3	■						10 MINS	■							
ERW ROTATION MONITORING SENSOR	ROT	1				■									■		
ERW VFD ENABLE/DISABLE	EN	3				■				■							
ERW VFD SPEED CONTROL	CI	3		■					10 MINS	■			■				
ERW VFD START/STOP	SS	3				■				■		■					CONNECT TO VFD RUN
ERW VFD STATUS	CSR	3			■				COV	■					■		CONNECT TO VFD STATUS
EWR BYPASS DAMPER CONTROL	D	3		■						■		■					
EXHAUST AFMS BMS NETWORK CONNECITON	BAS	4															FROM AFMS CONTROLLER; HARDWIRE POINT TO DOAS CONTROLLER
EXHAUST AIR DAMPER CONTROL	D	2		■						■		■					
EXHAUST AIR DAMPER POSITION FEEDBACK	DMP	2	■						10 MINS	■							
EXHAUST AIR TEMPERATURE	T	2	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
EXHAUST AIRFLOW MEASURING STATION	FMS	2	■						1 MINS	■					■		FROM AFMS CONTROLLER; HARDWIRE POINT TO DOAS CONTROLLER
EXHAUST FAN ARRAY CONTROLLER NETWORK CONNECTION	BAS	2															MS/TP - PULL ALL AVAILBLE POINTS TO READ AT BMS
EXHAUST FAN ARRAY ENABLE/DISABLE	EN	2				■				■							
EXHAUST FAN ARRAY SPEED	CI	1		■					10 MINS	■			■				
EXHAUST FAN ARRAY START/STOP	SS	2				■				■		■					
EXHAUST FAN ARRAY STATUS	CSR	2			■				COV	■					■		
FREEZESTAT STATUS	FT	1				■				■					■	LOW: 38ºF	
GAS FIRED HEATER 1 CONTROLLER	GH	1		■						■		■					PROVIDE W/ AIRFLOW SWITCH
GAS FIRED HEATER 2 CONTROLLER	GH	2		■						■		■					PROVIDE W/ AIRFLOW SWITCH
HIGH STATIC PRESSURE SAFETY SWITCH	SP	1	■							■					■	4" W.C.	
HIGH STATIC PRESSURE SAFETY SWITCH	SP	2	■							■					■	4" W.C.	
LEAVING AIR HUMIDITY	H	4	■						10 MINS	■							
OA FILTER STATUS	DPT	2	■							■					■	1" W.C.	
OP FILTER STATUS	DPT	1	■							■					■	1" W.C.	
OUTDOOR AIR DAMPER CONTROL	D	1		■						■		■					
OUTDOOR AIR DAMPER POSITION FEEDBACK	DMP	1	■						10 MINS	■							
OUTDOOR AIR HUMIDITY	H	1	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
OUTDOOR AIR TEMPERATURE	T	1	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
OUTDOOR AIRFLOW MEASURING STATION	FMS	1	■						1 MINS	■					■		FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
POST WHEEL / MIXED AIR HUMIDITY	H	3	■						10 MINS	■							
POST WHEEL / MIXED AIR TEMPERATURE	T	3	■						10 MINS	■							
RETURN AIR DAMPER CONTROL	D	3		■						■	■						
RETURN AIR DAMPER POSITION FEEDBACK	DMP	3	■						10 MINS	■							
RETURN AIR DUCT SMOKE DETECTOR	SD	2			■					■					■		PROVIDED BY DIV 28
RETURN AIR HUMIDITY	H	2	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
RETURN AIR TEMPERATURE	T	6	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
SUPPLY AFMS BMS NETWORK CONNECITON	BAS	4															FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
SUPPLY AIR DUCT SMOKE DETECTOR	SD	1			■					■					■		PROVIDED BY DIV 28
SUPPLY AIR TEMPERATURE	T	7	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
SUPPLY AIRFLOW MEASURING STATION	FMS	3	■						1 MINS	■					■		FROM AFMS CONTROLLER; HARDWIRE POINT TO DOAS CONTROLLER.
SUPPLY FAN ARRAY CONTROLLER NETWORK CONNECTION	BAS	1															MS/TP - PULL ALL AVAILBLE POINTS TO READ AT BMS
SUPPLY FAN ARRAY ENABLE/DISABLE	EN	1				■				■							
SUPPLY FAN ARRAY SPEED	CI	1		■					10 MINS	■			■				
SUPPLY FAN ARRAY START/STOP	SS	1				■				■		■					
SUPPLY FAN ARRAY STATUS	CSR	1			■				COV	■					■		
SUPPLY FILTER STATUS	DPT	1	■							■					■	1" W.C.	
UNIT LEAVING AIR TEMPERATURE	T	4	■						10 MINS	■					■	LOW: 50ºF / HIGH: 100ºF	
ZONE CO2	CO2	1	■						1 MINS	■					■	+25% SETPOINT	
ZONE TEMPERATURE	T	5	■						1 MINS	■					■	LOW: 50ºF / HIGH: 85ºF	
ZONE/BUILDING STATIC PRESSURE SENSOR	DPS	1	■						1 MINS	■					■		LOCATE IN ROOM XXX. MAINTAIN 0.03-0.05 IN. W.C.

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STATE OF MICHIGAN

07/30/2026

KINGSCOTT
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS (DOAS)

SHEET NO.
M807

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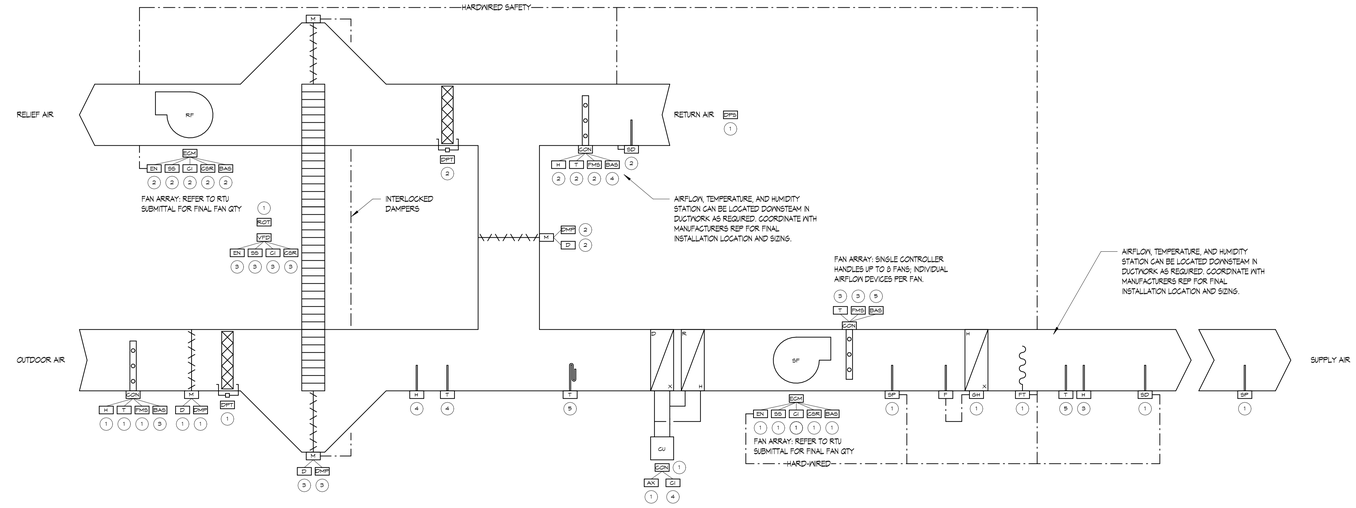


SEQUENCE OF OPERATION

GENERAL:

THE MULTIPLE-ZONE VAV ROOFTOP UNIT (IV/ DX COOLING, HOT GAS REHEAT, NATURAL GAS BURNER, AND ENERGY RECOVERY WHEEL) SEQUENCES PROVIDED ARE INTENDED TO BE PERFORMANCE BASED. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY USING DIFFERENT UNDERLYING LOGIC WILL BE ACCEPTABLE. THE SEQUENCES AND REQUIREMENTS ARE BASED IN PART ON ASHRAE GUIDELINE 36-2021, ASHRAE 62.1-2016, ASHRAE 90.1-2013, AND MMC-2021. CONTRACTOR TO REFER STANDARDS AS REQUIRED TO MEET INTENT.

CONTROLS ARE TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR. FOR REFRIGERATION CONTROLS, THE MANUFACTURER SHALL PROVIDE A REFRIGERATION CONTROLLER AND/OR TERMINAL STRIP. CONTROLS CONTRACTOR IS REQUIRED TO COORDINATE WITH THE PURCHASED REFRIGERATION EQUIPMENT TO DETERMINE FINAL CONTROL POINTS, FUNCTIONALITY, SEQUENCING, ETC.

ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, PID GAINS, ETC. LISTED IN THE SEQUENCE SHALL BE ADJUSTABLE BY THE OWNER. ADDITIONALLY, ALL POINT VALUES SHALL BE OVERRIDABLE (FOR TESTING AND COMMISSIONING PURPOSES). EXCEPTION BEING, THOSE POINTS WHICH WOULD EFFECT EQUIPMENT OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER ELECTRONIC COMMUTATED MOTORS OR WITH VARIABLE FREQUENCY DRIVES; REFER TO SCHEDULES AND SPECS FOR MOTOR TYPES.

SAFETIES HARD-WIRED INTO THE FANS VFDS INDICATE GENERAL INTENT FOR ENABLING/DISABLING VFD UPON SIGNAL FROM THE ASSOCIATED DEVICE (I.E. SMOKE DETECTORS, FREEZESTATS, HIGH/LOW PRESSURE SWITCHES, ETC.) TTC TO PROVIDE ALL NECESSARY TUBING, WIRING, CONTACTORS/RELAYS, ETC. FOR FULLY FUNCTIONAL SYSTEM.

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 55°F. MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 65°F IN OCCUPIED MODE. IN SETUP OR WARM-UP MODE, MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 95°F.

TRIM AND RESPOND: REFER TO ASHRAE GUIDELINE 36 SECTION 5.1.14.

TIR LOGIC SHALL RESET THE SETPOINT (I.E. STATIC PRESSURE SETPOINT, TEMPERATURE SETPOINT, ETC.) BETWEEN THE MINIMUM SETPOINT AND MAXIMUM SETPOINT.

WHILE IN UNOCCUPIED MODE, THE SYSTEMS SETPOINT SHALL BE SET TO THE SYSTEMS INITIAL SETPOINT.

WHEN PLACED IN OCCUPIED MODE, THE EQUIPMENT IS PROVEN ON, AND AFTER AN INITIAL TIME DELAY, THE TIR LOGIC SHALL GRADUALLY REDUCE THE SETPOINT BY THE TRIM AMOUNT EVERY TIME STEP WHILE THE DOWNSTREAM ZONE, SYSTEM, OR EQUIPMENTS CUMULATIVE REQUESTS ARE BELOW THE REQUEST LIMIT. REFER TO THE VAV TERMINAL UNIT CONTROLS SEQUENCE OF OPERATIONS.

IF THE NUMBER OF CUMULATIVE REQUESTS EXCEEDS THE REQUEST LIMIT, RESPOND BY INCREASING THE SETPOINT IN INCREMENTS EQUAL TO MULTIPLYING THE RESPONSE AMOUNT BY THE NUMBER OF REQUESTS GENERATED EVERY TIME STEP, BUT NEVER EXCEEDING THE MAX RESPONSE AMOUNT. EVERY TIME STEP REGARDLESS OF REQUEST COUNT, CONTINUE UNTIL THERE ARE LESS REQUESTS GENERATED THAN THE REQUEST LIMIT VALUE ALLOWS. AFTER SUCH EVENTS AND AFTER ANOTHER TIME DELAY, THE TIR LOGIC SHALL RESUME.

THE BAS SHALL GENERATE A RUNNING TOTAL OF THE REQUESTS GENERATED BY EACH ZONE TO IDENTIFY ZONES EXCESSIVELY DRIVING THE RESET LOGIC. IF A ZONE IS CAUSING ERRONEOUS RESULTS, THE *WEIGHTED IMPORTANCE MULTIPLIER* VALUE MAY BE SET TO 0.

ZONE GROUP 1 OPERATING MODES: REFER TO ASHRAE GUIDELINE 36 SECTION 5.4.

EACH SYSTEM SHALL BE BROKEN INTO ZONE GROUPS (ISOLATION ZONES) DETERMINED BY THE TCC. TCC TO COMPLY WITH REQUIREMENTS IN ASHRAE GUIDELINE 36-2021, SECTION 5.4 AND ASHRAE 90.1-2013 SECTION 6.4.3.3.4.

EACH ZONE AND/OR ZONE GROUP SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES: (1) OCCUPIED MODE, (2) WARM-UP MODE, (3) COOLDOWN MODE, (4) SETBACK MODE, (5) SETUP MODE, AND (6) UNOCCUPIED MODE.

UNOCCUPIED MODE. DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN; THE FANS SHALL BE STOPPED; THE TEMPERATURE CONTROLS LOOP SHALL BE IN DEADBAD.

SETBACK/SETUP MODE. WHILE IN UNOCCUPIED MODE, IF ANY 3 ZONES IN A ZONE GROUP FALLS-BELOW OR RISE-ABOVE THEIR UNOCCUPIED HEATING OR COOLING SETPOINT OR IF THE AVERAGE OF ALL ZONES WITHIN A ZONE GROUP FALL-BELOW OR RISE-ABOVE THE UNOCCUPIED HEATING OR COOLING SETPOINT, THE UNIT SHALL ENTER SETBACK OR SETUP MODE UNTIL ALL SPACES IN THE ZONE GROUP ARE 1°F ABOVE OR BELOW THEIR UNOCCUPIED SETPOINT VALUE. IF ANY 1 ZONE FALLS-BELOW 15°F THE UNOCCUPIED HEATING SETPOINT, GENERATE AN ALARM AT THE BAS. THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN. THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MAXIMUM DISCHARGE AIR TEMPERATURE.

COOLDOWN/WARM-UP MODE. PROVIDE A CALCULATED OPTIMIZED START ALGORITHM USED FOR BUILDING COOLDOWN OR WARM-UP. THE COOLDOWN OR WARM-UP MODE, THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN. IN COOLDOWN, THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MINIMUM DISCHARGE AIR TEMPERATURE. IN WARM-UP, THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MAXIMUM DISCHARGE AIR TEMPERATURE. (NOTE - EQUIPMENT SHALL BE THE SECOND STAGE OF HEATING.) COOLDOWN OR WARM-UP MODE SHALL SWITCH TO OCCUPIED MODE ONCE THE ZONE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR SCHEDULED OCCUPIED TIME IS REACHED.

OCCUPIED MODE. ENTER OCCUPIED MODE WHEN THE TIME OF DAY SCHEDULE STARTS OCCUPIED MODE; OR IF PLACED IN OCCUPIED MODE MANUALLY; OR IF COOLDOWN/WARM-UP REACH OCCUPIED TEMPERATURE.

SUPPLY FAN ARRAY CONTROL: REFER TO ASHRAE GUIDELINE 36 SECTION 5.16.1.

THE SUPPLY FAN ARRAY SHALL RUN IN ALL OPERATING MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FAN ARRAY SHALL BE STOPPED/STARTED BY THE UNITS CONTROLLER OR THE BAS. ONCE THE SUPPLY FAN ARRAY IS PROVEN ON, THE OUTDOOR AIR DAMPER (D-1) SHALL OPEN.

THE SUPPLY FAN ARRAY SHALL OPERATE TO MAINTAIN STATIC PRESSURE SETPOINT. NOTE - LOCATE SP SENSOR (SP-1) PER ASHRAE 90.1-2013 SECTION 6.5.3.2.2. SETPOINT SHALL BE NO GREATER THAN 1.2 IN W.C. IF THIS RESULTS IN SENSORS BEING LOCATED DOWNSTREAM OF MAJOR SPLITS, PROVIDE SENSORS IN EACH MAJOR BRANCH. REFER TO FLOOR PLANS. IF STATIC PRESSURE FALLS BELOW THE STATIC PRESSURE SETPOINT, THE SUPPLY FAN ARRAY SPEED SHALL BE INCREASED. IF THE STATIC PRESSURE RISES ABOVE STATIC PRESSURE SET POINT, THE SUPPLY FAN ARRAY SPEED SHALL BE DECREASED.

TOTALIZE AIRFLOW RATES FROM ALL ASSOCIATED VAV BOXES AND STORE AS A ANALOG VALUE POINT.

SUPPLY AIRFLOW RATE SHALL BE MEASURED BY THE SUPPLY AIRFLOW MEASURING STATION.

THE SUPPLY FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

VAV STATIC PRESSURE SETPOINT RESET: REFER TO TRIM AND RESPOND LOGIC

INITIAL SETPOINT (PRESSURE):	1.0 IN. W.C.	TRIM AMOUNT:	-0.05 IN. W.C.
MAXIMUM SETPOINT (PRESSURE):	REFER TO RTU/AHU SCHEDULE	RESPONSE AMOUNT:	+0.06 IN. W.C.
MINIMUM SETPOINT (PRESSURE):	0.1 IN. W.C.	MAX RESPONSE AMOUNT:	+0.15 IN. W.C.
TIME DELAY:	10 MINS	REQUEST LIMIT:	3
TIME STEP:	2 MINS		

RELIEF FAN CONTROL: REFER TO ASHRAE GUIDELINE 36 SECTION 6.18.9.

THE RELIEF FAN ARRAY SHALL BE ENABLED WHEN THE ASSOCIATED SUPPLY FAN ARRAY IS PROVEN ON.

START, STOP, AND MODULATE THE RELIEF FAN TO MAINTAIN ZONE/BUILDING STATIC PRESSURE (DPS-1) AT A SETPOINT OF 0.03 - 0.05 IN W.C.

RELIEF AIRFLOW RATE SHALL BE MEASURED BY THE RELIEF AIRFLOW MEASURING STATION.

THE RELIEF FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

MINIMUM OUTDOOR AIR CONTROL:

PROGRAM THE MULTIPLE-ZONE RECIRCULATION VENTILATION RATE PROCEDURE FOR SINGLE SUPPLY SYSTEMS FOUND IN ASHREAE 62.1-2019 TO HAVE THE UNIT CONTROLLER DETERMINE THE MINIMUM OUTDOOR AIR SETPOINT. SETPOINT SHALL BE CONTINUOUSLY CALCULATED BASED ON CHANGES WITHIN THE SYSTEM. SETPOINT SHALL NOT EXCEED MAXIMUM DESIGN OUTDOOR AIR RATES OF THE UNIT (REFER TO SCHEDULE), UNLESS IN ECONOMIZER MODE.

THE MINIMUM OUTDOOR AIR CONTROL LOOP IS ENABLED WHEN THE SUPPLY FAN ARRAY IS PROVEN ON, THE UNIT IS IN OCCUPIED MODE, AND THE ECONOMIZER LIMITS ARE MET. MODULATE THE OUTDOOR AIR DAMPER AND RETURN AIR DAMPER AS REQUIRED TO MAINTAIN THE CALCULATED MINIMUM OUTDOOR AIR SETPOINT AT ALL TIMES.

THE OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN AIRFLOW MEASURING STATION.

SUPPLY AIR TEMPERATURE CONTROL: REFER TO ASHRAE GUIDELINE 36 SECTION 5.16.2.

TEMPERATURE CONTROL LOOP SHALL BE ENABLED WHEN THE SUPPLY FAN ARRAY IS PROVEN ON.

DURING OCCUPIED MODE, TEMPERATURE SETPOINT SHALL RESET FROM MINIMUM DISCHARGE AIR TEMPERATURE WHEN THE OUTDOOR AIR TEMPERATURE IS 70°F AND ABOVE, PROPORTIONALLY UP TO MAXIMUM DISCHARGE AIR TEMPERATURE WHEN THE OUTDOOR AIR TEMPERATURE IS 60°F AND BELOW. THE CURRENT SETPOINT VARIES BETWEEN MINIMUM DISCHARGE AIR TEMPERATURE AND MAXIMUM DISCHARGE AIR TEMPERATURE BASED ON TIR LOGIC AND NUMBER OF REQUESTS.

DURING COOLDOWN AND SETUP MODE, THE SETPOINT SHALL BE FIXED TO THE MINIMUM DISCHARGE AIR TEMPERATURE ; DURING WARMUP AND SETBACK MODE, THE SETPOINT SHALL BE FIXED TO THE MAXIMUM DISCHARGE AIR TEMPERATURE.

SUPPLY AIR TEMPERATURE SHALL BE CONTROLLED TO SETPOINT USING THE NATURAL GAS BURNER, OUTDOOR AIR DAMPER, RETURN AIR DAMPER, AND COOLING COIL. RETURN AIR DAMPER MAXIMUM POSITION AND OUTDOOR AIR DAMPER MINIMUM POSITION SHALL BE SEQUENCED TO CONTROL MINIMUM OUTDOOR AIR VOLUME AND REDUCE ENERGY CONSUMPTION. OUTDOOR AIR DAMPER MAXIMUM POSITION IS LIMITED DURING MINIMUM OUTDOOR AIR CONTROL PERIODS; REFER TO OUTDOOR AIR CONTROL SECTION.

SUPPLY AIR TEMPERATURE RESET: REFER TO TRIM AND RESPOND LOGIC; REFER TO DIAGRAM.

INITIAL SETPOINT (TEMPERATURE):	55°F	TRIM AMOUNT:	+0.1°F
MAXIMUM SETPOINT (TEMPERATURE):	MAXIMUM DISCHARGE AIR TEMPERATURE	RESPONSE AMOUNT:	+0.2°F
MINIMUM SETPOINT (TEMPERATURE):	MINIMUM DISCHARGE AIR TEMPERATURE	MAX RESPONSE AMOUNT:	+0.6°F
TIME DELAY:	10 MINS	REQUEST LIMIT:	3
TIME STEP:	2 MINS		

DEHUMIDIFICATION CONTROL:

DEHUMIDIFICATION MODE (ONLY) VIA MECHANICAL COOLING SHALL BE ENABLED DURING NORMAL RTU OPERATION WHEN THE SUPPLY FAN ARRAY IS PROVEN ON AND THE GOLDEST ZONE SERVED BY THE SYSTEM IS ABOVE A DEW POINT OF 55°F AND HAS A RELATIVE HUMIDITY ABOVE 60% (ADJ.) THE SYSTEM SHALL BE DISABLED WHEN EITHER OF THESE CONDITIONS ARE MET UNLESS THERE IS A NEED FOR TEMPERATURE CONTROL VIA MECHANICAL COOLING.

WHEN ENABLED, THE UNIT CONTROLLER SHALL DISABLE THE ECONOMIZER. NEXT, THE DX COOLING SYSTEM SHALL MODULATE THE MECHANICAL COOLING SYSTEM TO OVERCOOL THE AIR, LOWERING THE MOISTURE CONTENT. THE MODULATING HOT GAS REHEAT SYSTEM SHALL BE USED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. ONCE THE CONDITIONS ABOVE ARE MET IN THE GOLDEST ZONE SERVED BY THE UNIT, THE SYSTEM SHALL EXIT DEHUMIDIFICATION CONTROL.

ENTHALPY WHEEL CONTROL:

DURING UNOCCUPIED MODE, THE ENTHALPY WHEEL SHALL BE STOPPED.

IN OCCUPIED MODE, IF THE OUTDOOR AIR ENTHALPY (CALCULATED) IS GREATER THAN THE RETURN AIR ENTHALPY (CALCULATED) OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE UNIT SHALL MODULATE THE ENTHALPY WHEEL TO MAX SPEED. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF COOLING.

IN OCCUPIED MODE, WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE DISCHARGE AIR TEMPERATURE, THE ENTHALPY WHEEL SHALL MODULATE SPEED TO MANTAIN REQUIRED DISCHARGE TEMPERATURE. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF HEATING.

ECONOMIZER MODE CONTROL: REFER TO ASHRAE GUIDELINE 36 SECTION 5.1.11

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE, THE UNIT SHALL MODULATE THE BYPASS DAMPER, OUTDOOR AIR, AND RETURN AIR DAMPERS TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AND MINIMIZE THE TOTAL MECHANICAL COOLING. THE ECONOMIZER IS THE FIRST STAGE OF COOLING.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION. THE BYPASS DAMPERS SHALL BE CLOSED.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION. THE BYPASS DAMPER SHALL BE CLOSED.

ECONOMIZER SECTION SHALL HAVE FAULT DETECTION AND DIAGNOSTICS.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

FIRE ALARM MODE CONTROL: THE SUPPLY FAN ARRAY SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL. SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN ARRAY (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE RESET MANUALLY AT THE UNIT.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. THE FREEZE STAT SHALL AUTOMATICALLY ATTEMPT TO RESET. IF THE STAT TRIPS AGAIN AND/OR FAILS TO RESET THREE (3) TIMES WITHIN A 24 HOUR PERIOD, THE UNIT SHALL GENERATE A NEW ALARM AND REQUIRED A MANUALLY RESET.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN ARRAY AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED AS LONG AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

VALVE POSITION: KNOWLEDGE OF VALVE POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING POINT ACTUATOR CAN BE USED AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF VALVE POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS. ADDITIONALLY, IF THE SUPPLY AIR TEMPERATURE IS EVER LESS THAN 45°F OR HIGHER THAN 110°F, IMMEDIATELY DE-ENERGIZE UNIT FANS AND GENERATE AN ALARM AT THE BMS.

ROTATION ALARM: IF THE ENERGY RECOVERY WHEEL FAILS TO ROTATE, WHEN INDICATED BY THE ROT SENSOR, GENERATE AN ALARM AT THE BAS.

A2L LEAK MITIGATION: REFER TO ASHRAE 15-2002, SECTION 7.6 AND UL-60335-2-40.

FACTORY MOUNTED CONTROLLER MONITORS THE A2L SENSORS AND INDICATES A REFRIGERANT LEAK OR REFRIGERANT SENSOR FAILURE SHOULD ONE OCCUR. THE COMPRESSOR AND ANY ELECTRICAL HEAT OUTPUTS WILL BE DE-ENERGIZED UPON DETECTION OR FAULT. THE FAN WILL BE FORCED TO SUFFICIENT AIRFLOW PER CODE (HIGH SPEED) WITHIN 10 SECONDS OF DETECTION OR FAULT.

A2L MITIGATION CONTROLS, WIRING, RELAYS, SEQUENCE, ETC. SHALL BE BY THE UNIT MANUFACTURER AND TO BE HARD-WIRED/AN INTEGRAL PART OF THE UNIT. CONTROLLER SHALL MEET REQUIREMENTS OF ASHRAE 15-2002, SECTION 7.6 AND UL-60335-2-40.

MULTI-ZONE VAV ROOFTOP UNIT (DX, HGR, ERW, & GAS) CONTROLS DIAGRAM

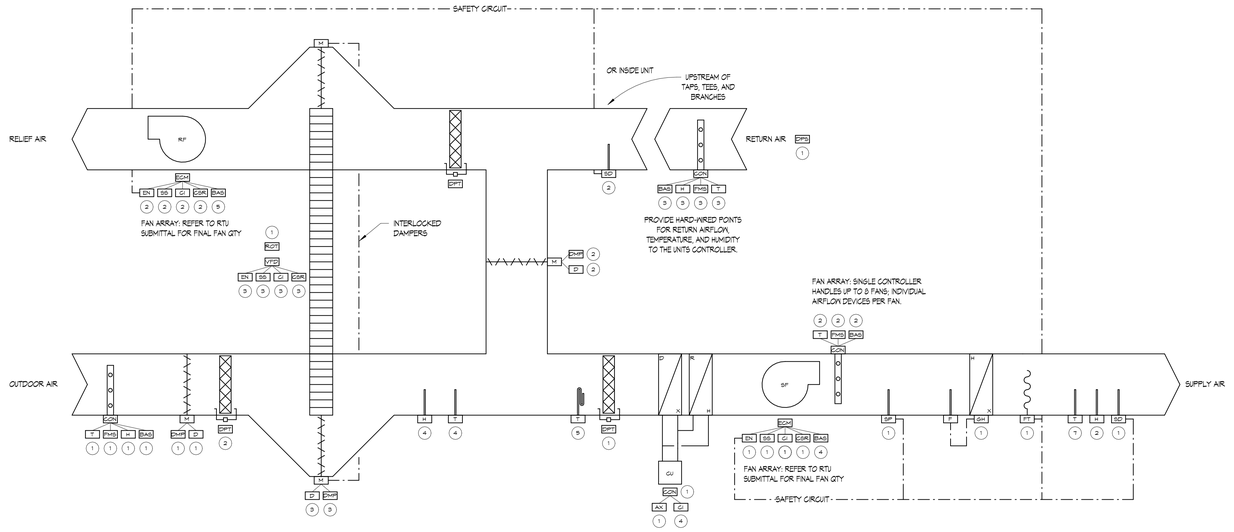
NOT TO SCALE

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M3.0

POINT NAME	HARDWARE: ID DATA: TAG	NO.	POINT TYPE: AI	AO	BI	BO	AV	BV	SOFTWARE: TREND	SHOW ON GRAPHIC	FAIL MODE: FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM: ALARM	ALARM LIMIT	REMARKS
MULTI-ZONE VAV ROOFTOP UNIT (DX, HGR, GAS, & ERV)																	
ALARM STATUS	AX	1			■					■					■		
DUCT STATIC PRESSURE SENSOR	SP	1	■						1 MINS	■					■		LOCAATE SO SETPOINT SHALL BE NO GREATER THAN 1.2 IN W.C.
DX COOLING DEMAND SIGNAL	CI	4		■					10 MINS	■				■			1-5VDC DEMAND SIGNAL
ERV BYPASS DAMPER POSITION	DMP	3	■						10 MINS	■							
ERV ROTATION MONITORING SENSOR	ROT	1				■				■					■		
ERV VFD ENABLE/DISABLE	EN	3				■				■							
ERV VFD SPEED CONTROL	CI	3		■					10 MINS	■				■			CONNECT TO VFD SPEED
ERV VFD START/STOP	SS	3				■				■			■				CONNECT TO VFD RUN
ERV VFD STATUS	CSR	3			■				COV	■					■		CONNECT TO VFD STATUS
EWR BYPASS DAMPER CONTROL	D	3		■						■		■					
FAN SUPPLY AIR TEMPERATURE	T	3	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
FILTER STATUS	DPT	1	■							■					■	1" W.C.	
FREEZESTAT STATUS	FT	1				■				■					■	LOW 35°F	
GAS FIRED HEATER CONTROLLER	GH	1		■						■		■					PROVIDE W/ AIRFLOW SWITCH
HIGH STATIC PRESSURE SAFETY SWITCH	SP	1	■							■					■	4" W.C.	
MANU. PACKAGED DX CONTROLLER	CON	1															1, 2
MIXED AIR TEMPERATURE	T	5	■						10 MINS	■							
OA FILTER STATUS	DPT	2	■							■					■	1" W.C.	
OUTDOOR AFMS BMS NETWORK CONNEGTION	BAS	3															MS/TP
OUTDOOR AIR DAMPER CONTROL	D	1		■						■		■					
OUTDOOR AIR DAMPER POSITION FEEDBACK	DMP	1	■						10 MINS	■							
OUTDOOR AIR HUMIDITY	H	1	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
OUTDOOR AIR TEMPERATURE	T	1	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
OUTDOOR AIRFLOW MEASURING STATION	FMS	1	■						1 MINS	■					■		FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
POST WHEEL AIR HUMIDITY	H	4	■						10 MINS	■							
POST WHEEL AIR TEMPERATURE	T	4	■						10 MINS	■							
RELIEF FAN ARRAY ENABLE/DISABLE	EN	2				■				■							
RELIEF FAN ARRAY NETWORK CONNECTION	BAS	2															MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
RELIEF FAN ARRAY SPEED CONTROL	CI	2		■					10 MINS	■				■			
RELIEF FAN ARRAY START/STOP	SS	2				■				■			■				
RELIEF FAN ARRAY STATUS	CSR	2			■				COV	■					■		
RETURN AFMS BMS NETWORK CONNEGTION	BAS	4															MS/TP
RETURN AIR DAMPER CONTROL	D	2		■						■		■					
RETURN AIR DAMPER POSITION FEEDBACK	DMP	2	■						10 MINS	■							
RETURN AIR DUCT SMOKE DETECTOR	SD	2			■					■					■		PROVIDED BY DIV 28
RETURN AIR HUMIDITY	H	2	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
RETURN AIR TEMPERATURE	T	2	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
RETURN AIRFLOW MEASURING STATION	FMS	2	■						1 MINS	■					■		FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
SUPPLY AFMS BMS NETWORK CONNEGITON	BAS	5															FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
SUPPLY AIR DUCT SMOKE DETECTOR	SD	1			■					■					■		PROVIDED BY DIV 28
SUPPLY AIR HUMIDITY	H	3	■						1 MINS	■							
SUPPLY AIR TEMPERATURE	T	5	■						1 MINS	■							
SUPPLY AIRFLOW MEASURING STATION	FMS	3	■						1 MINS	■					■		FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
SUPPLY FAN ARRAY ENABLE/DISABLE	EN	1				■				■							
SUPPLY FAN ARRAY NETWORK CONNECTION	BAS	1															MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
SUPPLY FAN ARRAY SPEED	CI	1		■					10 MINS	■				■			
SUPPLY FAN ARRAY START/STOP	SS	1				■				■			■				
SUPPLY FAN ARRAY STATUS	CSR	1			■				COV	■					■		
ZONE/BUILDING STATIC PRESSURE SENSOR	DPS	1	■						1 MINS	■					■		LOCATE IN ROOM XXX. MAINTIAN 0.03-0.05 IN W.C.

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS
3. DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
4. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK



(H) (H) COMBINE TEMP, H,M, AND CO2 SENSORS. (CO2) (T) MOUNT TO UNIT OR WALL - REFER TO (H) (T) FLOOR PLANS FOR THERMOSTAT PLACEMENT.

SEQUENCE OF OPERATION

GENERAL:

THE SINGLE-ZONE VAV ROOFTOP UNIT (R/V DX COOLING, HOT GAS REHEAT, ENERGY RECOVERY, AND NATURAL GAS) SEQUENCES PROVIDED ARE INTENDED TO BE PERFORMANCE BASED. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY USING DIFFERENT UNDERLYING LOGIC WILL BE ACCEPTABLE. THE SEQUENCES AND REQUIREMENTS ARE BASED IN PART ON ASHRAE GUIDELINE 36-2021, ASHRAE 62.1-2019, ASHRAE 90.1-2013, AND MMC-2021. CONTRACTOR TO REFER STANDARDS AS REQUIRED TO MEET INTENT.

CONTROLS ARE TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR. FOR REFRIGERATION CONTROLS, THE MANUFACTURER SHALL PROVIDE A REFRIGERATION CONTROLLER AND/OR TERMINAL STRIP. CONTROLS CONTRACTOR IS REQUIRED TO COORDINATE WITH THE PURCHASED REFRIGERATION EQUIPMENT TO DETERMINE FINAL CONTROL POINTS, FUNCTIONALITY, SEQUENCING, ETC.

ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, PID GAINS, ETC. LISTED IN THE SEQUENCE SHALL BE ADJUSTABLE BY THE OWNER. ADDITIONALLY, ALL POINT VALUES SHALL BE OVERRIDABLE (FOR TESTING AND COMMISSIONING PURPOSES). EXCEPTION BEING, THOSE POINTS WHICH WOULD EFFECT EQUIPMENT OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER ELECTRONIC COMMUTATED MOTORS OR WITH VARIABLE FREQUENCY DRIVES; REFER TO SCHEDULES AND SPECS FOR MOTOR TYPES.

SAFETIES HARD-WIRED INTO THE FANS VFDS INDICATE GENERAL INTENT FOR ENABLING/DISABLING VFD UPON SIGNAL FROM THE ASSOCIATED DEVICE (I.E. SMOKE DETECTORS, FREEZESTATS, HIGH/LOW PRESSURE SWITCHES, ETC.) TTC TO PROVIDE ALL NECESSARY TUBING, WIRING, CONTACTORS/RELAYS, ETC. FOR FULLY FUNCTIONAL SYSTEM.

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 55°F. MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 85°F.

SETPOINTS:

OCCUPIED COOLING SETPOINT:	75°F (ADJ.) / 50%RH
OCCUPIED HEATING SETPOINT:	70°F (ADJ.)
UNOCCUPIED COOLING SETPOINT:	80°F (ADJ.)
UNOCCUPIED HEATING SETPOINT:	65°F (ADJ.)

VERIFY ALL SETPOINTS WITH OWNER.

SETPOINT SHALL ALWAYS MAINTAIN A 5°F DEADBAND AND TEMPERATURE CONTROLS SHALL HAVE SETPOINT OVERLAP RESTRICTIONS.

OPERATING MODES:

EACH UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES: (1) OCCUPIED MODE, (2) WARM-UP MODE, (3) COOLDOWN MODE, (4) SETBACK MODE, (5) SETUP MODE, AND (6) UNOCCUPIED MODE.

UNOCCUPIED MODE: DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN; THE FANS SHALL BE STOPPED; THE TEMPERATURE CONTROLS LOOP SHALL BE IN DEADBAND.

SETBACK/SETUP MODE: WHILE IN UNOCCUPIED MODE, IF THE UNIT FALLS-BELOW OR RISE-ABOVE ITS UNOCCUPIED HEATING OR COOLING SETPOINT, THE UNIT SHALL ENTER SETBACK OR SETUP MODE RESPECTIVELY UNTIL THE ZONE IS 2°F ABOVE/OR BELOW THE UNOCCUPIED SETPOINT VALUE. THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN.

COOLDOWN/WARM-UP MODE: PROVIDE A CALCULATED OPTIMIZED START ALGORITHM USED FOR BUILDING COOLDOWN OR WARM-UP MODE. IN COOLDOWN OR WARM-UP MODE, THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN. IN COOLDOWN, THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MINIMUM DISCHARGE AIR TEMPERATURE. IN WARM-UP, THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MAXIMUM DISCHARGE AIR TEMPERATURE. COOLDOWN OR WARM-UP MODE SHALL SWITCH TO OCCUPIED MODE ONCE THE ZONE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR SCHEDULED OCCUPIED TIME IS REACHED.

OCCUPIED MODE: ENTER OCCUPIED MODE WHEN THE TIME OF DAY SCHEDULE STARTS OCCUPIED MODE; OR IF PLACED IN OCCUPIED MODE MANUALLY; OR IF COOLDOWN/WARM-UP REACH OCCUPIED TEMPERATURE.

SUPPLY AIR TEMPERATURE CONTROL: REFER TO ASHRAE GUIDELINE 36.

THE SUPPLY FAN ARRAY SHALL RUN WHEN THE SYSTEM IS OPERATING IN ALL MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FAN ARRAY SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE AHU CONTROLLER OR BAS.

UPON PROOF OF SUCCESSFUL START AND OPERATION OF THE SUPPLY FAN ARRAY, THE OUTDOOR AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION INITIALLY.

PROVIDE A RAMP FUNCTION TO PREVENT CHANGES IN FAN SPEED OF MORE THAN 10% PER MIN.

AS SPACE TEMPERATURE INCREASES, THE UNIT SHALL MODULATE ECONOMIZER DAMPERS (WHEN ECONOMIZER MODE IS ENABLED) AND/OR SHALL MODULATE THE DX COOLING SYSTEM TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE COOLING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE MINIMUM DISCHARGE AIR TEMPERATURE . AT WHICH POINT, BOTH THE MECHANICAL COOLING SYSTEM AND THE SUPPLY FAN ARRAY WILL MODULATE UP TOGETHER TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT AND MINIMUM DISCHARGE AIR TEMPERATURE .

AS SPACE TEMPERATURE BEGINS TO DECREASES, THE PROCESS SHALL WORK IN REVERSE ORDER.

AS SPACE TEMPERATURE DECREASES, THE UNIT SHALL MODULATE THE HEATING NATURAL GAS BURNER TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE HEATING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE MAXIMUM DISCHARGE AIR TEMPERATURE . AT WHICH POINT, BOTH THE MECHANICAL HEATING SYSTEM AND THE SUPPLY FAN ARRAY WILL MODULATE UP TOGETHER TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT AND MAXIMUM DISCHARGE AIR TEMPERATURE

AS SPACE TEMPERATURE BEGINS TO INCREASE, THE PROCESS SHALL WORK IN REVERSE ORDER.

SUPPLY AIRFLOW RATE SHALL BE MEASURED BY THE SUPPLY AIRFLOW MEASURING STATION.

THE SUPPLY FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

RELIEF FAN CONTROL: REFER TO ASHRAE GUIDELINE 36.

THE RELIEF FAN ARRAY SHALL BE ENABLED WHEN THE ASSOCIATED SUPPLY FAN ARRAY IS PROVEN ON.

START, STOP, AND MODULATE THE RELIEF FAN TO MAINTAIN ZONE/BUILDING STATIC PRESSURE (DPS-1) AT A SETPOINT OF 0.03 - 0.05 IN W.C.

RELIEF AIRFLOW RATE SHALL BE MEASURED BY THE SUPPLY AIRFLOW MEASURING STATION.

THE RELIEF FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

DEHUMIDIFICATION CONTROL: REFER TO ASHRAE GUIDELINE 36

DEHUMIDIFICATION MODE (ONLY) VIA MECHANICAL COOLING SHALL BE ENABLED DURING NORMAL RTU OPERATION WHEN THE SUPPLY FAN ARRAY IS PROVEN ON AND THE ZONE IS ABOVE A DEW POINT OF 55°F AND HAS A RELATIVE HUMIDITY ABOVE 60% (ADJ.) THE SYSTEM SHALL BE DISABLED WHEN EITHER OF THESE CONDITIONS ARE MET UNLESS THERE IS A NEED FOR TEMPERATURE CONTROL VIA MECHANICAL COOLING.

WHEN ENABLED, THE UNIT CONTROLLER SHALL DISABLE THE ECONOMIZER. NEXT, THE DX COOLING SYSTEM SHALL MODULATE THE MECHANICAL COOLING SYSTEM TO OVERCOOL THE AIR, LOWERING THE MOISTURE CONTENT. THE MODULATING HOT GAS REHEAT SYSTEM SHALL BE USED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. ONCE THE CONDITIONS ABOVE ARE MET, THE SYSTEM SHALL EXIT DEHUMIDIFICATION CONTROL.

MINIMUM OUTDOOR AIR CONTROL: REFER TO ASHRAE GUIDELINE 36.

UPON RISING CO2 CONCENTRATION LEVEL ABOVE 1300 PPM (900 PPM ABOVE AMBIENT - ASHRAE 62.1-2022), THE OUTDOOR AND RETURN AIR DAMPER ACTUATORS SHALL MODULATE TO INCREASE OUTDOOR AIR INTAKE UNTIL CO2 LEVELS ARE BELOW 1200 PPM. THE RTU OUTDOOR DAMPER ACTUATOR SHALL NOT MODULATE BEYOND ITS SCHEDULED MAXIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE) UNLESS IN ECONOMIZER MODE.

INVERSELY, UPON FALLING CO2 CONCENTRATION LEVELS BELOW 900 PPM, THE OUTDOOR AND RETURN AIR DAMPERS SHALL MODULATE TO DECREASE OUTDOOR AIR INTAKE UNTIL CO2 CONCENTRATION LEVELS ARE AT 1200 PPM. THE RTU OUTDOOR DAMPER ACTUATOR SHALL NOT MODULATE BEYOND ITS SCHEDULED MINIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE - I.E. DAMPER POSITION LIMITED TO NO LESS THAN THE BUILDING COMPONENT OUTDOOR AIRFLOW.)

DEAD BAND OCCURS BETWEEN CO2 CONCENTRATION LEVELS BETWEEN 1100 PPM AND 1200 PPM.

OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN OUTDOOR AIRFLOW MEASURING DEVICE.

ECONOMIZER MODE CONTROL: REFER TO ASHRAE GUIDELINE 36.

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE, THE UNIT SHALL MODULATE THE BYPASS DAMPER, OUTDOOR AIR, AND RETURN AIR DAMPERS TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AND MINIMIZE THE TOTAL MECHANICAL COOLING. THE ECONOMIZER IS THE FIRST STAGE OF COOLING.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION. THE BYPASS DAMPERS SHALL BE CLOSED.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION. THE BYPASS DAMPER SHALL BE CLOSED.

ECONOMIZER SECTION SHALL HAVE FAULT DETECTION AND DIAGNOSTICS.

ENTHALPY WHEEL CONTROL:

DURING UNOCCUPIED MODE, THE ENTHALPY WHEEL SHALL BE STOPPED.

IN OCCUPIED MODE, IF THE OUTDOOR AIR ENTHALPY (CALCULATED) IS GREATER THAN THE RETURN AIR ENTHALPY (CALCULATED) OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE UNIT SHALL MODULATE THE ENTHALPY WHEEL TO MAX SPEED. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF COOLING.

IN OCCUPIED MODE, WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE DISCHARGE AIR TEMPERATURE, THE ENTHALPY WHEEL SHALL MODULATE SPEED TO MAINTAIN REQUIRED DISCHARGE TEMPERATURE. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF HEATING.

UNOCCUPIED STANDBY MODE CONTROL:

WHEN THE SPACE HAS BEEN UNOCCUPIED FOR 5 MINS. THE UNIT SHALL ENTER UNOCCUPIED STANDBY MODE. THE ACTIVE HEATING SETPOINT SHALL BE SETBACK 1°F. THE ACTIVE COOLING SETPOINT SHALL BE SETUP 1°F. ALL AIRFLOW SUPPLIED TO THE ZONE SHALL BE SHUT OFF WHENEVER SPACE TEMPERATURE IS BETWEEN THE ACTIVE HEATING AND COOLING SETPOINTS.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

FIRE ALARM MODE CONTROL: THE SUPPLY FAN ARRAY SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL. SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN ARRAY (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE RESET MANUALLY AT THE UNIT.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. THE FREEZE STAT SHALL AUTOMATICALLY ATTEMPT TO RESET. IF THE STAT TRIPS AGAIN AND/OR FAILS TO RESET THREE (3) TIMES WITHIN A 24 HOUR PERIOD, THE UNIT SHALL GENERATE A NEW ALARM AND REQUIRED A MANUALLY RESET.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN ARRAY AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED AS LONG AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

PROVIDE AIR-ECONOMIZER FAULT DETECTION AND DIAGNOSTICS.

ROTATIONAL MONITORING: PROVIDE ROTATION SENSOR ON ENERGY RECOVERY WHEEL. IF ROTATION IS NOT SENSED, BUT WHEEL SHOULD BE RUNNING, GENERATE AN ALARM AT THE BMS.

A2L LEAK MITIGATION: REFER TO ASHRAE 15-2022, SECTION 7.6 AND UL-60335-2-40.

FACTORY MOUNTED CONTROLLER MONITORS THE A2L SENSORS AND INDICATES A REFRIGERANT LEAK OR REFRIGERANT SENSOR FAILURE SHOULD ONE OCCUR. THE COMPRESSOR AND ANY ELECTRICAL HEAT OUTPUTS WILL BE DE-ENERGIZED UPON DETECTION OR FAULT. THE FAN WILL BE FORCED TO SUFFICIENT AIRFLOW PER CODE (HIGH SPEED) WITHIN 10 SECONDS OF DETECTION OR FAULT.

A2L MITIGATION CONTROLS, WIRING, RELAYS, SEQUENCE, ETC. SHALL BE BY THE UNIT MANUFACTURER AND TO BE HARD-WIRED/AN INTEGRAL PART OF THE UNIT. CONTROLLER SHALL MEET REQUIREMENTS OF ASHRAE 15-2022, SECTION 7.6 AND UL-60335-2-40.

SINGLE-ZONE VAV ROOFTOP UNIT (DX, HGR, GAS, & ERW) CONTROLS DIAGRAM

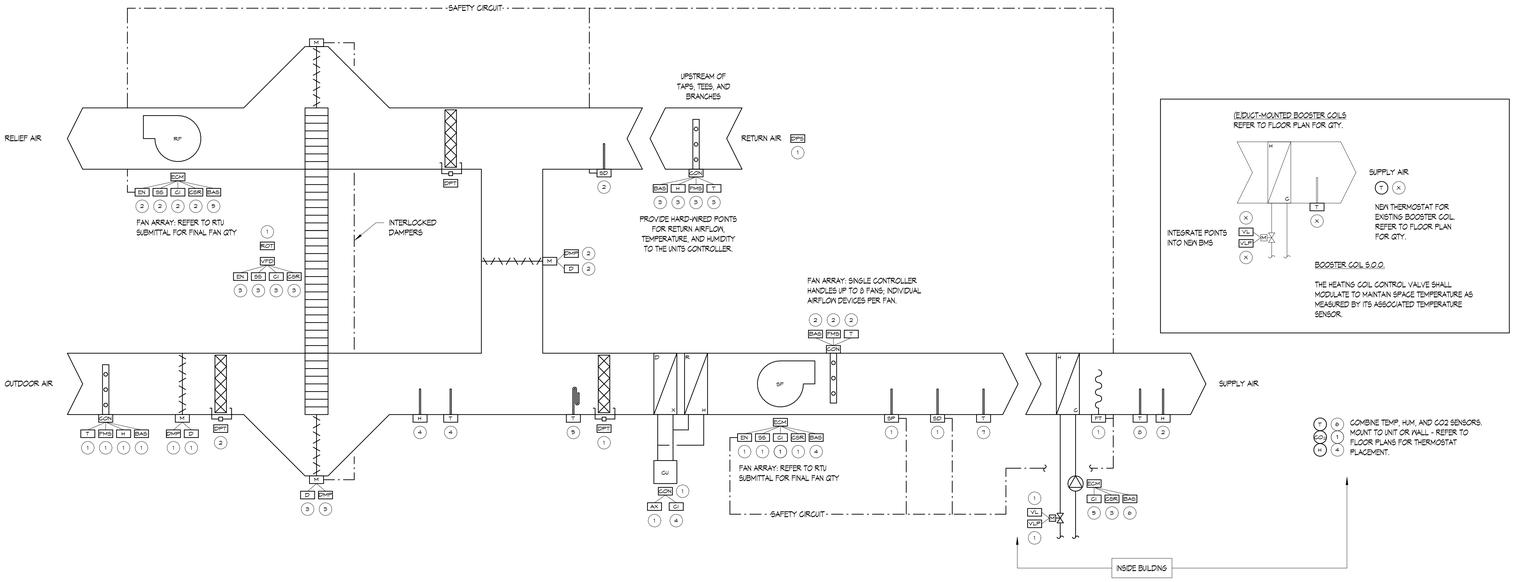
NOT TO SCALE

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.
3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
4. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.
5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MS TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS; SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (+2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M9.9

POINT NAME	TAG	NO.	HARDWARE ID DATA	AI	AO	BI	BO	AV	BV	SOFTWARE TREND	SHOW ON GRAPHIC	FAIL MODE FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM	ALARM LIMIT	REMARKS
SINGLE-ZONE VAV ROOFTOP UNIT (DX, HGR, ERV, & GAS)																		
ALARM STATUS	AX	1				■					■					■		
AFMS NETWORK CONNECTION	BAS	1																MS/TP
AFMS NETWORK CONNECTION	BAS	2																MS/TP
AFMS NETWORK CONNECTION	BAS	3																MS/TP
SUPPLY FAN ARRAY NETWORK CONNECTION	BAS	4																MS/TP - PULL ALL AVIABLE POINTS TO READ AT BMS
RELIEF FAN ARRAY NETWORK CONNECTION	BAS	5																MS/TP - PULL ALL AVIABLE POINTS TO READ AT BMS
SUPPLY FAN ARRAY SPEED	CI	1			■					10 MINS	■			■				
RELIEF FAN ARRAY SPEED CONTROL	CI	2			■					10 MINS	■			■				
ERV VFD SPEED CONTROL	CI	3			■					10 MINS	■			■				CONNECT TO VFD SPEED
DX COOLING DEMAND SIGNAL	CI	4			■					10 MINS	■			■				1-5VDC DEMAND SIGNAL
ZONE CO2	CO2	1	■							1 MINS	■					■	>25% SETPOINT	
MANU. PACKAGED DX CONTROLLER	CON	1									■							1, 2
SUPPLY FAN ARRAY STATUS	CSR	1				■				COV	■					■		
RELIEF FAN ARRAY STATUS	CSR	2				■				COV	■					■		
ERV VFD STATUS	CSR	3				■				COV	■					■		CONNECT TO VFD STATUS
OUTDOOR AIR DAMPER CONTROL	D	1		■							■		■					
RETURN AIR DAMPER CONTROL	D	2		■							■	■						
BYP. BYPASS DAMPER CONTROL	D	3		■							■		■					
OUTDOOR AIR DAMPER POSITION FEEDBACK	DMP	1	■							10 MINS	■							
RETURN AIR DAMPER POSITION FEEDBACK	DMP	2	■							10 MINS	■							
ERV BYPASS DAMPER POSITION	DMP	3	■							10 MINS	■							
ZONE/BUILDING STATIC PRESSURE SENSOR	DPS	1	■							1 MINS	■					■		LOCATE PER DRAWINGS
FILTER STATUS	DPT	1	■								■					■	1" W.C.	
OA FILTER STATUS	DPT	2	■								■					■	1" W.C.	
OUTDOOR AIR FILTER STATUS	DPT	2	■								■					■	1" W.C.	
SUPPLY FAN ARRAY ENABLE/DISABLE	EN	1					■				■							
RELIEF FAN ARRAY ENABLE/DISABLE	EN	2					■				■							
ERV VFD ENABLE/DISABLE	EN	3					■				■							
OUTDOOR AIRFLOW MEASURING STATION	FMS	1	■							1 MINS	■					■		
SUPPLY AIRFLOW MEASURING STATION	FMS	2	■							1 MINS	■					■		COORDINATE AIRFLOW MEASURE STATION LOCATION WITH MANUFACTURER. CAN BE LOCATED INSIDE UNIT IF AREA STRAIGHT LENGTH IS SUFFICIENT (TYP.)
RETURN AIRFLOW MEASURING STATION	FMS	3	■							1 MINS	■					■		COORDINATE AIRFLOW MEASURE STATION LOCATION WITH MANUFACTURER. CAN BE LOCATED INSIDE UNIT IF AREA STRAIGHT LENGTH IS SUFFICIENT (TYP.)
FREEZESTAT STATUS	FT	1				■					■					■	LOW: 36°F	
GAS FIRED HEATER CONTROLLER	GH	1		■							■		■					PROVIDE W/ AIRFLOW SWITCH
OUTDOOR AIR HUMIDITY	H	1	■							10 MINS	■							
SUPPLY AIR HUMIDITY	H	2	■							10 MINS	■							
RETURN AIR HUMIDITY	H	3	■							10 MINS	■							
ZONE HUMIDITY	H	4	■							1 MINS	■					■	>80% RELATIVE HUMIDITY	
POST WHEEL AIR HUMIDITY	H	4	■							10 MINS	■							
ERV ROTATION MONITORING SENSOR	ROT	1					■				■					■		
SUPPLY AIR DUCT SMOKE DETECTOR	SD	1				■					■					■		PROVIDED BY DIV. 28
RETURN AIR DUCT SMOKE DETECTOR	SD	2				■					■					■		PROVIDED BY DIV. 28
HIGH STATIC PRESSURE SAFETY SWITCH	SP	1	■								■					■	4" W.C.	
SUPPLY FAN ARRAY START/STOP	SS	1					■				■			■				
RELIEF FAN ARRAY START/STOP	SS	2					■				■			■				
ERV VFD START/STOP	SS	3					■				■			■				CONNECT TO VFD RUN
OUTDOOR AIR TEMPERATURE	T	1	■							1 MINS	■							
FAN DISCHARGE AIR TEMPERATURE	T	2	■							10 MINS	■							
RETURN AIR TEMPERATURE	T	3	■							1 MINS	■							
POST WHEEL AIR TEMPERATURE	T	4	■							10 MINS	■							
MIXED AIR TEMPERATURE	T	5	■							1 MINS	■							
ZONE TEMPERATURE	T	6	■							1 MINS	■					■	LOW: 55°F / HIGH: 90°F	
DISCHARGE AIR TEMPERATURE	T	7	■							10 MINS	■							



SEQUENCE OF OPERATION

GENERAL:

THE SINGLE-ZONE VAV ROOFTOP UNIT (IV/ DX COOLING, HOT GAS REHEAT, AND HWH HEATING) SEQUENCES PROVIDED ARE NTENDED TO BE PERFORMANCE BASED. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY USING DIFFERENT UNDERLYING LOGIC WILL BE ACCEPTABLE. THE SEQUENCES AND REQUIREMENTS ARE BASED IN PART ON ASHRAE GUIDELINE 36-2021, ASHRAE 62.1-2016, ASHRAE 90.1-2019, AND MMC-2021. CONTRACTOR TO REFER STANDARDS AS REQUIRED TO MEET INTENT.

CONTROLS ARE TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR. FOR REFRIGERATION CONTROLS, THE MANUFACTURER SHALL PROVIDE A REFRIGERATION CONTROLLER AND/OR TERMINAL STRIP. CONTROLS CONTRACTOR IS REQUIRED TO COORDINATE WITH THE PURCHASED REFRIGERATION EQUIPMENT TO DETERMINE FINAL CONTROL POINTS, FUNCTIONALITY, SEQUENCING, ETC.

ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, PID GAINS, ETC. LISTED IN THE SEQUENCE SHALL BE ADJUSTABLE BY THE OWNER. ADDITIONALLY, ALL POINT VALUES SHALL BE OVERRIDABLE (FOR TESTING AND COMMISSIONING PURPOSES). EXCEPTION BEING, THOSE POINTS WHICH WOULD EFFECT EQUIPMENT OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER ELECTRONIC COMMUTATED MOTORS OR WITH VARIABLE FREQUENCY DRIVES. REFER TO SCHEDULES AND SPECS FOR MOTOR TYPES.

SAFETIES HARD-WIRED INTO THE FANS VFDS INDICATE GENERAL INTENT FOR ENABLING/DISABLING VFD UPON SIGNAL FROM THE ASSOCIATED DEVICE (I.E. SMOKE DETECTORS, FREEZESTATS, HIGH/LOW PRESSURE SWITCHES, ETC.) TTC TO PROVIDE ALL NECESSARY TUBING, WIRING, CONTACTORS/RELAYS, ETC. FOR FULLY FUNCTIONAL SYSTEM.

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 55°F. MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 95°F.

SETPOINTS:

OCCUPIED COOLING SETPOINT:	75°F (ADJ.) / 50%RH
OCCUPIED HEATING SETPOINT:	70°F (ADJ.)
UNOCCUPIED COOLING SETPOINT:	80°F (ADJ.)
UNOCCUPIED HEATING SETPOINT:	65°F (ADJ.)

VERIFY ALL SETPOINTS WITH OWNER.

SETPOINT SHALL ALWAYS MAINTAIN A 5°F DEADBAND AND TEMPERATURE CONTROLS SHALL HAVE SETPOINT OVERLAP RESTRICTIONS.

OPERATING MODES:

EACH UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES: (1) OCCUPIED MODE, (2) WARM-UP MODE, (3) COOLDOWN MODE, (4) SETBACK MODE, (5) SETUP MODE, AND (6) UNOCCUPIED MODE.

UNOCCUPIED MODE. DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN; THE FANS SHALL BE STOPPED; THE TEMPERATURE CONTROLS LOOP SHALL BE IN DEADBAND.

SETBACK/SETUP MODE. WHILE IN UNOCCUPIED MODE, IF THE UNIT FALLS-BELOW OR RISE-ABOVE ITS UNOCCUPIED HEATING OR COOLING SETPOINT, THE UNIT SHALL ENTER SETBACK OR SETUP MODE RESPECTIVELY UNTIL THE ZONE IS 2°F ABOVE OR BELOW THE UNOCCUPIED SETPOINT VALUE.

COOLDOWN/WARM-UP MODE. PROVIDE A CALCULATED OPTIMIZED START ALGORITHM USED FOR BUILDING COOLDOWN OR WARM-UP MODE. IN COOLDOWN OR WARM-UP MODE, THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN. IN COOLDOWN, THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MINIMUM DISCHARGE AIR TEMPERATURE. IN WARM-UP, THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MAXIMUM DISCHARGE AIR TEMPERATURE. COOLDOWN OR WARM-UP MODE SHALL SWITCH TO OCCUPIED MODE ONCE THE ZONE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR SCHEDULED OCCUPIED TIME IS REACHED.

OCCUPIED MODE. ENTER OCCUPIED MODE WHEN THE TIME OF DAY SCHEDULE STARTS OCCUPIED MODE; OR IF PLACED IN OCCUPIED MODE MANUALLY; OR IF COOLDOWN/WARM-UP REACH OCCUPIED TEMPERATURE.

SUPPLY AIR TEMPERATURE CONTROL:

REFER TO ASHRAE GUIDELINE 36.

THE SUPPLY FAN ARRAY SHALL RUN WHEN THE SYSTEM IS OPERATING IN ALL MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FAN ARRAY SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE AHU CONTROLLER OR BAS.

UPON PROOF OF SUCCESSFUL START AND OPERATION OF THE SUPPLY FAN ARRAY, THE OUTDOOR AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION INITIALLY.

PROVIDE A RAMP FUNCTION TO PREVENT CHANGES IN FAN SPEED OF MORE THAN 10% PER MIN.

AS SPACE TEMPERATURE INCREASES, THE UNIT SHALL MODULATE ECONOMIZER DAMPERS (WHEN ECONOMIZER MODE IS ENABLED) AND/OR SHALL MODULATE THE DX COOLING SYSTEM TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE COOLING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE MINIMUM DISCHARGE AIR TEMPERATURE . AT WHICH POINT, BOTH THE MECHANICAL COOLING SYSTEM AND THE SUPPLY FAN ARRAY WILL MODULATE UP TOGETHER TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT AND MINIMUM DISCHARGE AIR TEMPERATURE .

AS SPACE TEMPERATURE BEGINS TO DECREASES, THE PROCESS SHALL WORK IN REVERSE ORDER.

AS SPACE TEMPERATURE DECREASES, THE UNIT SHALL MODULATE THE HEATING HOT WATER CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE HEATING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THEMAXIMUM DISCHARGE AIR TEMPERATURE , AT WHICH POINT, BOTH THE MECHANICAL HEATING SYSTEM AND THE SUPPLY FAN ARRAY WILL MODULATE UP TOGETHER TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT AND MAXIMUM DISCHARGE AIR TEMPERATURE .

AS SPACE TEMPERATURE BEGINS TO INCREASE, THE PROCESS SHALL WORK IN REVERSE ORDER.

SUPPLY AIRFLOW RATE SHALL BE MEASURED BY THE SUPPLY AIRFLOW MEASURING STATION.

THE SUPPLY FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

RELIEF FAN CONTROL:

REFER TO ASHRAE GUIDELINE 36.

THE RELIEF FAN SHALL BE ENABLED WHEN THE ASSOCIATED SUPPLY FAN ARRAY IS PROVEN ON.

START, STOP, AND MODULATE THE RELIEF FAN TO MAINTAN ZONE/BUILDING STATIC PRESSURE (DPS-1) AT A SETPOINT OF 0.03 - 0.05 IN W.C.

RELIEF AIRFLOW RATE SHALL BE MEASURED BY THE SUPPLY AIRFLOW MEASURING STATION.

THE RELIEF FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

DEHUMIDIFICATION CONTROL:

REFER TO ASHRAE GUIDELINE 36

DEHUMIDIFICATION MODE (ONLY) VIA MECHANICAL COOLING SHALL BE ENABLED DURING NORMAL RTU OPERATION WHEN THE SUPPLY FAN ARRAY IS PROVEN ON AND THE ZONE IS ABOVE A DEW POINT OF 55°F AND HAS A RELATIVE HUMIDITY ABOVE 60% (ADJ.) THE SYSTEM SHALL BE DISABLED WHEN EITHER OF THESE CONDITIONS ARE MET UNLESS THERE IS A NEED FOR TEMPERATURE CONTROL VIA MECHANICAL COOLING.

WHEN ENABLED, THE UNIT CONTROLLER SHALL DISABLE THE ECONOMIZER. NEXT, THE DX COOLING SYSTEM SHALL MODULATE THE MECHANICAL COOLING SYSTEM TO OVERCOOL THE AIR, LOWERING THE MOISTURE CONTENT. THE MODULATING HOT GAS REHEAT SYSTEM SHALL BE USED TO MAINTAN THE DISCHARGE AIR TEMPERATURE SETPOINT. ONCE THE CONDITIONS ABOVE ARE MET, THE SYSTEM SHALL EXIT DEHUMIDIFICATION CONTROL.

MINIMUM OUTDOOR AIR CONTROL:

REFER TO ASHRAE GUIDELINE 36.

UPON RISING CO2 CONCENTRATION LEVEL ABOVE 1300 PPM (900 PPM ABOVE AMBIENT - ASHRAE 62.1-2022), THE OUTDOOR AND RETURN AIR DAMPER ACTUATORS SHALL MODULATE TO INCREASE OUTDOOR AIR INTAKE UNTIL CO2 LEVELS ARE BELOW 1200 PPM. THE RTU OUTDOOR DAMPER ACTUATOR SHALL NOT MODULATE BEYOND ITS SCHEDULED MAXIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE) UNLESS IN ECONOMIZER MODE.

INVERSELY, UPON FALLING CO2 CONCENTRATION LEVELS BELOW 900 PPM, THE OUTDOOR AND RETURN AIR DAMPERS SHALL MODULATE TO DECREASE OUTDOOR AIR INTAKE UNTIL CO2 CONCENTRATION LEVELS ARE AT 1200 PPM. THE RTU OUTDOOR DAMPER ACTUATOR SHALL NOT MODULATE BEYOND ITS SCHEDULED MINIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE - I.E. DAMPER POSITION LIMITED TO NO LESS THAN THE BUILDING COMPONENT OUTDOOR AIRFLOW.)

DEAD BAND OCCURS BETWEEN CO2 CONCENTRATION LEVELS BETWEEN 1100 PPM AND 1200 PPM.

OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN OUTDOOR AIRFLOW MEASURING DEVICE.

ECONOMIZER MODE CONTROL:

REFER TO ASHRAE GUIDELINE 36.

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE, THE UNIT SHALL MODULATE THE BYPASS DAMPER, OUTDOOR AIR, AND RETURN AIR DAMPERS TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AND MINMIZE THE TOTAL MECHANICAL COOLING. THE ECONOMIZER IS THE FIRST STAGE OF COOLING.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MNMUM OUTDOOR AIR CONTROL OPERATION. THE BYPASS DAMPERS SHALL BE CLOSED.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MNMUM OUTDOOR AIR CONTROL OPERATION. THE BYPASS DAMPER SHALL BE CLOSED.

ECONOMIZER SECTION SHALL HAVE FAULT DETECTION AND DIAGNOSTICS.

ENTHAUPY WHEEL CONTROL:

DURING UNOCCUPIED MODE, THE ENTHALPY WHEEL SHALL BE STOPPED.

IN OCCUPIED MODE, IF THE OUTDOOR AIR ENTHALPY (CALCULATED) IS GREATER THAN THE RETURN AIR ENTHALPY (CALCULATED) OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE UNIT SHALL MODULATE THE ENTHALPY WHEEL TO MAX SPEED. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF COOLING.

IN OCCUPIED MODE, WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE DISCHARGE AIR TEMPERATURE, THE ENTHALPY WHEEL SHALL MODULATE SPEED TO MAINTAN REQUIRED DISCHARGE TEMPERATURE. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF HEATING.

HEATING HOT WATER CIRCULATION PUMP CONTROL:

WHENEVER THE OUTDOOR AIR TEMPERATURE IS BELOW 40°F OR THERE IS A CALL FOR HEATING, THE HEATING COIL FREEZE PUMP SHALL BE ENERGIZED AND RUN CONTINUOUSLY. THE PUMP SHALL PROVE FLOW TO THE BMS SYSTEM WITH ITS CURRENT SWITCH. IF THE PUMP FAILS, AN ALARM SHALL BE GENERATED AT THE BAS.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

FIRE ALARM MODE CONTROL: THE SUPPLY FAN ARRAY SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL. SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN ARRAY (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE RESET MANUALLY AT THE UNIT.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. THE FREEZE STAT SHALL AUTOMATICALLY ATTEMPT TO RESET. IF THE STAT TRIPS AGAIN AND/OR FAILS TO RESET THREE (3) TIMES WITHIN A 24 HOUR PERIOD, THE UNIT SHALL GENERATE A NEW ALARM AND REQUIRED A MANUALLY RESET.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN ARRAY AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED AS LONG AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

VALVE POSITION: KNOWLEDGE OF VALVE POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING POINT ACTUATOR CAN BE USED AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF VALVE POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

PROVIDE AIR-ECONOMIZER FAULT DETECTION AND DIAGNOSTICS.

ROTATIONAL MONITORING: PROVIDE ROTATION SENSOR ON ENERGY RECOVERY WHEEL; IF ROTATION IS NOT SENSED, BUT WHEEL SHOULD BE RUNNING, GENERATE AN ALARM AT THE BMS.

A2L LEAK MITIGATION:

REFER TO ASHRAE 15-2002, SECTION 7.6 AND UL-60335-2-40.

FACTORY MOUNTED CONTROLLER MONITORS THE A2L SENSORS AND INDICATES A REFRIGERANT LEAK OR REFRIGERANT SENSOR FAILURE SHOULD ONE OCCUR. THE COMPRESSOR AND ANY ELECTRICAL HEAT OUTPUTS WILL BE DE-ENERGIZED UPON DETECTION OR FAULT. THE FAN WILL BE FORCED TO SUFFICIENT AIRFLOW PER CODE (HIGH SPEED) WITHIN 10 SECONDS OF DETECTION OR FAULT.

A2L MITIGATION CONTROLS, WIRING, RELAYS, SEQUENCE, ETC. SHALL BE BY THE UNIT MANUFACTURER AND TO BE HARD-WIRED/AN INTEGRAL PART OF THE UNIT. CONTROLLER SHALL MEET REQUIREMENTS OF ASHRAE 15-2002, SECTION 7.6 AND UL-60335-2-40.

SINGLE-ZONE VAV ROOFTOP UNIT (DX, HGR, REMOTE HHW, & ERW) CONTROLS DIAGRAM

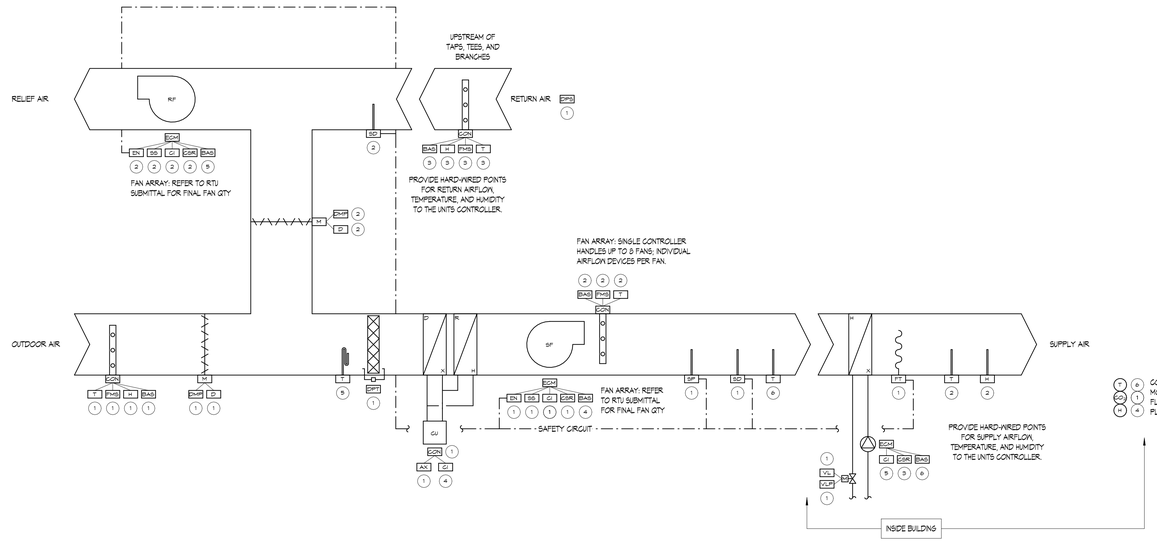
NOT TO SCALE

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS
3. DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL
4. COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
5. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MS TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT& NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS. SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (+2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M0.9

	HARDWARE								SOFTWARE		FAIL MODE			ALARM		
	ID DATA		POINT TYPE													
POINT NAME	TAG	NO.	AI	AO	BI	BO	AV	BV	TREND	SHOW ON GRAPHIC	FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM	ALARM LIMIT	REMARKS
SINGLE-ZONE VAV ROOFTOP UNIT (DX, HGR, REMOTE HHW, & ERW)																	
ALARM STATUS	AX	1			■					■					■		
AFMS NETWORK CONNECTION	BAS	1															MS/TP
AFMS NETWORK CONNECTION	BAS	2															FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
AFMS NETWORK CONNECTION	BAS	3															MS/TP
SUPPLY FAN ARRAY NETWORK CONNECTION	BAS	4															MS/TP - PULL ALL AVIABLE POINTS TO READ AT BMS
RELIEF FAN ARRAY NETWORK CONNECTION	BAS	5															MS/TP - PULL ALL AVIABLE POINTS TO READ AT BMS
BAS NETWORK CONNECTION	BAS	6								■							MS/TP
SUPPLY FAN ARRAY SPEED	CI	1	■						10 MINS	■			■				
RELIEF FAN ARRAY SPEED CONTROL	CI	2	■						10 MINS	■			■				
ERW VFD SPEED CONTROL	CI	3	■						10 MINS	■			■				CONNECT TO VFD SPEED
DX COOLING DEMAND SIGNAL	CI	4	■						10 MINS	■			■				1-5VDC DEMAND SIGNAL
G/RG PUMP SPEED	CI	5	■						10 MINS	■			■				
ZONE CO2	CO2	1	■						1 MINS	■				■	>25% SETPOINT		
MANU. PACKAGED DX CONTROLLER	CON	1															1, 2
SUPPLY FAN ARRAY STATUS	CSR	1		■					COV	■				■			
RELIEF FAN ARRAY STATUS	CSR	2		■					COV	■				■			
G/RG PUMP STATUS	CSR	3		■					COV	■				■			
ERW VFD STATUS	CSR	3		■					COV	■				■			CONNECT TO VFD STATUS
OUTDOOR AIR DAMPER CONTROL	D	1	■							■		■					
RETURN AIR DAMPER CONTROL	D	2	■							■	■						
EWR BYPASS DAMPER CONTROL	D	3	■							■		■					
OUTDOOR AIR DAMPER POSITION FEEDBACK	DMP	1	■						10 MINS	■							
RETURN AIR DAMPER POSITION FEEDBACK	DMP	2	■						10 MINS	■							
ERW BYPASS DAMPER POSITION	DMP	3	■						10 MINS	■							
ZONE/BUILDING STATIC PRESSURE SENSOR	DPS	1	■						1 MINS	■				■			LOCATE PER DRAWINGS
FILTER STATUS	DPT	1	■							■				■	1" W.C.		
OA FILTER STATUS	DPT	2	■							■				■	1" W.C.		
OUTDOOR AIR FILTER STATUS	DPT	2	■							■				■	1" W.C.		
SUPPLY FAN ARRAY ENABLE/DISABLE	EN	1			■					■							
RELIEF FAN ARRAY ENABLE/DISABLE	EN	2			■					■							
ERW VFD ENABLE/DISABLE	EN	3			■					■							
OUTDOOR AIRFLOW MEASURING STATION	FMS	1	■						1 MINS	■				■			
SUPPLY AIRFLOW MEASURING STATION	FMS	2	■						1 MINS	■				■			FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
RETURN AIRFLOW MEASURING STATION	FMS	3	■						1 MINS	■				■			COORDINATE AIRFLOW MEASURE STATION LOCATION WITH MANUFACTURER. CAN BE LOCATED INSIDE UNIT IF AREA STRAIGHT LENGTH IS SUFFICIENT (TYP.)
FREEZESTAT STATUS	FT	1			■					■				■	LOW: 36°F		
OUTDOOR AIR HUMIDITY	H	1	■						10 MINS	■							
SUPPLY AIR HUMIDITY	H	2	■						10 MINS	■							
RETURN AIR HUMIDITY	H	3	■						10 MINS	■							
ZONE HUMIDITY	H	4	■						1 MINS	■				■	>60% RELATIVE HUMIDITY		
POST WHEEL AIR HUMIDITY	H	4	■						10 MINS	■							
ERW ROTATION MONITORING SENSOR	ROT	1			■									■			
SUPPLY AIR DUCT SMOKE DETECTOR	SD	1		■						■				■			PROVIDED BY DIV 23
RETURN AIR DUCT SMOKE DETECTOR	SD	2		■						■				■			PROVIDED BY DIV 23
HIGH STATIC PRESSURE SAFETY SWITCH	SP	1	■							■				■	4" W.C.		
SUPPLY FAN ARRAY START/STOP	SS	1			■					■		■					
RELIEF FAN ARRAY START/STOP	SS	2			■					■		■					
ERW VFD START/STOP	SS	3			■					■		■					CONNECT TO VFD RUN
OUTDOOR AIR TEMPERATURE	T	1	■						1 MINS	■							
FAN DISCHARGE AIR TEMPERATURE	T	2	■						10 MINS	■							



SEQUENCE OF OPERATION

GENERAL:

THE SINGLE-ZONE VAV ROOFTOP UNIT (RV DX COOLING, HOT GAS REHEAT, AND HHW HEATING) SEQUENCES PROVIDED ARE INTENDED TO BE PERFORMANCE BASED. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY USING DIFFERENT UNDERLYING LOGIC WILL BE ACCEPTABLE. THE SEQUENCES AND REQUIREMENTS ARE BASED IN PART ON ASHRAE GUIDELINE 36-2021, ASHRAE 62.1-2016, ASHRAE 90.1-2013, AND MMC-2021. CONTRACTOR TO REFER STANDARDS AS REQUIRED TO MEET INTENT.

CONTROLS ARE TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR. FOR REFRIGERATION CONTROLS, THE MANUFACTURER SHALL PROVIDE A REFRIGERATION CONTROLLER AND/OR TERMINAL STRIP. CONTROLS CONTRACTOR IS REQUIRED TO COORDINATE WITH THE PURCHASED REFRIGERATION EQUIPMENT TO DETERMINE FINAL CONTROL POINTS, FUNCTIONALITY, SEQUENCING, ETC.

ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, PID GAINS, ETC. LISTED IN THE SEQUENCE SHALL BE ADJUSTABLE BY THE OWNER. ADDITIONALLY, ALL POINT VALUES SHALL BE OVERRIDABLE (FOR TESTING AND COMMISSIONING PURPOSES). EXCEPTION BEING, THOSE POINTS WHICH WOULD EFFECT EQUIPMENT OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER ELECTRONIC COMMUTATED MOTORS OR WITH VARIABLE FREQUENCY DRIVES; REFER TO SCHEDULES AND SPECS FOR MOTOR TYPES.

SAFETIES HARD-WIRED INTO THE FANS VFDS INDICATE GENERAL INTENT FOR ENABLING/DISABLING VFD UPON SIGNAL FROM THE ASSOCIATED DEVICE (I.E. SMOKE DETECTORS, FREEZESTATS, HIGH/LOW PRESSURE SWITCHES, ETC.) TTC TO PROVIDE ALL NECESSARY TUBING, WIRING, CONTACTORS/RELAYS, ETC. FOR FULLY FUNCTIONAL SYSTEM.

MINIMUM DISCHARGE AIR TEMPERATURE: SETPOINT SHALL BE 59°F. MAXIMUM DISCHARGE AIR TEMPERATURE: SHALL BE 161°F.

SETPOINTS:

OCCUPIED COOLING SETPOINT:	75°F (ADJ.) / 50%RH
OCCUPIED HEATING SETPOINT:	70°F (ADJ.)
UNOCCUPIED COOLING SETPOINT:	80°F (ADJ.)
UNOCCUPIED HEATING SETPOINT:	65°F (ADJ.)

VERIFY ALL SETPOINTS WITH OWNER.

SETPOINT SHALL ALWAYS MAINTAIN A 5°F DEADBAND AND TEMPERATURE CONTROLS SHALL HAVE SETPOINT OVERLAP RESTRICTIONS.

OPERATING MODES:

EACH UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES: (1) OCCUPIED MODE, (2) WARM-UP MODE, (3) COOLDOWN MODE, (4) SETBACK MODE, (5) SETUP MODE, AND (6) UNOCCUPIED MODE.

UNOCCUPIED MODE. DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN; THE FANS SHALL BE STOPPED; THE TEMPERATURE CONTROLS LOOP SHALL BE IN DEADBAND.

SETBACK/SETUP MODE. WHILE IN UNOCCUPIED MODE, IF THE UNIT FALLS-BELOW OR RISE-ABOVE ITS UNOCCUPIED HEATING OR COOLING SETPOINT, THE UNIT SHALL ENTER SETBACK OR SETUP MODE RESPECTIVELY UNTIL THE ZONE IS 2°F ABOVE OR BELOW THE UNOCCUPIED SETPOINT VALUE.

COOLDOWN/WARM-UP MODE. PROVIDE A CALCULATED OPTIMIZED START ALGORITHM USED FOR BUILDING COOLDOWN OR WARM-UP MODE. IN COOLDOWN OR WARM-UP MODE, THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED, THE RETURN AIR DAMPER (D-2) SHALL BE OPEN. IN COOLDOWN, THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MINIMUM DISCHARGE AIR TEMPERATURE. IN WARM-UP, THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MAXIMUM DISCHARGE AIR TEMPERATURE. COOLDOWN OR WARM-UP MODE SHALL SWITCH TO OCCUPIED MODE ONCE THE ZONE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR SCHEDULED OCCUPIED TIME IS REACHED.

OCCUPIED MODE. ENTER OCCUPIED MODE WHEN THE TIME OF DAY SCHEDULE STARTS OCCUPIED MODE, OR IF PLACED IN OCCUPIED MODE MANUALLY; OR IF COOLDOWN/WARM-UP REACH OCCUPIED TEMPERATURE.

SUPPLY AIR TEMPERATURE CONTROL: REFER TO ASHRAE GUIDELINE 36.

THE SUPPLY FAN ARRAY SHALL RUN WHEN THE SYSTEM IS OPERATING IN ALL MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FAN ARRAY SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE AHU CONTROLLER OR BAS.

UPON PROOF OF SUCCESSFUL START AND OPERATION OF THE SUPPLY FAN ARRAY, THE OUTDOOR AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION INITIALLY.

PROVIDE A RAMP FUNCTION TO PREVENT CHANGES IN FAN SPEED OF MORE THAN 10% PER MIN.

AS SPACE TEMPERATURE INCREASES, THE UNIT SHALL MODULATE ECONOMIZER DAMPERS (WHEN ECONOMIZER MODE IS ENABLED) AND/OR SHALL MODULATE THE DX COOLING SYSTEM TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE COOLING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE MINIMUM DISCHARGE AIR TEMPERATURE . AT WHICH POINT, BOTH THE MECHANICAL COOLING SYSTEM AND THE SUPPLY FAN ARRAY WILL MODULATE UP TOGETHER TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT AND MINIMUM DISCHARGE AIR TEMPERATURE .

AS SPACE TEMPERATURE BEGINS TO DECREASES, THE PROCESS SHALL WORK IN REVERSE ORDER.

AS SPACE TEMPERATURE DECREASES, THE UNIT SHALL MODULATE THE HEATING HOT WATER CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT. THE HEATING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE MAXIMUM DISCHARGE AIR TEMPERATURE . AT WHICH POINT, BOTH THE MECHANICAL HEATING SYSTEM AND THE SUPPLY FAN ARRAY WILL MODULATE UP TOGETHER TO MAINTAIN SPACE AIR TEMPERATURE SETPOINT AND MAXIMUM DISCHARGE AIR TEMPERATURE .

AS SPACE TEMPERATURE BEGINS TO INCREASE, THE PROCESS SHALL WORK IN REVERSE ORDER.

SUPPLY AIRFLOW RATE SHALL BE MEASURED BY THE SUPPLY AIRFLOW MEASURING STATION.

THE SUPPLY FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

DEHUMIDIFICATION CONTROL: REFER TO ASHRAE GUIDELINE 36

DEHUMIDIFICATION MODE (ONLY) VIA MECHANICAL COOLING SHALL BE ENABLED DURING NORMAL RTU OPERATION WHEN THE SUPPLY FAN ARRAY IS PROVEN ON AND THE ZONE IS ABOVE A DEW POINT OF 55°F AND HAS A RELATIVE HUMIDITY ABOVE 60% (ADJ.) THE SYSTEM SHALL BE DISABLED WHEN EITHER OF THESE CONDITIONS ARE MET UNLESS THERE IS A NEED FOR TEMPERATURE CONTROL VIA MECHANICAL COOLING.

WHEN ENABLED, THE UNIT CONTROLLER SHALL DISABLE THE ECONOMIZER. NEXT, THE DX COOLING SYSTEM SHALL MODULATE THE MECHANICAL COOLING SYSTEM TO OVERCOOL THE AIR, LOWERING THE MOISTURE CONTENT. THE MODULATING HOT GAS REHEAT SYSTEM SHALL BE USED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. ONCE THE CONDITIONS ABOVE ARE MET, THE SYSTEM SHALL EXIT DEHUMIDIFICATION CONTROL.

RELIEF FAN CONTROL: REFER TO ASHRAE GUIDELINE 36.

THE RELIEF FAN SHALL BE ENABLED WHEN THE ASSOCIATED SUPPLY FAN ARRAY IS PROVEN ON.

START, STOP, AND MODULATE THE RELIEF FAN TO MAINTAIN ZONE/BUILDING STATIC PRESSURE (DPS-1) AT A SETPOINT OF 0.03 - 0.05 IN W.C.

RELIEF AIRFLOW RATE SHALL BE MEASURED BY THE SUPPLY AIRFLOW MEASURING STATION.

THE RELIEF FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

MINIMUM OUTDOOR AIR CONTROL: REFER TO ASHRAE GUIDELINE 36.

UPON RISING CO2 CONCENTRATION LEVEL ABOVE 1300 PPM (900 PPM ABOVE AMBIENT - ASHRAE 62.1-2022), THE OUTDOOR AND RETURN AIR DAMPER ACTUATORS SHALL MODULATE TO INCREASE OUTDOOR AIR INTAKE UNTIL CO2 LEVELS ARE BELOW 1200 PPM. THE RTU OUTDOOR DAMPER ACTUATOR SHALL NOT MODULATE BEYOND ITS SCHEDULED MAXIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE) UNLESS IN ECONOMIZER MODE.

INVERSELY, UPON FALLING CO2 CONCENTRATION LEVELS BELOW 900 PPM, THE OUTDOOR AND RETURN AIR DAMPERS SHALL MODULATE TO DECREASE OUTDOOR AIR INTAKE UNTIL CO2 CONCENTRATION LEVELS ARE AT 1200 PPM. THE RTU OUTDOOR DAMPER ACTUATOR SHALL NOT MODULATE BEYOND ITS SCHEDULED MINIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE - I.E. DAMPER POSITION LIMITED TO NO LESS THAN THE BUILDING COMPONENT OUTDOOR AIRFLOW.)

DEAD BAND OCCURS BETWEEN CO2 CONCENTRATION LEVELS BETWEEN 1100 PPM AND 1200 PPM.

OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN OUTDOOR AIRFLOW MEASURING DEVICE.

ECONOMIZER MODE CONTROL: REFER TO ASHRAE GUIDELINE 36.

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE, THE UNIT SHALL MODULATE THE OUTDOOR AIR AND RETURN AIR DAMPERS TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AND MINIMIZE THE TOTAL MECHANICAL COOLING. THE ECONOMIZER IS THE FIRST STAGE OF COOLING.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION.

ECONOMIZER SECTION SHALL HAVE FAULT DETECTION AND DIAGNOSTICS.

HEATING HOT WATER CIRCULATION PUMP CONTROL:

WHENEVER THE OUTDOOR AIR TEMPERATURE IS BELOW 40°F OR THERE IS A CALL FOR HEATING, THE HEATING COIL FREEZE PUMP SHALL BE ENERGIZED AND RUN CONTINUOUSLY. THE PUMP SHALL PROVE FLOW TO THE BMS SYSTEM WITH ITS CURRENT SWITCH. IF THE PUMP FAILS, AN ALARM SHALL BE GENERATED AT THE BAS.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

FIRE ALARM MODE CONTROL: THE SUPPLY FAN ARRAY SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL. SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN ARRAY (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE RESET MANUALLY AT THE UNIT.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. THE FREEZE STAT SHALL AUTOMATICALLY ATTEMPT TO RESET. IF THE STAT TRIPS AGAIN AND/OR FAILS TO RESET THREE (3) TIMES WITHIN A 24 HOUR PERIOD, THE UNIT SHALL GENERATE A NEW ALARM AND REQUIRED A MANUALLY RESET.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN ARRAY AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED AS LONG AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

VALVE POSITION: KNOWLEDGE OF VALVE POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING POINT ACTUATOR CAN BE USED AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF VALVE POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

PROVIDE AIR-ECONOMIZER FAULT DETECTION AND DIAGNOSTICS.

A2L LEAK MITIGATION: REFER TO ASHRAE 15-2022, SECTION 7.6 AND UL-60335-2-40.

FACTORY MOUNTED CONTROLLER MONITORS THE A2L SENSORS AND INDICATES A REFRIGERANT LEAK OR REFRIGERANT SENSOR FAILURE SHOULD ONE OCCUR. THE COMPRESSOR AND ANY ELECTRICAL HEAT OUTPUTS WILL BE DE-ENERGIZED UPON DETECTION OR FAULT. THE FAN WILL BE FORCED TO SUFFICIENT AIRFLOW PER CODE (HIGH SPEED) WITHIN 10 SECONDS OF DETECTION OR FAULT.

A2L MITIGATION CONTROLS, WIRING, RELAYS, SEQUENCE, ETC. SHALL BE BY THE UNIT MANUFACTURER AND TO BE HARD-WIRED/AN INTEGRAL PART OF THE UNIT. CONTROLLER SHALL MEET REQUIREMENTS OF ASHRAE 15-2022, SECTION 7.6 AND UL-60335-2-40.

SINGLE-ZONE VAV ROOFTOP UNIT (DX, HGR, REMOTE HHW) CONTROLS DIAGRAM

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS
3. DRAWINGS, REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
4. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MSI TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
5. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
6. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
7. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
8. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR TIME DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
9. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT NETWORK) SHALL BE INCLUDED ON GRAPHICS.
10. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
11. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
12. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
13. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS; SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (+2°F) WITH NO DISPLAY. SET-POINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
14. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
15. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
16. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M8.10

POINT NAME	HARDWARE: ID DATA TAG	NO.	POINT TYPE: AI	AO	BI	BO	AV	BV	SOFTWARE: TREND	SHOW ON GRAPHIC	FAIL MODE: FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT*	ALARM: ALARM	ALARM LIMIT	REMARKS
SINGLE-ZONE VAV ROOFTOP UNIT (DX, HGR, REMOTE HHW)																	
ALARM STATUS	AX	1			■					■					■		
AFMS NETWORK CONNECTION	BAS	1															MS/TP
AFMS NETWORK CONNECTION	BAS	2															FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
AFMS NETWORK CONNECTION	BAS	3															MS/TP
SUPPLY FAN ARRAY NETWORK CONNECTION	BAS	4															MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
RELIEF FAN ARRAY NETWORK CONNECTION	BAS	5															MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
BAS NETWORK CONNECTION	BAS	6								■							MS/TP
SUPPLY FAN ARRAY SPEED	CI	1		■					10 MINS	■			■				
RELIEF FAN ARRAY SPEED CONTROL	CI	2		■					10 MINS	■			■				
DX COOLING DEMAND SIGNAL	CI	4		■					10 MINS	■			■				1-5VDC DEMAND SIGNAL
CIRC PUMP SPEED	CI	5		■					10 MINS	■			■				
ZONE CO2	CO2	1	■						1 MINS	■					■	125% SETPOINT	
MANU. PACKAGED DX CONTROLLER	CON	1								■							1, 2
SUPPLY FAN ARRAY STATUS	CSR	1			■				COV	■					■		
RELIEF FAN ARRAY STATUS	CSR	2			■				COV	■					■		
CIRC PUMP STATUS	CSR	3			■				COV	■					■		
OUTDOOR AIR DAMPER CONTROL	D	1		■						■		■					
RETURN AIR DAMPER CONTROL	D	2		■						■	■						
OUTDOOR AIR DAMPER POSITION FEEDBACK	DMP	1	■						10 MINS	■							
RETURN AIR DAMPER POSITION FEEDBACK	DMP	2	■						10 MINS	■							
ZONE-BUILDING STATIC PRESSURE SENSOR	DPS	1	■						1 MINS	■					■		LOCATE PER DRAWINGS
FILTER STATUS	DPT	1	■							■					■	1" W.C.	
SUPPLY FAN ARRAY ENABLE/DISABLE	EN	1				■				■							
RELIEF FAN ARRAY ENABLE/DISABLE	EN	2				■				■							
OUTDOOR AIRFLOW MEASURING STATION	FMS	1	■						1 MINS	■					■		
SUPPLY AIRFLOW MEASURING STATION	FMS	2	■						1 MINS	■					■		FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
RETURN AIRFLOW MEASURING STATION	FMS	3	■						1 MINS	■					■		COORDINATE AIRFLOW MEASURE STATION LOCATION WITH MANUFACTURER. CAN BE LOCATED INSIDE UNIT IF AREA STRAIGHT LENGTH IS SUFFICIENT (TYP.)
FREEZESTAT STATUS	FT	1			■					■					■	LOW: 36°F	
OUTDOOR AIR HUMIDITY	H	1	■						10 MINS	■							
SUPPLY AIR HUMIDITY	H	2	■						10 MINS	■							
RETURN AIR HUMIDITY	H	3	■						10 MINS	■							
ZONE HUMIDITY	H	4	■						1 MINS	■					■	60% RELATIVE HUMIDITY	
SUPPLY AIR DUCT SMOKE DETECTOR	SD	1			■					■					■		PROVIDED BY DIV 28
RETURN AIR DUCT SMOKE DETECTOR	SD	2			■					■					■		PROVIDED BY DIV 28
HIGH STATIC PRESSURE SAFETY SWITCH	SP	1	■							■					■	4" W.C.	
SUPPLY FAN ARRAY START/STOP	SS	1				■				■		■					
RELIEF FAN ARRAY START/STOP	SS	2				■				■		■					
OUTDOOR AIR TEMPERATURE	T	1	■						1 MINS	■							
DISCHARGE AIR TEMPERATURE	T	2	■						10 MINS	■							
FAN DISCHARGE AIR TEMPERATURE	T	2	■						10 MINS	■							
RETURN AIR TEMPERATURE	T	3	■						1 MINS	■							
MIXED AIR TEMPERATURE	T	5	■						1 MINS	■							
ZONE TEMPERATURE	T	6	■						1 MINS	■					■	LOW: 55°F / HIGH: 90°F	
UNIT LEAVING AIR TEMPERATURE	T	6	■						10 MINS	■					■	LOW: 50°F / HIGH: 100°F	
HEATING COIL VALVE CONTROL	VL	1	■						1 MINS	■	■						2-10 VDC MODULATING
HEATING COIL VALVE POSITION FEEDBACK	VLP	1	■						1 MINS	■	■						2-10 VDC MODULATING

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

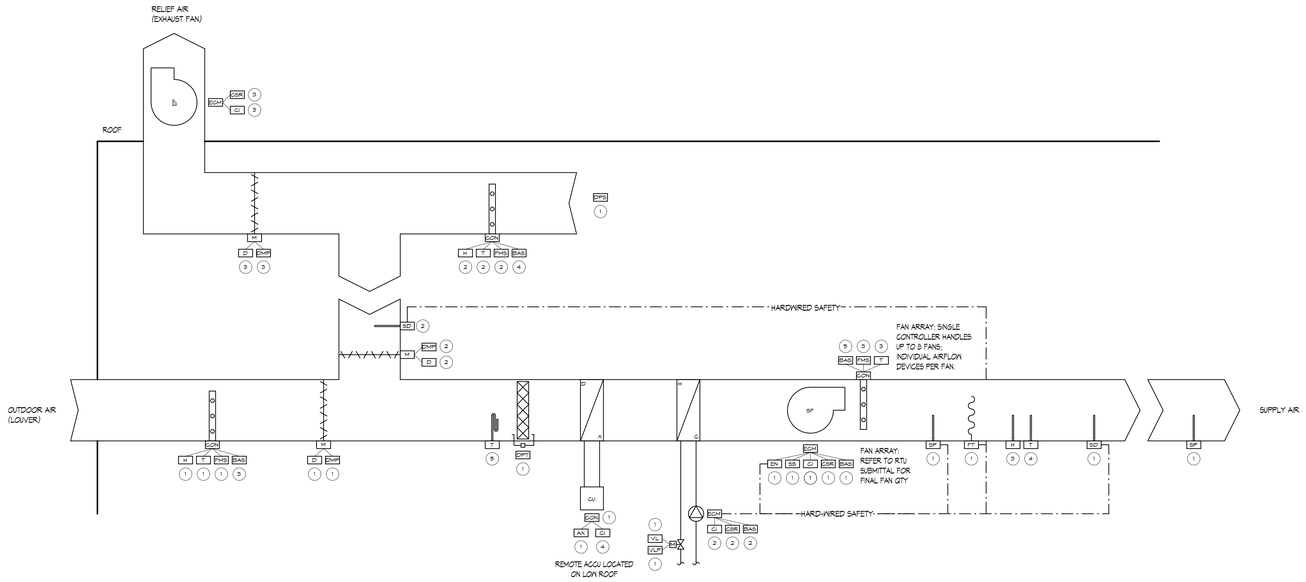
JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS (RTU-3)

SHEET NO.
M811



07/30/2026



SEQUENCE OF OPERATION

GENERAL:

THE MULTIPLE-ZONE VAV AIR HANDLING UNIT (W/ DX COOLING AND HEATING HOT WATER HEATING) SEQUENCES PROVIDED ARE INTENDED TO BE PERFORMANCE BASED. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY USING DIFFERENT UNDERLYING LOGIC WILL BE ACCEPTABLE. THE SEQUENCES AND REQUIREMENTS ARE BASED IN PART ON ASHRAE GUIDELINE 36-2021, ASHRAE 62.1-2019, ASHRAE 90.1-2013, AND MMC-2021. CONTRACTOR TO REFER STANDARDS AS REQUIRED TO MEET INTENT.

CONTROLS ARE TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR. FOR REFRIGERATION CONTROLS, THE MANUFACTURER SHALL PROVIDE A REFRIGERATION CONTROLLER AND/OR TERMINAL STRIP. CONTROLS CONTRACTOR IS REQUIRED TO COORDINATE WITH THE PURCHASED REFRIGERATION EQUIPMENT TO DETERMINE FINAL CONTROL POINTS, FUNCTIONALITY, SEQUENCING, ETC.

ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, PID GAINS, ETC. LISTED IN THE SEQUENCE SHALL BE ADJUSTABLE BY THE OWNER. ADDITIONALLY, ALL POINT VALUES SHALL BE OVERRIDABLE (FOR TESTING AND COMMISSIONING PURPOSES). EXCEPTION BEING, THOSE POINTS WHICH WOULD EFFECT EQUIPMENT OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER ELECTRONIC COMMUTATED MOTORS OR WITH VARIABLE FREQUENCY DRIVES; REFER TO SCHEDULES AND SPECS FOR MOTOR TYPES.

SAFETIES HARD-WIRED INTO THE FANS VFDS INDICATE GENERAL INTENT FOR ENABLING/DISABLING VFD UPON SIGNAL FROM THE ASSOCIATED DEVICE (I.E. SMOKE DETECTORS, FREEZESTATS, HIGH/LOW PRESSURE SWITCHES, ETC.) TTC TO PROVIDE ALL NECESSARY TUBING, WIRING, CONTACTORS/RELAYS, ETC. FOR FULLY FUNCTIONAL SYSTEM.

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 55°F. MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 65°F IN OCCUPIED MODE. IN SETUP OR WARM-UP MODE, MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 45°F.

TRIM AND RESPOND: REFER TO ASHRAE GUIDELINE 36 SECTION 5.1.1.4.

TIR LOGIC SHALL RESET THE SETPOINT (I.E. STATIC PRESSURE SETPOINT, TEMPERATURE SETPOINT, ETC) BETWEEN THE MINIMUM SETPOINT AND MAXIMUM SETPOINT.

WHILE IN UNOCCUPIED MODE, THE SYSTEMS SETPOINT SHALL BE SET TO THE SYSTEMS INITIAL SETPOINT.

WHEN PLACED IN OCCUPIED MODE, THE EQUIPMENT IS PROVEN ON, AND AFTER AN INITIAL TIME DELAY, THE TIR LOGIC SHALL GRADUALLY REDUCE THE SETPOINT BY THE TRIM AMOUNT EVERY TIME STEP WHILE THE DOWNSTREAM ZONE, SYSTEM, OR EQUIPMENTS CUMULATIVE REQUESTS ARE BELOW THE REQUEST LIMIT. REFER TO THE VAV TERMINAL UNIT CONTROLS SEQUENCE OF OPERATIONS.

IF THE NUMBER OF CUMULATIVE REQUESTS EXCEEDS THE REQUEST LIMIT, RESPOND BY INCREASING THE SETPOINT IN INCREMENTS EQUAL TO MULTIPLYING THE RESPONSE AMOUNT BY THE NUMBER OF REQUESTS GENERATED EVERY TIME STEP, BUT NEVER EXCEEDING THE MAX. RESPONSE AMOUNT. EVERY TIME STEP REGARDLESS OF REQUEST COUNT, CONTINUE UNTIL THERE ARE LESS REQUESTS GENERATED THAN THE REQUEST LIMIT VALUE ALLOWS. AFTER SUCH EVENTS AND AFTER ANOTHER TIME DELAY, THE TIR LOGIC SHALL RESUME.

THE BAS SHALL GENERATE A RUNNING TOTAL OF THE REQUESTS GENERATED BY EACH ZONE TO IDENTIFY ZONES EXCESSIVELY DRIVING THE RESET LOGIC. IF A ZONE IS CAUSING ERRONEOUS RESULTS, THE *WEIGHTED IMPORTANCE MULTIPLIER* VALUE MAY BE SET TO 0.

ZONE GROUP & OPERATING MODES: REFER TO ASHRAE GUIDELINE 36 SECTION 5.4.

EACH ZONE SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES: (1) OCCUPIED MODE, (2) WARM-UP MODE, (3) COOLDOWN MODE, (4) SETBACK MODE, (5) SETUP MODE, AND (6) UNOCCUPIED MODE.

UNOCCUPIED MODE. DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER (D-1) AND RELIEF AIR DAMPER (D-3) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN; THE FANS SHALL BE STOPPED; THE TEMPERATURE CONTROLS LOOP SHALL BE IN DEADBAND.

SETBACK/SETUP MODE. WHILE IN UNOCCUPIED MODE, IF ANY ZONE FALLS-BELOW OR RISE-ABOVE THEIR UNOCCUPIED HEATING OR COOLING SETPOINT, THE UNIT SHALL ENTER SETBACK OR SETUP MODE UNTIL ALL SPACES ARE 2°F ABOVE OR BELOW THEIR UNOCCUPIED SETPOINT VALUE. IF ANY 1 ZONE FALLS-BELOW 15°F THE UNOCCUPIED HEATING SETPOINT, GENERATE AN ALARM AT THE BAS.

COOLDOWN/WARM-UP MODE. PROVIDE A CALCULATED OPTIMIZED START ALGORITHM USED FOR BUILDING COOLDOWN OR WARM-UP. THE COOLDOWN OR WARM-UP MODE, THE OUTDOOR AIR DAMPER (D-1) AND RELIEF AIR DAMPER (D-3) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN. IN COOLDOWN, THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MINIMUM DISCHARGE AIR TEMPERATURE. IN WARM-UP, THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MAXIMUM DISCHARGE AIR TEMPERATURE. (NOTE - ZONE REHEAT SHALL BE THE SECOND STAGE OF HEATING). COOLDOWN OR WARM-UP MODE SHALL SWITCH TO OCCUPIED MODE ONCE THE ZONE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR SCHEDULED OCCUPIED TIME IS REACHED.

OCCUPIED MODE. ENTER OCCUPIED MODE WHEN THE TIME OF DAY SCHEDULE STARTS OCCUPIED MODE; OR IF PLACED IN OCCUPIED MODE MANUALLY; OR IF COOLDOWN/WARM-UP REACH OCCUPIED TEMPERATURE.

SUPPLY FAN CONTROL: REFER TO ASHRAE GUIDELINE 36 SECTION 5.16.1.

THE SUPPLY FAN SHALL RUN IN ALL OPERATING MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FANS SHALL BE STOPPED/STARTED BY THE UNITS CONTROLLER OR THE BAS. ONCE THE SUPPLY FAN IS PROVEN ON, THE OUTDOOR AIR DAMPER (D-1) AND RELIEF AIR DAMPER (D-3) SHALL OPEN.

THE SUPPLY FAN SHALL OPERATE TO MAINTAIN STATIC PRESSURE SETPOINT. NOTE - LOCATE SP SENSOR (SP-1) PER ASHRAE 90.1-2013 SECTION 6.5.3.2.2: SETPOINT SHALL BE NO GREATER THAN 1.2 IN W.C. IF THIS RESULTS IN SENSORS BEING LOCATED DOWNSTREAM OF MAJOR SPLITS, PROVIDE SENSORS IN EACH MAJOR BRANCH. REFER TO FLOOR PLANS. IF STATIC PRESSURE FALLS BELOW THE STATIC PRESSURE SETPOINT, THE SUPPLY FANS SPEED SHALL BE INCREASED. IF THE STATIC PRESSURE RISES ABOVE STATIC PRESSURE SET POINT, THE SUPPLY FANS SPEED SHALL BE DECREASED.

TOTALIZE AIRFLOW RATES FROM ALL ASSOCIATED VAV BOXES AND STORE AS A ANALOG VALUE POINT.

SUPPLY AIRFLOW RATE SHALL BE MEASURED BY THE SUPPLY AIRFLOW MEASURING STATION.

THE SUPPLY FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

VAV STATIC PRESSURE SETPOINT RESET: REFER TO TRIM AND RESPOND LOGIC

INITIAL SETPOINT (PRESSURE):	1.0 IN. W.C.	TRIM AMOUNT:	-0.05 IN. W.C.
MAXIMUM SETPOINT (PRESSURE):	REFER TO RTU/AHU SCHEDULE	RESPONSE AMOUNT:	+0.06 IN. W.C.
MINIMUM SETPOINT (PRESSURE):	0.1 IN. W.C.	MAX RESPONSE AMOUNT:	+0.15 IN. W.C.
TIME DELAY:	10 MINS	REQUEST LIMIT:	3
TIME STEP:	2 MINS		

RELIEF AIR/ EXHAUST FAN CONTROL: REFER TO ASHRAE GUIDELINE 36 SECTION 6.16.9.

THE EXHAUST FAN (EF-2) SHALL BE ENABLED WHEN THE ASSOCIATED SUPPLY FAN IS PROVEN ON.

START, STOP, AND MODULATE THE RELIEF FAN TO MAINTAIN ZONE/BUILDING STATIC PRESSURE (DPS-1) AT A SETPOINT OF 0.03 - 0.05 IN W.C.

RELIEF AIRFLOW RATE SHALL BE MEASURED BY THE RELIEF AIRFLOW MEASURING STATION.

A2L LEAK MITIGATION: REFER TO ASHRAE 15-2022, SECTION 7.6 AND UL-60335-2-40.

FACTORY MOUNTED CONTROLLER MONITORS THE A2L SENSORS AND INDICATES A REFRIGERANT LEAK OR REFRIGERANT SENSOR FAILURE SHOULD ONE OCCUR. THE COMPRESSOR AND ANY ELECTRICAL HEAT OUTPUTS WILL BE DE-ENERGIZED UPON DETECTION OR FAULT. THE FAN WILL BE FORCED TO SUFFICIENT AIRFLOW PER CODE (HIGH SPEED) WITHIN 10 SECONDS OF DETECTION OR FAULT.

A2L MITIGATION CONTROLS, WIRING, RELAYS, SEQUENCE, ETC. SHALL BE BY THE UNIT MANUFACTURER AND TO BE HARD-WIRED/AN INTEGRAL PART OF THE UNIT. CONTROLLER SHALL MEET REQUIREMENTS OF ASHRAE 15-2022, SECTION 7.6 AND UL-60335-2-40.

MINIMUM OUTDOOR AIR CONTROL:

PROGRAM THE MULTIPLE-ZONE RECIRCULATION VENTILATION RATE PROCEDURE FOR SINGLE SUPPLY SYSTEMS FOUND IN ASHREAE 62.1-2016 TO HAVE THE UNIT CONTROLLER DETERMINE THE MINIMUM OUTDOOR AIR SETPOINT. SETPOINT SHALL BE CONTINUOUSLY CALCULATED BASED ON CHANGES WITHIN THE SYSTEM. SETPOINT SHALL NOT EXCEED MAXIMUM DESIGN OUTDOOR AIR RATES OF THE UNIT (REFER TO SCHEDULE), UNLESS IN ECONOMIZER MODE.

THE MINIMUM OUTDOOR AIR CONTROL LOOP IS ENABLED WHEN THE SUPPLY FAN IS PROVEN ON, THE UNIT IS IN OCCUPIED MODE, AND THE ECONOMIZER LIMITS ARE MET. MODULATE THE OUTDOOR AIR DAMPER, RELIEF AIR DAMPER, AND RETURN AIR DAMPER AS REQUIRED TO MAINTAIN THE CALCULATED MINIMUM OUTDOOR AIR SETPOINT AT ALL TIMES.

THE OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN AIRFLOW MEASURING STATION.

SUPPLY AIR TEMPERATURE CONTROL: REFER TO ASHRAE GUIDELINE 36 SECTION 5.16.2.

TEMPERATURE CONTROL LOOP SHALL BE ENABLED WHEN THE SUPPLY FAN IS PROVEN ON.

DURING OCCUPIED MODE, TEMPERATURE SETPOINT SHALL RESET FROM MINIMUM DISCHARGE AIR TEMPERATURE WHEN THE OUTDOOR AIR TEMPERATURE IS 70°F AND ABOVE, PROPORTIONALLY UP TO MAXIMUM DISCHARGE AIR TEMPERATURE WHEN THE OUTDOOR AIR TEMPERATURE IS 60°F AND BELOW. THE CURRENT SETPOINT VARIES BETWEEN MINIMUM DISCHARGE AIR TEMPERATURE AND MAXIMUM DISCHARGE AIR TEMPERATURE BASED ON TIR LOGIC AND NUMBER OF REQUESTS.

DURING COOLDOWN AND SETUP MODE, THE SETPOINT SHALL BE FIXED TO THE MINIMUM DISCHARGE AIR TEMPERATURE ; DURING WARMUP AND SETBACK MODE, THE SETPOINT SHALL BE FIXED TO THE MAXIMUM DISCHARGE AIR TEMPERATURE.

SUPPLY AIR TEMPERATURE SHALL BE CONTROLLED TO SETPOINT USING THE HEATING COIL, OUTDOOR AIR DAMPER, RETURN AIR DAMPER, AND COOLING COIL. RETURN AIR DAMPER MAXIMUM POSITION AND OUTDOOR AIR DAMPER MINIMUM POSITION SHALL BE SEQUENCED TO CONTROL MINIMUM OUTDOOR AIR VOLUME AND REDUCE ENERGY CONSUMPTION. OUTDOOR AIR DAMPER MAXIMUM POSITION IS LIMITED DURING MINIMUM OUTDOOR AIR CONTROL PERIODS; REFER TO OUTDOOR AIR CONTROL SECTION.

SUPPLY AIR TEMPERATURE RESET: REFER TO TRIM AND RESPOND LOGIC; REFER TO DIAGRAM.

INITIAL SETPOINT (TEMPERATURE):	55°F	TRIM AMOUNT:	+0.1°F
MAXIMUM SETPOINT (TEMPERATURE):	MAXIMUM DISCHARGE AIR TEMPERATURE	RESPONSE AMOUNT:	-0.2°F
MINIMUM SETPOINT (TEMPERATURE):	MINIMUM DISCHARGE AIR TEMPERATURE	MAX RESPONSE AMOUNT:	-0.6°F
TIME DELAY:	10 MINS	REQUEST LIMIT:	3
TIME STEP:	2 MINS		

ECONOMIZER MODE CONTROL: REFER TO ASHRAE GUIDELINE 36 SECTION 5.1.1.17

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE, THE UNIT SHALL MODULATE THE OUTDOOR AIR, RELIEF AIR, AND RETURN AIR DAMPERS TO MANTAIN THE DISCHARGE AIR TEMPERATURE AND MINMIZE THE TOTAL MECHANICAL COOLING. THE ECONOMIZER IS THE FIRST STAGE OF COOLING.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE OUTDOOR AIR, RELIEF AIR, AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE OUTDOOR AIR, RELIEF AIR, AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION.

ECONOMIZER SECTION SHALL HAVE FAULT DETECTION AND DIAGNOSTICS.

DEHUMIDIFICATION CONTROL:

DEHUMIDIFICATION MODE (ONLY) VIA MECHANICAL COOLING SHALL BE ENABLED DURING NORMAL AHU OPERATION WHEN THE SUPPLY FAN IS PROVEN ON; THE OUTDOOR AIR TEMPERATURE IS ABOVE 50°F (ACCU-1 MINIMUM AMBIENT); AND ANY ZONE IS ABOVE A DEW POINT OF 55°F AND HAS A RELATIVE HUMIDITY ABOVE 60% (ADJ.) THE SYSTEM SHALL BE DISABLED IN ALL OTHER CONDITIONS UNLESS THERE IS A NEED FOR TEMPERATURE CONTROL VIA MECHANICAL COOLING.

WHEN ENABLED, THE UNIT CONTROLLER SHALL DISABLE THE ECONOMIZER. NEXT, THE DX COOLING SYSTEM SHALL STAGE THE MECHANICAL COOLING SYSTEM TO OVERCOOL THE AIR, LOWERING THE MOISTURE CONTENT. THE MODULATING HEATING HOT WATER CONTROL VAVLE SHALL BE USED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. ONCE THE CONDITIONS ABOVE ARE MET, THE SYSTEM SHALL EXIT DEHUMIDIFICATION CONTROL.

HEATING HOT WATER CIRCULATION PUMP CONTROL:

WHENEVER THE OUTDOOR AIR TEMPERATURE IS BELOW 40°F OR THERE IS A CALL FOR HEATING, THE HEATING COIL FREEZE PUMP SHALL BE ENERGIZED AND RUN CONTINUOUSLY. THE PUMP SHALL PROVE FLOW TO THE BMS SYSTEM WITH ITS CURRENT SWITCH. IF THE PUMP FAILS, AN ALARM SHALL BE GENERATED AT THE BAS.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

FIRE ALARM MODE CONTROL: THE SUPPLY FAN SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL. SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE RESET MANUALLY AT THE UNIT.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. THE FREEZE STAT SHALL AUTOMATICALLY ATTEMPT TO RESET. IF THE STAT TRIPS AGAIN AND/OR FAILS TO RESET THREE (3) TIMES WITHIN A 24 HOUR PERIOD, THE UNIT SHALL GENERATE A NEW ALARM AND REQUIRED A MANUALLY RESET.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED AS LONG AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

VALVE POSITION: KNOWLEDGE OF VALVE POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING POINT ACTUATOR CAN BE USED AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF VALVE POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

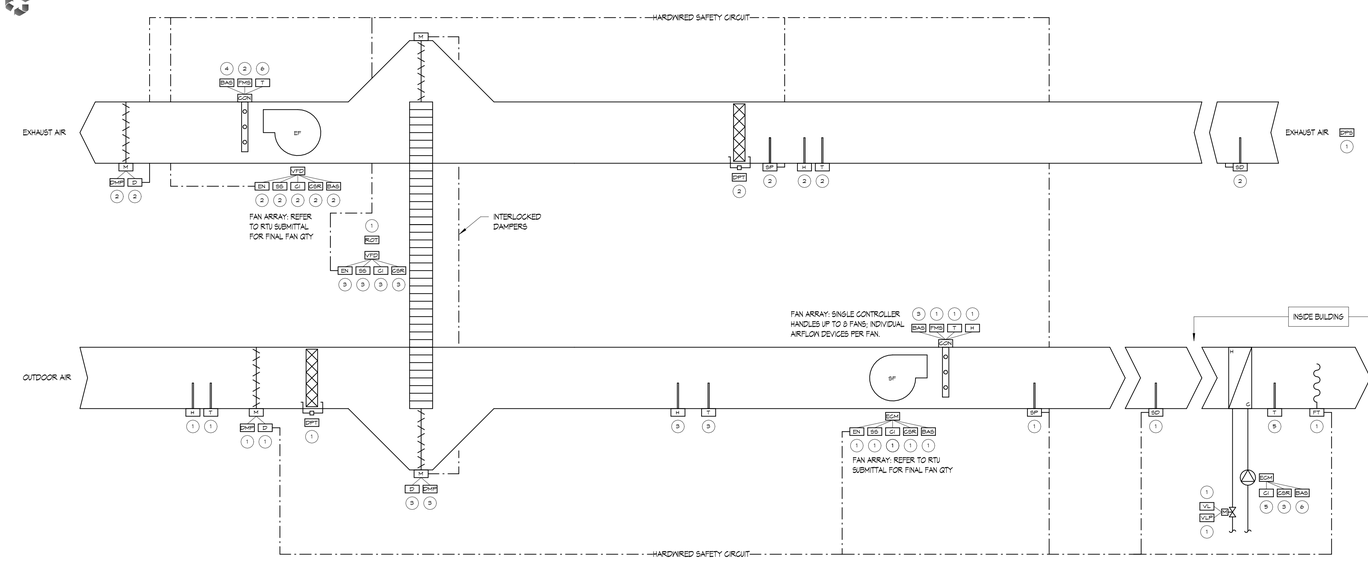
SUPPLY AIR TEMPERATURE: IF THE SUPPLY AIR TEMPERATURE AS MEASURED BY THE DISCHARGE AIR TEMPERATURE SENSOR (T-3) IS OUTSIDE THE RANGE OF 50°F OR 100°F FOR MORE THAN 10 MINS, DEENERGIZE UNIT FANS AND GENERATE AN ALARM AT THE BMS.

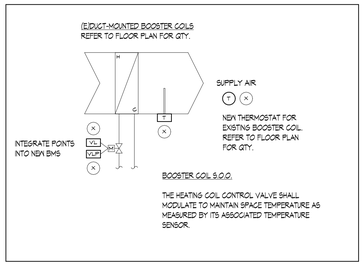
MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS
3. DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL
4. COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
5. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MS TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR TIME DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT4 NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS; SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M8.11

POINT NAME	HARDWARE: ID DATA: TAG	HARDWARE: POINT TYPE: NO.	AI	AO	BI	BO	AV	BV	SOFTWARE: TREND	SHOW ON GRAPHIC	FAIL MODE: FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM: ALARM	ALARM LIMIT	REMARKS
MULTI-ZONE VAV AIR HANDLING UNIT (REMOTE DX, HHW) CONTROLS DIAGRAM																	
AFMS BMS NETWORK CONNECITON	BAS	3															MS/TP
AFMS BMS NETWORK CONNECITON	BAS	4															MS/TP
AFMS BMS NETWORK CONNECITON	BAS	5															MS/TP
ALARM STATUS	AX	1			■					■					■		
BAS NETWORK CONNECTION	BAS	2								■							MS/TP
CIRC PUMP SPEED	CI	2		■					10 MINS	■			■				
CIRC PUMP STATUS	CSR	2			■				COV	■					■		
DUCT STATIC PRESSURE SENSOR	SP	1	■						1 MINS	■					■		LOCAATE SO SETPOINT SHALL BE NO GREATER THAN 1.2 IN W.C.
DX COOLING DEMAND SIGNAL	CI	4		■					10 MINS	■			■				1-5VDC DEMAND SIGNAL
EXHAUST FAN SPEED CONTROL	CI	3		■						■			■				0-1.9 STOP, 2-10V START/OPPERATE
EXHAUST FAN STATUS	CSR	3			■				COV	■					■		
FAN SUPPLY AIR TEMPERATURE	T	3	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
FILTER STATUS	DPT	1	■							■					■	1" W.C.	
FREEZESTAT STATUS	FT	1				■				■					■	LOW: 38°F	
HEATING COIL VALVE CONTROL	VL	1	■						1 MINS	■		■					2-10 VDC MODULATING
HEATING COIL VALVE POSITION FEEDBACK	VLP	1	■						1 MINS	■		■					2-10 VDC MODULATING
HIGH STATIC PRESSURE SAFETY SWITCH	SP	1	■							■					■	4" W.C.	
MAN; PACKAGED DX CONTROLLER	CON	1															1, 2
MIXED AIR TEMPERATURE	T	5	■						10 MINS	■							
OUTDOOR AIR DAMPER CONTROL	D	1		■						■		■					
OUTDOOR AIR DAMPER POSITION FEEDBACK	DMP	1	■						10 MINS	■							
OUTDOOR AIR HUMIDITY	H	1	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
OUTDOOR AIR TEMPERATURE	T	1	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
OUTDOOR AIRFLOW MEASURING STATION	FMS	1	■						1 MINS	■					■		FROM AFMS; HARDWIRE POINT TO RTU CONTROLLER
RELIEF AIR DAMPER CONTROL	D	3		■						■		■					
RELIEF AIR DAMPER POSITION FEEDBACK	DMP	3	■						10 MINS	■							
RETURN AIR DAMPER CONTROL	D	2		■						■		■					
RETURN AIR DAMPER POSITION FEEDBACK	DMP	2	■						10 MINS	■							
RETURN AIR DUCT SMOKE DETECTOR	SD	2			■					■					■		PROVIDED BY DIV 28
RETURN AIR HUMIDITY	H	2	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
RETURN AIR TEMPERATURE	T	2	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
RETURN AIRFLOW MEASURING STATION	FMS	2	■						1 MINS	■					■		FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
SUPPLY AIR DUCT SMOKE DETECTOR	SD	1			■					■					■		PROVIDED BY DIV 28
SUPPLY AIR HUMIDITY	H	3	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO





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8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
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13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS; SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

SEQUENCE OF OPERATION

GENERAL:

THE SINGLE-ZONE VAV DEDICATED OUTDOOR AIR UNIT (W/ REMOTE HHW HEATING AND ERW) SEQUENCES PROVIDED ARE INTENDED TO BE PERFORMANCE BASED. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY USING DIFFERENT UNDERLYING LOGIC WILL BE ACCEPTABLE. THE SEQUENCES AND REQUIREMENTS ARE BASED IN PART ON ASHRAE GUIDELINE 36-2021, ASHRAE 62.1-2016, ASHRAE 90.1-2013, AND MMC-2021. CONTRACTOR TO REFER STANDARDS AS REQUIRED TO MEET INTENT.

CONTROLS ARE TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR. FOR REFRIGERATION CONTROLS, THE MANUFACTURER SHALL PROVIDE A REFRIGERATION CONTROLLER AND/OR TERMINAL STRIP. CONTROLS CONTRACTOR IS REQUIRED TO COORDINATE WITH THE PURCHASED REFRIGERATION EQUIPMENT TO DETERMINE FINAL CONTROL POINTS, FUNCTIONALITY, SEQUENCING, ETC.

ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, PID GAINS, ETC. LISTED IN THE SEQUENCE SHALL BE ADJUSTABLE BY THE OWNER. ADDITIONALLY, ALL POINT VALUES SHALL BE OVERRIDABLE (FOR TESTING AND COMMISSIONING PURPOSES). EXCEPTION BEING, THOSE POINTS WHICH WOULD EFFECT EQUIPMENT OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER ELECTRONIC COMMUTATED MOTORS OR WITH VARIABLE FREQUENCY DRIVES; REFER TO SCHEDULES AND SPECS FOR MOTOR TYPES.

SAFETIES HARD-WIRED INTO THE FANS VFDS INDICATE GENERAL INTENT FOR ENABLING/DISABLING VFD UPON SIGNAL FROM THE ASSOCIATED DEVICE (I.E. SMOKE DETECTORS, FREEZESTATS, HIGH/LOW PRESSURE SWITCHES, ETC.) TTC TO PROVIDE ALL NECESSARY TUBING, WIRING, CONTACTORS/RELAYS, ETC. FOR FULLY FUNCTIONAL SYSTEM.

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 59°F. MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 85°F.

SETPOINTS:

OCCUPIED COOLING SETPOINT: 75°F (ADJ.) (ONLY WHEN ECONOMIZER IS ABLE TO BRING AIR IN BETWEEN 50°F AND 65°F.
OCCUPIED HEATING SETPOINT: 70°F (ADJ.)
UNOCCUPIED COOLING SETPOINT: NONE
UNOCCUPIED HEATING SETPOINT: 60°F (ADJ.)

VERIFY ALL SETPOINTS WITH OWNER.

SETPOINT SHALL ALWAYS MAINTAIN A 5°F DEADBAND AND TEMPERATURE CONTROLS SHALL HAVE SETPOINT OVERLAP RESTRICTIONS.

OPERATING MODES:

EACH UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES: (1) OCCUPIED MODE, (2) WARM-UP MODE, (4) SETBACK MODE, (5) ECONOMIZER "COOLING MODE", AND (5) UNOCCUPIED MODE.

UNOCCUPIED MODE. DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER (D-1) AND EXHAUST AIR DAMPER (D-2) SHALL BE CLOSED; THE FANS SHALL BE STOPPED; THE TEMPERATURE CONTROLS LOOP SHALL BE IN DEADBAND.

SETBACK MODE. WHILE IN UNOCCUPIED MODE, IF THE UNIT FALLS-BELOW ITS UNOCCUPIED HEATING SETPOINT, THE UNIT SHALL ENTER SETBACK MODE UNTIL THE ZONE IS 3°F ABOVE THE UNOCCUPIED SETPOINT VALUE. DURING SETBACK MODE, THE OUTDOOR AIR (D-1) AND EXHAUST AIR DAMPER (D-2) SHALL OPEN.

WARM-UP MODE. PROVIDE A CALCULATED OPTIMIZED START ALGORITHM USED FOR BUILDING WARM-UP MODE. IN WARM-UP MODE, THE OUTDOOR AIR DAMPER (D-1) AND EXHAUST AIR DAMPER (D-2) SHALL BE OPEN. THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MAXIMUM DISCHARGE AIR TEMPERATURE. WARM-UP MODE SHALL SWITCH TO OCCUPIED MODE ONCE THE ZONE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR SCHEDULED OCCUPIED TIME IS REACHED.

OCCUPIED MODE. ENTER OCCUPIED MODE WHEN THE TIME OF DAY SCHEDULE STARTS OCCUPIED MODE, OR IF PLACED IN OCCUPIED MODE MANUALLY; OR IF WARM-UP HAS REACHED OCCUPIED TEMPERATURE.

SUPPLY FAN ARRAY CONTROL:

THE SUPPLY FAN ARRAY(S) SHALL RUN WHEN THE SYSTEM IS OPERATING IN ALL MODES EXCEPT UNOCCUPIED MODE.

PRIOR TO START OF SUPPLY FAN ARRAY(S), THE OUTDOOR AIR AND RELIEF AIR DAMPERS SHALL OPEN TO THEIR FULL OPEN POSITION.

THE SUPPLY FAN ARRAY VFD(S) SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE AHU CONTROLLER (OR BAS) WHEN IN AUTO.

PROVIDE A RAMP FUNCTION TO PREVENT CHANGES IN FAN SPEED OF MORE THAN 10% PER MIN.

THE SUPPLY FAN ARRAY(S) SHALL GO TO THEIR MINIMUM SPEEDS INITIALLY (AS DETERMINED BY TAB, REFER TO SCHEDULE FOR MINIMUM AIRFLOW). THEN FAN SPEEDS SHALL BE MODULATED UP AS REQUIRED TO MAINTAIN THE WORSE CASE CONDITION OF EITHER: (1) MAINTAINING SPACE TEMPERATURE OR (2) MAINTAINING MINIMUM OUTDOOR AIR REQUIREMENTS (BASED ON OCCUPANCY COUNT (I.E. CO2)).

THE SUPPLY FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

(1) SPACE TEMPERATURE CONTROL:

AS SPACE TEMPERATURE DECREASES, THE UNIT SHALL MODULATE THE HEATING HOT WATER CONTROL VALVE TO MAINTAIN OCCUPIED HEATING SETPOINT. THE HEATING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE MAXIMUM DISCHARGE AIR TEMPERATURE, AT WHICH POINT, BOTH THE MECHANICAL HEATING SYSTEM AND THE SUPPLY FAN ARRAY WILL MODULATE UP TOGETHER TO MAINTAIN OCCUPIED HEATING SETPOINT AND MAXIMUM DISCHARGE AIR TEMPERATURE .

AS SPACE TEMPERATURE BEGINS TO INCREASE, THE PROCESS SHALL WORK IN REVERSE ORDER.

(2) MINIMUM OUTDOOR AIR CONTROL:

AMBIENT CO2 READING IN LOCAL AREA SHALL BE DETERMINED AND INPUT INTO THE BMS. ASSUMPTION AND SEQUENCE BELOW ASSUME 400 PPM CO2. ADJUST AS REQUIRED.

UPON RISING CO2 CONCENTRATION LEVEL ABOVE 1300 PPM (900 PPM ABOVE AMBIENT - ASHRAE 62.1-2022), THE SUPPLY FAN ARRAY(S) SHALL INCREASE AIRFLOW UNTIL CO2 LEVELS ARE BELOW 1200 PPM. THE SUPPLY FAN ARRAY SHALL NOT GO PAST ITS MAXIMUM SCHEDULED AIRFLOW RATE.

INVERSELY, UPON FALLING CO2 CONCENTRATION LEVELS BELOW 1100 PPM, THE SUPPLY FAN ARRAY SHALL DECREASE AIRFLOW UNTIL CO2 CONCENTRATION LEVELS ARE AT 1200 PPM, THE SUPPLY FAN ARRAY(S) SHALL NOT GO PAST ITS MAXIMUM SCHEDULED AIRFLOW RATE.

DEAD BAND OCCURS BETWEEN CO2 CONCENTRATION LEVELS BETWEEN 1100 PPM AND 1200 PPM.

OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN OUTDOOR AIRFLOW MEASURING DEVICE.

RELIEF FAN CONTROL:

THE RELIEF FAN SHALL BE ENABLED WHEN THE ASSOCIATED SUPPLY FAN ARRAY IS PROVEN ON.

START, STOP, AND MODULATE THE RELIEF FAN TO MAINTAIN BUILDING STATIC PRESSURE (DPS-1) AT A SETPOINT OF 0.03 - 0.05 IN W.C.

STATIC PRESSURE SENSOR SHALL BE LOCATED INTELLIGENTLY WITHIN THE PDMB.

THE RELIEF FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

ECONOMIZER "COOLING" MODE CONTROL:

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE AND THE TEMPERATURE IS ABOVE OCCUPIED COOLING SETPOINT, THE UNIT SHALL MODULATE THE ERW, THE ERW BYPASS DAMPERS, AND THE SUPPLY FAN ARRAY(S) TO MAINTAIN THE OCCUPIED COOLING SETPOINT USING THE COOLER OUTDOOR AIR. DISCHARGE AIR TEMPERATURE SHALL FLOAT BETWEEN 50°F AND 70°F. THE ECONOMIZER (IN CONJUNCTION WITH THE ERW) IS THE ONLY STAGE OF COOLING.

NOTE: VENTILATION REQUIREMENTS SUPERSEDE ECONOMIZER CONTROL AIRFLOW MINIMUMS.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE EXCEEDS EXHAUST AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE SUPPLY FAN ARRAY SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION. THE BYPASS DAMPERS SHALL BE CLOSED.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE SUPPLY FAN ARRAY(S) SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION. THE BYPASS DAMPER SHALL BE CLOSED.

ECONOMIZER SECTION SHALL HAVE FAULT DETECTION AND DIAGNOSTICS.

UNOCCUPIED STANDBY MODE CONTROL:

WHEN THE SPACE HAS BEEN UNOCCUPIED FOR 5 MINS. THE UNIT SHALL ENTER UNOCCUPIED STANDBY MODE. THE ACTIVE HEATING SETPOINT SHALL BE SETBACK 1°F. THE ACTIVE COOLING SETPOINT SHALL BE SETUP 1°F. ALL AIRFLOW SUPPLIED TO THE ZONE SHALL BE SHUT OFF WHENEVER SPACE TEMPERATURE IS BETWEEN THE ACTIVE HEATING AND COOLING SETPOINTS.

HEATING HOT WATER CIRCULATION PUMP CONTROL:

WHENEVER THE OUTDOOR AIR TEMPERATURE IS BELOW 40°F OR THERE IS A CALL FOR HEATING, THE HEATING COIL FREEZE PUMP SHALL BE ENERGIZED AND RUN CONTINUOUSLY. THE PUMP SHALL PROVE FLOW TO THE BMS SYSTEM WITH ITS CURRENT SWITCH.

IF THE PUMP FAILS TO START, AN ALARM SHALL BE GENERATED AT THE BAS AND THE ASSOCIATED DOAS SHALL BE DISABLED. A HARDWIRED SAFETY CIRCUIT SHALL BE INTERLOCKED BETWEEN THE DOAS FANS AND THE FREEZE PUMP VFD FAULT SIGNAL.

ENTHALPY WHEEL CONTROL:

DURING UNOCCUPIED MODE, THE ENTHALPY WHEEL SHALL BE STOPPED.

IN OCCUPIED MODE, IF THE OUTDOOR AIR ENTHALPY (CALCULATED) IS GREATER THAN THE RETURN AIR ENTHALPY (CALCULATED) OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE UNIT SHALL MODULATE THE ENTHALPY WHEEL TO MAX SPEED. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF COOLING.

IN OCCUPIED MODE, WHENEVER THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE DISCHARGE AIR TEMPERATURE, THE ENTHALPY WHEEL SHALL MODULATE SPEED TO MAINTAIN REQUIRED DISCHARGE TEMPERATURE. THE ENTHALPY WHEEL SHALL BE THE FIRST STAGE OF HEATING.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

FIRE ALARM MODE CONTROL: THE SUPPLY FAN ARRAY SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL. SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE RESET MANUALLY AT THE UNIT.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. THE FREEZE STAT SHALL AUTOMATICALLY ATTEMPT TO RESET. IF THE STAT TRIPS AGAIN AND/OR FAILS TO RESET THREE (3) TIMES WITHIN A 24 HOUR PERIOD, THE UNIT SHALL GENERATE A NEW ALARM AND REQUIRED A MANUALLY RESET.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN ARRAY AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BMS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED AS LONG AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

VALVE POSITION: KNOWLEDGE OF VALVE POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING POINT ACTUATOR CAN BE USED AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF VALVE POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BMS.

PROVIDE AIR-ECONOMIZER FAULT DETECTION AND DIAGNOSTICS.

SUPPLY AIR TEMPERATURE: IF THE SUPPLY AIR TEMPERATURE AS MEASURED BY THE DISCHARGE AIR TEMPERATURE SENSOR (T-4) IS OUTSIDE THE RANGE OF 50°F OR 120°F FOR MORE THAN 10 MINS, DEENERGIZE UNIT FANS AND GENERATE AN ALARM AT THE BMS.

ROTATION ALARM: IF THE ENERGY RECOVERY WHEEL FAILS TO ROTATE, WHEN INDICATED BY THE ROT SENSOR, GENERATE AN ALARM AT THE BAS.

DEDICATED OUTDOOR AIR UNIT (REMOTE HHW & ERW) CONTROLS DIAGRAM

NOT TO SCALE

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M3.12

POINT NAME	HARDWARE: ID DATA TAG	NO.	POINT TYPE: AI	AO	BI	BO	AV	BV	SOFTWARE: TREND	SHOW ON GRAPHIC	FAIL MODE: FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM	ALARM LIMIT	REMARKS
DEDICATED OUTDOOR AIR UNIT (REMOTE HHW & ERW)																	
BAS NETWORK CONNECTION	BAS	6							10 MINS	■							MS/TP
BOOSTER COIL DISCHARGE AIR TEMPERATURE	T	X	■						10 MINS	■							INTEGRATE INTO NEW BMS; REFER TO FLOOR PLANS FOR QTY AND LOCATION.
BOOSTER COIL ZONE TEMPERATURE	T	X	■						1 MINS	■							INTEGRATE INTO NEW BMS; REFER TO FLOOR PLANS FOR QTY AND LOCATION.
CIRC PUMP SPEED	CI	5		■					10 MINS	■			■				
CIRC PUMP STATUS	CSR	3			■				COV	■				■			
ERW BYPASS DAMPER POSITION FEEDBACK	DMP	3	■						10 MINS	■							
ERW ROTATION MONITORING SENSOR	ROT	1				■				■				■			
ERW VFD ENABLE/DISABLE	EN	3				■				■							
ERW VFD SPEED CONTROL	CI	3		■					10 MINS	■			■				
ERW VFD START/STOP	SS	3				■				■			■				CONNECT TO VFD RUN
ERW VFD STATUS	CSR	3			■				COV	■				■			CONNECT TO VFD STATUS
EWR BYPASS DAMPER CONTROL	D	3		■						■		■					
EXHAUST AFMS BMS NETWORK CONNESITON	BAS	4															
EXHAUST AIR DAMPER CONTROL	D	2		■						■		■					
EXHAUST AIR DAMPER POSITION FEEDBACK	DMP	2	■						10 MINS	■							
EXHAUST AIR TEMPERATURE	T	6	■						1 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
EXHAUST AIRFLOW MEASURING STATION	FMS	2	■						1 MINS	■				■			HARDWIRE POINT TO UNIT CONTROLLER
FILTER STATUS	DPT	1	■							■				■		1" W.C.	
FREEZESTAT STATUS	FT	1				■				■				■		LOW: 35°F	
HEATING COIL AIR TEMPERATURE	T	5	■						10 MINS	■				■		LOW: 50°F / HIGH: 100°F	
HEATING COIL VALVE CONTROL	VL	1	■						1 MINS	■	■						2-10 VDC MODULATING
HEATING COIL VALVE CONTROL	VL	X	■						1 MINS	■	■						INTEGRATE INTO NEW BMS; REFER TO FLOOR PLANS FOR QTY AND LOCATION.
HEATING COIL VALVE POSITION FEEDBACK	VLP	1	■						1 MINS	■	■						2-10 VDC MODULATING
HEATING COIL VALVE POSITION FEEDBACK	VLP	X	■						1 MINS	■	■						INTEGRATE INTO NEW BMS; REFER TO FLOOR PLANS FOR QTY AND LOCATION.
HIGH STATIC PRESSURE SAFETY SWITCH	SP	1	■							■				■		4" W.C.	
HIGH STATIC PRESSURE SAFETY SWITCH	SP	2	■							■				■		4" W.C.	
OA FILTER STATUS	DPT	2	■							■				■		1" W.C.	
OUTDOOR AIR DAMPER CONTROL	D	1		■						■		■					
OUTDOOR AIR DAMPER POSITION FEEDBACK	DMP	1	■						10 MINS	■							
OUTDOOR AIR HUMIDITY	H	1	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
OUTDOOR AIR HUMIDITY	H	1	■						1 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
OUTDOOR AIR TEMPERATURE	T	1	■						1 MINS	■							FROM AFMS; HARDWIRE POINT TO DOAS CONTROLLER
OUTDOOR AIRFLOW MEASURING STATION	FMS	1	■						1 MINS	■				■			
POST WHEEL AIR HUMIDITY	H	3	■						10 MINS	■							
POST WHEEL AIR TEMPERATURE	T	3	■						10 MINS	■							
RELIEF FAN VFD ENABLE/DISABLE	EN	2				■				■							
RELIEF FAN VFD NETWORK CONNECTION	BAS	2															MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
RELIEF FAN VFD SPEED CONTROL	CI	2		■					10 MINS	■			■				CONNECT TO VFD SPEED
RELIEF FAN VFD START/STOP	SS	2				■				■			■				CONNECT TO VFD RUN
RELIEF FAN VFD STATUS	CSR	2			■				COV	■				■			CONNECT TO VFD STATUS
RETURN AIR DUCT SMOKE DETECTOR	SD	2			■					■				■			PROVIDED BY DIV 28
RETURN AIR HUMIDITY	H	2	■						1 MINS	■							
RETURN AIR TEMPERATURE	T	2	■						1 MINS	■							
SUPPLY AIR DUCT SMOKE DETECTOR	SD	1			■					■				■			PROVIDED BY DIV 28
SUPPLY FAN AFMS BMS NETWORK CONNECTON	BAS	3															MS/TP
SUPPLY FAN ARRAY ENABLE/DISABLE	EN	1				■				■							
SUPPLY FAN ARRAY NETWORK CONNECTION	BAS	1															MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
SUPPLY FAN ARRAY SPEED	CI	1		■					10 MINS	■			■				
SUPPLY FAN ARRAY START/STOP	SS	1				■				■			■				
SUPPLY FAN ARRAY STATUS	CSR	1			■				COV	■				■			
UNIT DISCHARGE AIR TEMPERATURE	T	1	■						1 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
ZONE CO2	CO2	1	■						1 MINS	■				■		>25% SETPOINT	
ZONE OCCUPANCY SENSOR	OS	1	■						1 MINS	■							
ZONE TEMPERATURE	T	9	■						1 MINS	■				■		LOW: 50°F / HIGH: 85°F	
ZONE/BUILDING STATIC PRESSURE SENSOR	DPS	1	■						1 MINS	■				■			LOCATE IN ROOM XXX. MAINTIAN 0.03-0.05 IN. W.C.

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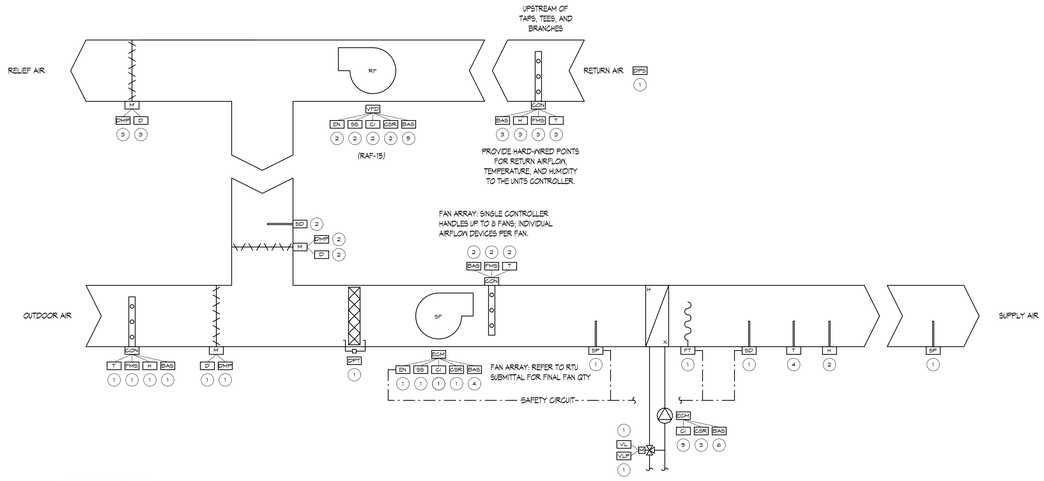

SEQUENCE OF OPERATION

GENERAL:

THE MULTIPLE-ZONE VAV AIR HANDLING UNIT (HEATING HOT WATER HEATING ONLY WITH SEPARATE RETURN FAN) SEQUENCES PROVIDED ARE INTENDED TO BE PERFORMANCE BASED. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY USING DIFFERENT UNDERLYING LOGIC WILL BE ACCEPTABLE. THE SEQUENCES AND REQUIREMENTS ARE BASED IN PART ON ASHRAE GUIDELINE 36-2021, ASHRAE 62.1-2016, ASHRAE 90.1-2013, AND MMC-2021. CONTRACTOR TO REFER STANDARDS AS REQUIRED TO MEET INTENT.

CONTROLS ARE TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR. FOR REFRIGERATION CONTROLS, THE MANUFACTURER SHALL PROVIDE A REFRIGERATION CONTROLLER AND/OR TERMINAL STRIP. CONTROLS CONTRACTOR IS REQUIRED TO COORDINATE WITH THE PURCHASED REFRIGERATION EQUIPMENT TO DETERMINE FINAL CONTROL POINTS, FUNCTIONALITY, SEQUENCING, ETC.

ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, PID GAINS, ETC. LISTED IN THE SEQUENCE SHALL BE ADJUSTABLE BY THE OWNER. ADDITIONALLY, ALL POINT VALUES SHALL BE OVERRIDABLE (FOR TESTING AND COMMISSIONING PURPOSES). EXCEPTION BEING, THOSE POINTS WHICH WOULD EFFECT EQUIPMENT OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER ELECTRONIC COMMUTATED MOTORS OR WITH VARIABLE FREQUENCY DRIVES; REFER TO SCHEDULES AND SPECS FOR MOTOR TYPES.

SAFETIES HARD-WIRED INTO THE FANS VFDS INDICATE GENERAL INTENT FOR ENABLING/DISABLING VFD UPON SIGNAL FROM THE ASSOCIATED DEVICE (I.E. SMOKE DETECTORS, FREEZESTATS, HIGH/LOW PRESSURE SWITCHES, ETC.) TTC TO PROVIDE ALL NECESSARY TUBING, WIRING, CONTACTORS/RELAYS, ETC. FOR FULLY FUNCTIONAL SYSTEM.

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 55°F. MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 65°F IN OCCUPIED MODE. IN SETUP OR WARM-UP MODE, MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 90°F.

TRIM AND RESPOND: REFER TO ASHRAE GUIDELINE 36 SECTION 5.1.14.

TIR LOGIC SHALL RESET THE SETPOINT (I.E. STATIC PRESSURE SETPOINT, TEMPERATURE SETPOINT, ETC.) BETWEEN THE MINIMUM SETPOINT AND MAXIMUM SETPOINT.

WHILE IN UNOCCUPIED MODE, THE SYSTEMS SETPOINT SHALL BE SET TO THE SYSTEMS INITIAL SETPOINT.

WHEN PLACED IN OCCUPIED MODE, THE EQUIPMENT IS PROVEN ON, AND AFTER AN INITIAL TIME DELAY, THE TIR LOGIC SHALL GRADUALLY REDUCE THE SETPOINT BY THE TRIM AMOUNT EVERY TIME STEP WHILE THE DOWNSTREAM ZONE, SYSTEM, OR EQUIPMENTS CUMULATIVE REQUESTS ARE BELOW THE REQUEST LIMIT. REFER TO THE VAV TERMINAL UNIT CONTROLS SEQUENCE OF OPERATIONS.

IF THE NUMBER OF CUMULATIVE REQUESTS EXCEEDS THE REQUEST LIMIT, RESPOND BY INCREASING THE SETPOINT IN INCREMENTS EQUAL TO MULTIPLYING THE RESPONSE AMOUNT BY THE NUMBER OF REQUESTS GENERATED EVERY TIME STEP, BUT NEVER EXCEEDING THE MAX. RESPONSE AMOUNT EVERY TIME STEP REGARDLESS OF REQUEST COUNT. CONTINUE UNTIL THERE ARE LESS REQUESTS GENERATED THAN THE REQUEST LIMIT VALUE ALLOWS. AFTER SUCH EVENTS AND AFTER ANOTHER TIME DELAY, THE TIR LOGIC SHALL RESUME.

THE BAS SHALL GENERATE A RUNNING TOTAL OF THE REQUESTS GENERATED BY EACH ZONE TO IDENTIFY ZONES EXCESSIVELY DRIVING THE RESET LOGIC. IF A ZONE IS CAUSING ERRONEOUS RESULTS, THE *WEIGHTED IMPORTANCE MULTIPLIER* VALUE MAY BE SET TO 0.

OPERATING MODES:

EACH UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES: (1) OCCUPIED MODE, (2) WARM-UP MODE, (4) SETBACK MODE, (5) ECONOMIZER "COOLING MODE", AND (5) UNOCCUPIED MODE.

UNOCCUPIED MODE: DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER (D-1) AND RELIEF AIR DAMPER (D-3) SHALL BE CLOSED; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN, THE FANS SHALL BE STOPPED; THE TEMPERATURE CONTROLS LOOP SHALL BE IN DEADBAND.

SETBACK MODE: WHILE IN UNOCCUPIED MODE, IF THE UNIT FALLS-BELOW ITS UNOCCUPIED HEATING SETPOINT, THE UNIT SHALL ENTER SETBACK MODE UNTIL THE ZONE IS 3°F ABOVE THE UNOCCUPIED SETPOINT VALUE.

WARM-UP MODE: PROVIDE A CALCULATED OPTIMIZED START ALGORITHM USED FOR BUILDING WARM-UP MODE. IN WARM-UP MODE, THE OUTDOOR AIR DAMPER (D-1) AND RELIEF AIR DAMPER (D-3) SHALL BE CLOSE, THE RETURN AIR DAMPER (D-2) SHALL BE OPEN. THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MAXIMUM DISCHARGE AIR TEMPERATURE. WARM-UP MODE SHALL SWITCH TO OCCUPIED MODE ONCE THE ZONE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR SCHEDULED OCCUPIED TIME IS REACHED.

OCCUPIED MODE: ENTER OCCUPIED MODE WHEN THE TIME OF DAY SCHEDULE STARTS OCCUPIED MODE; OR IF PLACED IN OCCUPIED MODE MANUALLY; OR IF WARM-UP HAS REACHED OCCUPIED TEMPERATURE.

SUPPLY FAN CONTROL: REFER TO ASHRAE GUIDELINE 36 SECTION 5.16.1.

THE SUPPLY FAN SHALL RUN IN ALL OPERATING MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FANS SHALL BE STOPPED/STARTED BY THE UNITS CONTROLLER OR THE BAS. ONCE THE SUPPLY FAN IS PROVEN ON, THE OUTDOOR AIR DAMPER (D-1) AND RELIEF AIR DAMPER (D-3) SHALL OPEN.

THE SUPPLY FAN SHALL OPERATE TO MAINTAIN STATIC PRESSURE SETPOINT. NOTE - LOCATE SP SENSOR (SP-1) PER ASHRAE 90.1-2013 SECTION 6.5.3.2.2. SETPOINT SHALL BE NO GREATER THAN 1.2 IN W.C. IF THIS RESULTS IN SENSORS BEING LOCATED DOWNSTREAM OF MAJOR SPLITS, PROVIDE SENSORS IN EACH MAJOR BRANCH. REFER TO FLOOR PLANS. IF STATIC PRESSURE FALLS BELOW THE STATIC PRESSURE SETPOINT, THE SUPPLY FANS SPEED SHALL BE INCREASED. IF THE STATIC PRESSURE RISES ABOVE STATIC PRESSURE SET POINT, THE SUPPLY FANS SPEED SHALL BE DECREASED.

TOTALIZE AIRFLOW RATES FROM ALL ASSOCIATED VAV BOXES AND STORE AS A ANALOG VALUE POINT.

SUPPLY AIRFLOW RATE SHALL BE MEASURED BY THE SUPPLY AIRFLOW MEASURING STATION.

THE SUPPLY FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

VAV STATIC PRESSURE SETPOINT RESET: REFER TO TRIM AND RESPOND LOGIC

INTIAL SETPOINT (PRESSURE):	1.0 IN. W.G.	TRIM AMOUNT:	-0.05 IN. W.G.
MAXIMUM SETPOINT (PRESSURE):	REFER TO RTU/AHU SCHEDULE	RESPONSE AMOUNT:	+0.06 IN. W.G.
MINIMUM SETPOINT (PRESSURE):	0.1 IN. W.G.	MAX RESPONSE AMOUNT:	+0.15 IN. W.G.
TIME DELAY:	10 MINS	REQUEST LIMIT:	3
TIME STEP:	2 MINS		

RETURN FAN CONTROL: REFER TO ASHRAE GUIDELINE 36 SECTION 5.16.9.

THE RETURN FAN (RF-15) SHALL BE ENABLED WHEN THE ASSOCIATED SUPPLY FAN IS PROVEN ON.

START, STOP, AND MODULATE THE RETURN FAN TO MAINTAIN ZONE/BUILDING STATIC PRESSURE (DPS-1) AT A SETPOINT OF -0.5 IN W.G.

RELIEF AIRFLOW RATE SHALL BE MEASURED BY THE RELIEF AIRFLOW MEASURING STATION.

MINIMUM OUTDOOR AIR CONTROL:

PROGRAM THE MULTIPLE-ZONE RECIRCULATION VENTILATION RATE PROCEDURE FOR SINGLE SUPPLY SYSTEMS FOUND IN ASHRAE 62.1-2019 TO HAVE THE UNIT CONTROLLER DETERMINE THE MINIMUM OUTDOOR AIR SETPOINT. SETPOINT SHALL BE CONTINUOSLY CALCULATED BASED ON CHANGES WITHIN THE SYSTEM. SETPOINT SHALL NOT EXCEED MAXIMUM DESIGN OUTDOOR AIR RATES OF THE UNIT (REFER TO SCHEDULE), UNLESS IN ECONOMIZER MODE.

THE MINIMUM OUTDOOR AIR CONTROL LOOP IS ENABLED WHEN THE SUPPLY FAN IS PROVEN ON, THE UNIT IS IN OCCUPIED MODE, AND THE ECONOMIZER LIMITS ARE MET. MODULATE THE OUTDOOR AIR DAMPER, RELIEF AIR DAMPER, AND RETURN AIR DAMPER AS REQUIRED TO MAINTAIN THE CALCULATED MINIMUM OUTDOOR AIR SETPOINT AT ALL TIMES.

THE OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN AIRFLOW MEASURING STATION.

SUPPLY AIR TEMPERATURE CONTROL:

TEMPERATURE CONTROL LOOP SHALL BE ENABLED WHEN THE SUPPLY FAN IS PROVEN ON.

DURING OCCUPIED MODE, TEMPERATURE SETPOINT SHALL RESET FROM MINIMUM DISCHARGE AIR TEMPERATURE WHEN THE OUTDOOR AIR TEMPERATURE IS 70°F AND ABOVE, PROPORTIONALLY UP TO MAXIMUM DISCHARGE AIR TEMPERATURE WHEN THE OUTDOOR AIR TEMPERATURE IS 60°F AND BELOW. THE CURRENT SETPOINT VARIES BETWEEN MINIMUM DISCHARGE AIR TEMPERATURE AND MAXIMUM DISCHARGE AIR TEMPERATURE BASED ON TIR LOGIC AND NUMBER OF REQUESTS.

DURING WARMUP AND SETBACK MODE, THE SETPOINT SHALL BE FIXED TO THE MAXIMUM DISCHARGE AIR TEMPERATURE.

SUPPLY AIR TEMPERATURE SHALL BE CONTROLLED TO SETPOINT USING THE HEATING COIL, OUTDOOR AIR DAMPER, RETURN AIR DAMPER, ECONOMIZER. RETURN AIR DAMPER MAXIMUM POSITION AND OUTDOOR AIR DAMPER MINIMUM POSITION SHALL BE SEQUENCED TO CONTROL MINIMUM OUTDOOR AIR VOLUME AND REDUCE ENERGY CONSUMPTION. OUTDOOR AIR DAMPER MAXIMUM POSITION IS LIMITED DURING MINIMUM OUTDOOR AIR CONTROL PERIODS; REFER TO OUTDOOR AIR CONTROL SECTION.

SUPPLY AIR TEMPERATURE RESET: REFER TO TRIM AND RESPOND LOGIC; REFER TO DIAGRAM.

INITIAL SETPOINT (TEMPERATURE):	55°F	TRIM AMOUNT:	+0.1°F
MAXIMUM SETPOINT (TEMPERATURE):	MAXIMUM DISCHARGE AIR TEMPERATURE	RESPONSE AMOUNT:	-0.2°F
MINIMUM SETPOINT (TEMPERATURE):	MINIMUM DISCHARGE AIR TEMPERATURE	MAX RESPONSE AMOUNT:	-0.6°F
TIME DELAY:	10 MINS	REQUEST LIMIT:	3
TIME STEP:	2 MINS		

ECONOMIZER "COOLING" MODE CONTROL:

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE AND THE TEMPERATURE IS ABOVE OCCUPIED COOLING SETPOINT, THE UNIT SHALL MODULATE THE OUTDOOR AIR DAMPER, RELIEF AIR DAMPER AND RETURN AIR DAMPER TO MAINTAIN THE OCCUPIED COOLING SETPOINT USING THE COOLER OUTDOOR AIR. DISCHARGE AIR TEMPERATURE SHALL FLOAT BETWEEN 50°F AND 70°F. THE ECONOMIZER IS THE ONLY STAGE OF COOLING.

NOTE: VENTILATION REQUIREMENTS SUPERSEDE ECONOMIZER CONTROL AIRFLOW MINIMUMS.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION.

ECONOMIZER SECTION SHALL HAVE FAULT DETECTION AND DIAGNOSTICS

HEATING HOT WATER CIRCULATION PUMP CONTROL:

WHENEVER THE OUTDOOR AIR TEMPERATURE IS BELOW 40°F OR THERE IS A CALL FOR HEATING, THE HEATING COIL FREEZE PUMP SHALL BE ENERGIZED AND RUN CONTINUOUSLY. THE PUMP SHALL PROVE FLOW TO THE BMS SYSTEM WITH ITS CURRENT SWITCH. IF THE PUMP FAILS, AN ALARM SHALL BE GENERATED AT THE BAS.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

FIRE ALARM MODE CONTROL: THE SUPPLY FAN SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDINGS FIRE ALARM CONTROL PANEL. SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE RESET MANUALLY AT THE UNIT.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. THE FREEZE STAT SHALL AUTOMATICALLY ATTEMPT TO RESET. IF THE STAT TRIPS AGAIN AND/OR FAILS TO RESET THREE (3) TIMES WITHIN A 24 HOUR PERIOD, THE UNIT SHALL GENERATE A NEW ALARM AND REQUIRED A MANUALLY RESET.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BAS.

FAN STATUS: THE BAS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BAS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED AS LONG AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

VALVE POSITION: KNOWLEDGE OF VALVE POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING POINT ACTUATOR CAN BE USED AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF VALVE POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BAS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BAS.

SUPPLY AIR TEMPERATURE: IF THE SUPPLY AIR TEMPERATURE AS MEASURED BY THE DISCHARGE AIR TEMPERATURE SENSOR (T-3) IS OUTSIDE THE RANGE OF 50°F OR 100°F FOR MORE THAN 10 MINS, DEENERGIZE UNIT FANS AND GENERATE AN ALARM AT THE BMS.

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.
3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
4. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.
5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MSI TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS. SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M3.13

MULTI-ZONE VAV AIR HANDLING UNIT (HHW ONLY, RF) CONTROLS DIAGRAM

	POINT NAME	TAG	NO.	AI	AO	BI	BO	AV	BV	TREND	SHOW ON GRAPHIC	FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM	ALARM LIMIT	REMARKS
	BAS NETWORK CONNECTION	BAS	6								■							MS/TP
	CIRC PUMP SPEED	CI	5	■						10 MINS	■			■				
	CIRC PUMP STATUS	CSR	3			■				COV	■					■		
	DISCHARGE AIR TEMPERATURE	T	4	■						10 MINS	■							
	DUCT STATIC PRESSURE SENSOR	SP	1	■						1 MINS	■					■		LOCATE SO SETPOINT SHALL BE NO GREATER THAN 1.2 IN W.C.
	FAN DISCHARGE AIR TEMPERATURE	T	2	■						10 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
	FILTER STATUS	DPT	1	■							■					■	1" W.C.	
	FREEZESTAT STATUS	FT	1				■				■					■	LOW 36°F	
	HEATING COIL VALVE CONTROL	VL	1	■						1 MINS	■		■					2-10 VDC MODULATING
	HEATING COIL VALVE POSITION FEEDBACK	VLP	1	■						1 MINS	■		■					2-10 VDC MODULATING
	HIGH STATIC PRESSURE SAFETY SWITCH	SP	1	■							■					■	4" W.C.	
	OUTDOOR AIR AFMS NETWORK CONNECTION	BAS	1								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
DAMPER OUTSIDE OF AHU	OUTDOOR AIR DAMPER CONTROL	D	1		■						■		■					
	OUTDOOR AIR DAMPER POSITION FEEDBACK	DMP	1	■						10 MINS	■							
	OUTDOOR AIR HUMIDITY	H	1	■						10 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
	OUTDOOR AIR TEMPERATURE	T	1	■						1 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
	OUTDOOR AIRFLOW MEASURING STATION	FMS	1	■						1 MINS	■					■		HARDWIRE POINT TO UNIT CONTROLLER
	RELIEF AIR DAMPER POSITION FEEDBACK	DMP	3	■						10 MINS	■							
	RELIEF AIR DAMPER CONTROL	D	3		■						■		■					
	RETURN AFMS NETWORK CONNECTION	BAS	3								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
	RETURN AIR DAMPER CONTROL	D	2		■						■		■					
	RETURN AIR DAMPER POSITION FEEDBACK	DMP	2	■						10 MINS	■							
	RETURN AIR DUCT SMOKE DETECTOR	SD	2			■					■					■		PROVIDED BY DIV 28
	RETURN AIR HUMIDITY	H	3	■						10 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
	RETURN AIR TEMPERATURE	T	3	■						1 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
	RETURN AIRFLOW MEASURING STATION	FMS	3	■						1 MINS	■					■		HARDWIRE POINT TO UNIT CONTROLLER
INDEPENDENT FAN OUTSIDE OF AHU	RETURN FAN (RAF-15) VFD ENABLE/DISABLE	EN	2			■					■							
	RETURN FAN (RAF-15) VFD NETWORK CONNECTION	BAS	5								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
	RETURN FAN (RAF-15) VFD SPEED CONTROL	CI	2		■					10 MINS	■			■				CONNECT TO VFD SPEED
	RETURN FAN (RAF-15) VFD START/STOP	SS	2				■				■				■			CONNECT TO VFD RUN
	RETURN FAN (RAF-15) VFD STATUS	CSR	2			■				COV	■					■		CONNECT TO VFD STATUS
	SUPPLY AIR DUCT SMOKE DETECTOR	SD	1			■					■					■		PROVIDED BY DIV 28
	SUPPLY AIR HUMIDITY	H	2	■						10 MINS	■							
	SUPPLY AIRFLOW MEASURING STATION	FMS	2	■						1 MINS	■					■		HARDWIRE POINT TO UNIT CONTROLLER
	SUPPLY FAN AFMS NETWORK CONNECTION	BAS	2								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
	SUPPLY FAN ARRAY ENABLE/DISABLE	EN	1			■					■							
	SUPPLY FAN ARRAY NETWORK CONNECTION	BAS	4								■							MS/TP - PULL ALL AVIALBLE POINTS TO READ AT BMS
	SUPPLY FAN ARRAY SPEED	CI	1	■						10 MINS	■			■				
	SUPPLY FAN ARRAY START/STOP	SS	1			■					■				■			
	SUPPLY FAN ARRAY STATUS	CSR	1		■					COV	■					■		
	ZONE/BUILDING STATIC PRESSURE SENSOR	DPS	1	■						1 MINS	■					■		LOCATE PER DRAWINGS

MULTI-ZONE VAV AIR HANDLING UNIT (HHW ONLY & RETURN FAN) CONTROLS DIAGRAM

NOT TO SCALE

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS (AHU-1.5)

SHEET NO.
M814

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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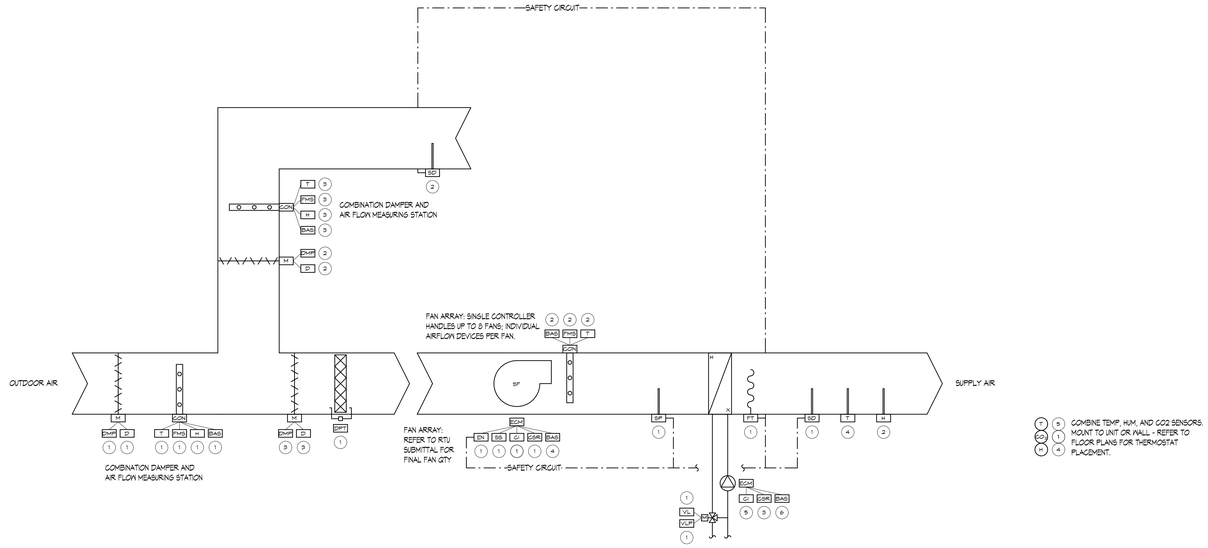

SEQUENCE OF OPERATION

GENERAL:

THE SINGLE-ZONE VAV AIR HANDLING UNIT (VV HHW HEATING) SEQUENCES PROVIDED ARE INTENDED TO BE PERFORMANCE BASED IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY USING DIFFERENT UNDERLYING LOGIC WILL BE ACCEPTABLE. THE SEQUENCES AND REQUIREMENTS ARE BASED IN PART ON ASHRAE GUIDELINE 36-2021, ASHRAE 62.1-2016, ASHRAE 90.1-2013, AND MMC-2021. CONTRACTOR TO REFER STANDARDS AS REQUIRED TO MEET INTENT.

CONTROLS ARE TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR. FOR REFRIGERATION CONTROLS, THE MANUFACTURER SHALL PROVIDE A REFRIGERATION CONTROLLER AND/OR TERMINAL STRIP. CONTROLS CONTRACTOR IS REQUIRED TO COORDINATE WITH THE PURCHASED REFRIGERATION EQUIPMENT TO DETERMINE FINAL CONTROL POINTS, FUNCTIONALITY, SEQUENCING, ETC.

ALL SETPOINTS, TIMERS, DEADBANDS, SCHEDULES, PID GAINS, ETC. LISTED IN THE SEQUENCE SHALL BE ADJUSTABLE BY THE OWNER. ADDITIONALLY, ALL POINT VALUES SHALL BE OVERRIDABLE (FOR TESTING AND COMMISSIONING PURPOSES). EXCEPTION BEING, THOSE POINTS WHICH WOULD EFFECT EQUIPMENT OR LIFE SAFETY.

EQUIPMENT MOTORS INTENDED TO BE MODULATED CAN BE PROVIDED WITH EITHER ELECTRONIC COMMUTATED MOTORS OR WITH VARIABLE FREQUENCY DRIVES; REFER TO SCHEDULES AND SPECS FOR MOTOR TYPES.

SAFETIES HARD-WIRED INTO THE FANS VFDS INDICATE GENERAL INTENT FOR ENABLING/DISABLING VFD UPON SIGNAL FROM THE ASSOCIATED DEVICE (I.E. SMOKE DETECTORS, FREEZESTATS, HIGH/LOW PRESSURE SWITCHES, ETC.) TTC TO PROVIDE ALL NECESSARY TUBING, WIRING, CONTACTORS/RELAYS, ETC. FOR FULLY FUNCTIONAL SYSTEM.

MINIMUM DISCHARGE AIR TEMPERATURE SETPOINT SHALL BE 55ºF. MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE 85ºF.

SETPOINTS:

OCCUPIED COOLING SETPOINT:	75ºF (ADJ.) (ONLY WHEN ECONOMIZER IS ABLE TO BRING AIR IN BETWEEN 50ºF AND 65ºF.
OCCUPIED HEATING SETPOINT:	70ºF (ADJ.)
UNOCCUPIED COOLING SETPOINT:	NONE
UNOCCUPIED HEATING SETPOINT:	60ºF (ADJ.)

VERIFY ALL SETPOINTS WITH OWNER.

SETPOINT SHALL ALWAYS MAINTAIN A 5ºF DEADBAND AND TEMPERATURE CONTROLS SHALL HAVE SETPOINT OVERLAP RESTRICTIONS.

OPERATING MODES:

EACH UNIT SHALL BE CAPABLE OF OPERATING IN THE FOLLOWING MODES: (1) OCCUPIED MODE, (2) WARM-UP MODE, (4) SETBACK MODE, (5) ECONOMIZER "COOLING MODE", AND (5) UNOCCUPIED MODE.

UNOCCUPIED MODE: DURING UNOCCUPIED MODE, THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE FANS SHALL BE STOPPED; THE TEMPERATURE CONTROLS LOOP SHALL BE IN DEADBAND. THE FACTORY MIXED AIR DAMPER PROVIDED WITH UNIT (D-3) SHALL BE CLOSED.

SETBACK MODE: WHILE IN UNOCCUPIED MODE, IF THE UNIT FALLS-BELOW ITS UNOCCUPIED HEATING SETPOINT, THE UNIT SHALL ENTER SETBACK MODE UNTIL THE ZONE IS 5ºF ABOVE THE UNOCCUPIED SETPOINT VALUE. THE FACTORY MIXED AIR DAMPER PROVIDED WITH UNIT (D-3) SHALL BE OPEN. THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED AND THE RETURN DAMPER (D-2) SHALL BE OPEN.

WARM-UP MODE: PROVIDE A CALCULATED OPTIMIZED START ALGORITHM USED FOR BUILDING WARM-UP MODE. IN WARM-UP MODE, THE OUTDOOR AIR DAMPER (D-1) SHALL BE CLOSED; THE FACTORY MIXED AIR DAMPER (D-3) SHALL BE OPEN; THE RETURN AIR DAMPER (D-2) SHALL BE OPEN. THE SUPPLY AIR TEMPERATURE CONTROLS LOOP SHALL BE ENABLED AND OPERATE TO MAINTAIN MAXIMUM DISCHARGE AIR TEMPERATURE. WARM-UP MODE SHALL SWITCH TO OCCUPIED MODE ONCE THE ZONE TEMPERATURE REACHES THE OCCUPIED SETPOINT OR SCHEDULED OCCUPIED TIME IS REACHED.

OCCUPIED MODE: ENTER OCCUPIED MODE WHEN THE TIME OF DAY SCHEDULE STARTS OCCUPIED MODE, OR IF PLACED IN OCCUPIED MODE MANUALLY, OR IF WARM-UP HAS REACHED OCCUPIED TEMPERATURE. THE FACTORY OUTDOOR AIR DAMPER PROVIDED WITH UNIT (D-3) SHALL BE OPEN.

SUPPLY FAN CONTROL:

THE SUPPLY FAN SHALL RUN WHEN THE SYSTEM IS OPERATING IN ALL MODES EXCEPT UNOCCUPIED MODE.

THE SUPPLY FAN SHALL BE AUTOMATICALLY STARTED AND STOPPED BY THE AHU CONTROLLER OR BAS.

UPON PROOF OF SUCCESSFUL START AND OPERATION OF THE SUPPLY FAN, THE OUTDOOR AIR DAMPER OPEN TO ITS MINIMUM POSITION INITIALLY. THE RELIEF AIR DAMPER SHALL ALSO OPEN TO 100%.

PROVIDE A RAMP FUNCTION TO PREVENT CHANGES IN FAN SPEED OF MORE THAN 10% PER MIN.

SPACE TEMPERATURE CONTROL:

AS SPACE TEMPERATURE DECREASES, THE UNIT SHALL MODULATE THE HEATING HOT WATER CONTROL VALVE TO MAINTAIN OCCUPIED HEATING SETPOINT. THE HEATING SYSTEM WILL CONTINUE TO MODULATE UP UNTIL THE DISCHARGE AIR TEMPERATURE REACHES THE MAXIMUM DISCHARGE AIR TEMPERATURE , AT WHICH POINT, BOTH THE MECHANICAL HEATING SYSTEM AND THE SUPPLY FAN WILL MODULATE UP TOGETHER TO MAINTAIN OCCUPIED HEATING SETPOINT AND MAXIMUM DISCHARGE AIR TEMPERATURE .

AS SPACE TEMPERATURE BEGINS TO INCREASE, THE PROCESS SHALL WORK IN REVERSE ORDER.

THE SUPPLY FAN ARRAY SHALL OPERATE EACH FAN IN SYNC WITH EACH OTHER. IF ONE FAN FAILS TO START, THAT INDIVIDUAL FAN SHALL BE DISABLED, AND ALARM SHALL BE GENERATED AT THE BMS, AND THE REMAINING FANS SHALL ALL ADJUST SPEEDS AS REQUIRED (UP OR DOWN) TO MEET THE TOTAL AIRFLOW.

MINIMUM OUTDOOR AIR CONTROL:

AMBIENT CO2 READING IN LOCAL AREA SHALL BE DETERMINED AND INPUT INTO THE BMS. ASSUMPTION AND SEQUENCE BELOW ASSUME 400 PPM CO2. ADJUST AS REQUIRED.

UPON RISING CO2 CONCENTRATION LEVEL ABOVE 1300 PPM (900 PPM ABOVE AMBIENT - ASHRAE 62.1-2022), THE OUTDOOR AND RETURN AIR DAMPER ACTUATORS SHALL MODULATE TO INCREASE OUTDOOR AIR INTAKE UNTIL CO2 LEVELS ARE BELOW 1200 PPM. THE AHU OUTDOOR DAMPER ACTUATOR SHALL NOT MODULATE BEYOND ITS SCHEDULED MAXIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE) UNLESS IN ECONOMIZER MODE.

INVERSELY, UPON FALLING CO2 CONCENTRATION LEVELS BELOW 900 PPM, THE OUTDOOR AND RETURN AIR DAMPERS SHALL MODULATE TO DECREASE OUTDOOR AIR INTAKE UNTIL CO2 CONCENTRATION LEVELS ARE AT 1200 PPM. THE RTU OUTDOOR DAMPER ACTUATOR SHALL NOT MODULATE BEYOND ITS SCHEDULED MINIMUM VENTILATION SETPOINT (SEE VENTILATION SCHEDULE - I.E. DAMPER POSITION LIMITED TO NO LESS THAN THE BUILDING COMPONENT OUTDOOR AIRFLOW.)

DEAD BAND OCCURS BETWEEN CO2 CONCENTRATION LEVELS BETWEEN 1100 PPM AND 1200 PPM.

OUTDOOR AIRFLOW RATE SHALL BE MEASURED BY AN OUTDOOR AIRFLOW MEASURING DEVICE.

ECONOMIZER "COOLING" MODE CONTROL:

WHILE IN OCCUPIED MODE, IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE RETURN AIR TEMPERATURE AND THE TEMPERATURE IS ABOVE OCCUPIED COOLING SETPOINT, THE UNIT SHALL MODULATE THE OUTDOOR AIR DAMPER AND RETURN AIR DAMPER TO MAINTAIN THE OCCUPIED COOLING SETPOINT USING THE COOLER OUTDOOR AIR. DISCHARGE AIR TEMPERATURE SHALL FLOAT BETWEEN 50°F AND 70°F. THE ECONOMIZER IS THE ONLY STAGE OF COOLING. THE FACTORY OUTDOOR AIR DAMPER PROVIDED WITH UNIT (D-3) SHALL BE OPEN.

NOTE: VENTILATION REQUIREMENTS SUPERSEDE ECONOMIZER CONTROL AIRFLOW MINIMUMS.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE EXCEEDS RETURN AIR TEMPERATURE OR IF THE OUTDOOR AIR TEMPERATURE EXCEEDS 75°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION.

LIMIT: IF THE OUTDOOR AIR TEMPERATURE IS LOWER THAN 45°F, THE OUTDOOR AIR AND RETURN AIR DAMPERS SHALL RETURN TO MINIMUM OUTDOOR AIR CONTROL OPERATION.

ECONOMIZER SECTION SHALL HAVE FAULT DETECTION AND DIAGNOSTICS.

HEATING HOT WATER CIRCULATION PUMP CONTROL:

WHENEVER THE OUTDOOR AIR TEMPERATURE IS BELOW 40°F OR THERE IS A CALL FOR HEATING, THE HEATING COIL FREEZE PUMP SHALL BE ENERGIZED AND RUN CONTINUOUSLY. THE PUMP SHALL PROVE FLOW TO THE BMS SYSTEM WITH ITS CURRENT SWITCH. IF THE PUMP FAILS, AN ALARM SHALL BE GENERATED AT THE BAS.

ALARMS AND SAFETIES

PROVIDE ALL RELEVANT ALARMS TO NOTIFY SYSTEM OPERATORS OF MAINTENANCE, PERFORMANCE, EQUIPMENT, OR LIFE-SAFETY ERRORS AND FAULTS. REFER TO MANUFACTURER INFORMATION, CODE REQUIREMENTS, AND ASHRAE 36 RECOMMENDATIONS FOR ADDITIONAL SAFETIES AND ALARMS.

FIRE ALARM MODE CONTROL: THE SUPPLY FAN SHALL SHUT DOWN WHEN ANY AUTOMATIC OR MANUAL FIRE ALARM DEVICE IS PLACED INTO ALARM BY THE BUILDING FIRE ALARM CONTROL PANEL. SYSTEM SHALL AUTOMATICALLY RESET FOLLOWING AN ALARM EVENT.

HIGH STATIC PRESSURE SAFETY SWITCH: WHEN THE SAFETY SWITCH IS TRIPPED, DISABLE SUPPLY FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. HIGH PRESSURE SHALL BE RESET MANUALLY AT THE UNIT.

FREEZESTAT: WHEN A FREEZE CONDITION OCCURS, DISABLE FANS (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE. THE FREEZE STAT SHALL AUTOMATICALLY ATTEMPT TO RESET. IF THE STAT TRIPS AGAIN AND/OR FAILS TO RESET THREE (3) TIMES WITHIN A 24 HOUR PERIOD, THE UNIT SHALL GENERATE A NEW ALARM AND REQUIRED A MANUALLY RESET.

DUCT SMOKE DETECTOR: WHEN SMOKE IS DETECTED, DISABLE SUPPLY FAN AND RELIEF FAN (HARDWIRED) AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

FILTER DIFFERENTIAL SWITCH: WHEN DIFFERENTIAL PRESSURE ACROSS THE FILTERS EXCEEDS ALLOWABLE LIMIT, GENERATE AN ALARM AT THE BMS.

FAN STATUS: THE BMS SHALL MONITOR FAN CURRENT SWITCHES. IF STATUS DOES NOT MATCH COMMAND OUTPUT, DISABLE FAN AND GENERATE AN ALARM AT THE BMS. ALL OTHER COMPONENTS SHALL RETURN TO AN UNOCCUPIED/OFF CONTROL MODE.

DAMPER POSITION: KNOWLEDGE OF DAMPER POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING ACTUATOR CAN BE USED AS LONG AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF DAMPER POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BMS.

VALVE POSITION: KNOWLEDGE OF VALVE POSITION SHALL BE REQUIRED; A MODULATING (ANALOG) ACTUATOR OR FLOATING POINT ACTUATOR CAN BE USED AS ACTUATOR HAS ONBOARD FEEDBACK POINT AVAILABLE. END SWITCHES CAN ALSO BE USED. IF VALVE POSITION IS DETERMINED BY THE BAS TO BE INCORRECT, GENERATE AN ALARM AT THE BMS.

DISCHARGE AIR TEMPERATURE: IF DISCHARGE AIR TEMPERATURE FALLS OUT OF THE ALLOWABLE RANGE OF 5°F FOR A TIME PERIOD 10 MINUTES, GENERATE AN ALARM AT THE BMS.

PROVIDE AIR-ECONOMIZER FAULT DETECTION AND DIAGNOSTICS.

SINGLE-ZONE VAV AIR HANDLING UNIT (HHW) CONTROLS DIAGRAM

NOT TO SCALE

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.
3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
4. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.
5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MS TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR TIME DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS. SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (+2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M0.14

POINT NAME	HARDWARE: ID DATA TAG	NO.	POINT TYPE AI	AO	BI	BO	AV	BV	SOFTWARE: TREND	SHOW ON GRAPHIC	FAIL MODE: FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM	ALARM LIMIT	REMARKS
SINGLE-ZONE VAV AIR HANDLING UNIT (HHW)																	
BAS NETWORK CONNECTION	BAS	6								■							MS/TP
CIRC PUMP SPEED	CI	5		■					10 MINS	■			■				
CIRC PUMP STATUS	CSR	3			■				COV	■					■		
DISCHARGE AIR TEMPERATURE	T	2	■						10 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
DISCHARGE AIR TEMPERATURE	T	4	■						10 MINS	■							
FACTORY OUTDOOR AIR DAMPER CONTROL	D	3		■						■		■					
FACTORY OUTDOOR AIR DAMPER POSITION FEEDBACK	DMP	3	■						10 MINS	■							
FILTER STATUS	DPT	1	■							■					■	1" W.C.	
FREEZESTAT STATUS	FT	1			■					■					■	LOW: 38°F	
HEATING COIL VALVE CONTROL	VL	1	■						1 MINS	■		■					2-10 VDC MODULATING
HEATING COIL VALVE POSITION FEEDBACK	VLP	1	■						1 MINS	■		■					2-10 VDC MODULATING
HIGH STATIC PRESSURE SAFETY SWITCH	SP	1	■							■					■	4" W.C.	
OUTDOOR AFMS NETWORK CONNECTION	BAS	1															MS/TP
OUTDOOR AIR DAMPER CONTROL	D	1		■						■		■					
OUTDOOR AIR DAMPER POSITION FEEDBACK (DAMPER OUTSIDE OF UNIT)	DMP	1	■						10 MINS	■							
OUTDOOR AIR HUMIDITY (DAMPER OUTSIDE OF UNIT)	H	1	■						10 MINS	■							
OUTDOOR AIR TEMPERATURE	T	1	■						1 MINS	■							
OUTDOOR AIRFLOW MEASURING STATION	FMS	1	■						1 MINS	■					■		
RETURN AFMS NETWORK CONNECTION	BAS	2															MS/TP
RETURN AIR DAMPER CONTROL	D	2		■						■		■					
RETURN AIR DAMPER POSITION FEEDBACK	DMP	2	■						10 MINS	■							
RETURN AIR DUCT SMOKE DETECTOR	SD	2			■					■					■		PROVIDED BY DIV 28
RETURN AIR HUMIDITY	H	3	■						10 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
RETURN AIR TEMPERATURE	T	3	■						1 MINS	■							HARDWIRE POINT TO UNIT CONTROLLER
RETURN AIRFLOW MEASURING STATION	FMS	3	■						1 MINS	■					■		HARDWIRE POINT TO UNIT CONTROLLER
SUPPLY AIR DUCT SMOKE DETECTOR	SD	1			■					■					■		PROVIDED BY DIV 28
SUPPLY AIR HUMIDITY	H	2	■						10 MINS	■							
SUPPLY AIRFLOW MEASURING STATION	FMS	2	■						1 MINS	■					■		HARDWIRE POINT TO UNIT CONTROLLER
SUPPLY FAN AFMS NETWORK CONNECTION	BAS	2															MS/TP
SUPPLY FAN ARRAY ENABLE/DISABLE	EN	1				■				■							
SUPPLY FAN ARRAY NETWORK CONNECTION	BAS	4															MS/TP - PULL ALL AVIABLE POINTS TO READ AT BMS
SUPPLY FAN ARRAY SPEED	CI	1		■					10 MINS	■			■				
SUPPLY FAN ARRAY START/STOP	SS	1				■				■		■					
SUPPLY FAN ARRAY STATUS	CSR	1			■				COV	■					■		
ZONE CO2	CO2	1	■						1 MINS	■					■	>25% SETPOINT	
ZONE HUMIDITY	H	4	■						1 MINS	■					■	>60% RELATIVE HUMIDITY	
ZONE TEMPERATURE	T	5	■						1 MINS	■					■	LOW: 55°F / HIGH: 90°F	

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE

MECHANICAL CONTROLS (AHU-16 & AHU-17)

SHEET NO.

M815

STATE OF MICHIGAN · THERESA LYN CARD · ENGINEER · No. 6201061673

07/30/2026

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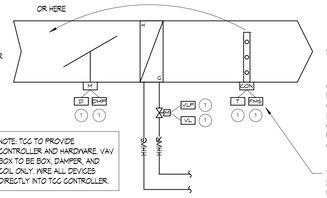


SEQUENCE OF OPERATION

SETPOINTS:

OCCUPIED COOLING SETPOINTS:	75°F (ADJ.) / 60%RH
OCCUPIED HEATING SETPOINT:	70°F (ADJ.)
UNOCCUPIED COOLING SETPOINTS:	85°F (ADJ.)
UNOCCUPIED HEATING SETPOINT:	60°F (ADJ.)

VERIFY ALL SETPOINTS WITH OWNER.

ZONE GROUP & OPERATING MODES: REFER TO ASHRAE GUIDELINE 36 SECTION 5.3.

EACH SYSTEM SHALL BE BROKEN INTO ZONE GROUPS (ISOLATION ZONES) DETERMINED BY THE TCC. TCC TO COMPLY WITH REQUIREMENTS IN ASHRAE GUIDELINE 36-2021, SECTION 5.4 AND ASHRAE 90.1-2013 SECTION 6.4.3.3.4.

VAV BOX OCCUPIED/UNOCCUPIED SETPOINT SHALL BE DETERMINED BY THE ZONE GROUP. OCCUPIED SETPOINT WILL OCCUR DURING OCCUPIED MODE, WARM-UP MODE, AND COOLDOWN MODE. UNOCCUPIED SETPOITN WILL OCCUR DURING UNNOCCUPIED MODE, SETBACK MODE, AND SETUP MODE.

WHILE THE BUILDING IS IN OCCUPIED MODE, LOCAL SETPOINT SHALL BE INDEPENDENTLY ADJUSTABLE UP TO +/- 3°F AND SHALL BE PERSISTENT.

AIRFLOW AND TEMPERATURE CONTROLS: REFER TO ASHRAE GUIDELINE 36 SECTION 5.6

WHILE IN UNOCCUPIED MODE, THE VAV BOX DAMPER AND CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE RISES ABOVE UNOCCUPIED ZONE SETPOINT, THE VAV BOX CONTROLLER SHALL MAKE AN ENABLE REQUEST TO THE ASSOCIATED AIR HANDLER. THE VAV BOX AIRFLOW SETPOINT SHALL BE HELD AT THE MAXIMUM COOLING AIRFLOW UNTIL SPACE TEMPERATURE IS 2°F (ADJ.) BELOW UNOCCUPIED SPACE SETPOINT. THE HEATING COIL CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE FALLS BELOW UNOCCUPIED ZONE SETPOINT, THE VAV BOX CONTROLLER SHALL MAKE AN ENABLE REQUEST TO THE AIR HANDLER. THE VAV BOX AIRFLOW SETPOINT SHALL BE HELD AT THE MAXIMUM HEATING AIRFLOW WITH THE CONTROL VALVE AT 100% OPEN UNTIL SPACE TEMPERATURE IS 2°F (ADJ.) ABOVE UNOCCUPIED SPACE SETPOINT.

WHILE IN OCCUPIED MODE, WHEN THERE IS NO CALL FOR HEATING OR COOLING (DEADBAND), THE AIRFLOW SETPOINT SHALL BE SET TO THE MINIMUM AIRFLOW.

AS SPACE TEMPERATURE RISES ABOVE OCCUPIED ZONE SETPOINT, THE COOLING LOOP OUTPUT SHALL RESET THE ACTIVE AIRFLOW SETPOINT BETWEEN THE MINIMUM AIRFLOW AND THE COOLING MAXIMUM AIRFLOW (REFER TO SCHEDULE) UNLESS THE SUPPLY AIR TEMPERATURE FROM THE AIR HANDLER IS GREATER THAN THE SPACE TEMPERATURE, THEN THE ACTIVE AIRFLOW SETPOINT SHALL BE SET TO THE MINIMUM AIRFLOW. THE HEATING COIL CONTROL VALVE SHALL BE CLOSED.

AS SPACE TEMPERATURE FALLS BELOW OCCUPIED ZONE SETPOINT, THE HEATING LOOP OUTPUT (0%-50%) SHALL RESET THE DISCHARGE AIR TEMPERATURE (DAT) SETPOINT BETWEEN THE AIR HANDLER SUPPLY AIR TEMPERATURE (SAT) AND THE MAXIMUM VAV BOX DAT (REFER TO SCHEDULE) AT MINIMUM AIRFLOW. AT WHICH POINT, IF SPACE TEMPERATURE CONTINUES TO FALL, THE HEATING LOOP (51%-100%) OUTPUT SHALL RESET THE ACTIVE AIRFLOW SETPOINT BETWEEN THE MINIMUM AIRFLOW AND THE MAXIMUM HEATING AIRFLOW (REFER TO SCHEDULE) AND THE DAT SETPOINT SHALL BE HELD AT THE MAXIMUM VAV BOX DAT.

THE VAV BOX CONTROL VALVE SHALL BE MODULATED BY THE CONTROL LOOP TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT SETPOINT.

THE VAV BOX DAMPER SHALL BE MODULATED BY THE CONTROL LOOP TO MAINTAIN AIRFLOW AT SETPOINT.

NOTE: FOR THE VAV BOX SERVING THE TMNG ROOM, THE SUPPLY AIR DISCHARGE SHALL NOT BE LOWER THAN 70°F. REHEAT WILL BE AVILABLE YEAR ROUND TO REHEAT AIR FROM 55°F TO 70°F EVEN DURING PEAK COOLING. MAXIMUM DISCHARGE AIR TEMPERATURE SHALL BE PER SCHEDULED VALUE.

SUPPLY AIR TEMPERATURE RESET: REFER TO ASHRAE GUIDELINE 36 SECTION 5.6.6.1

THE FOLLOWING REQUEST SEQUENCE SHALL ONLY APPLY WHEN OUTDOOR AIR TEMPERATURE IS LESS THAN 65°F.

A REQUEST IS A CALL TO RESET UPSTREAM TEMPERATURE SETPOINT GENERATED BY THE VAV BOX CONTROLLER. EACH VAV BOX WILL BE EQUALLY WEIGHTED IN IMPORTANCE (INITIAL IMPORTANCE MULTIPLIER VALUE OF 1).

PROVIDE THE FOLLOWING TEMPERATURE REQUESTS COMMANDS:

1. IF THE ZONE TEMPERATURE EXCEEDS THE ZONES COOLING SETPOINT BY 5°F (ADJ.) FOR 2 MINUTES (ADJ.) SEND 3 REQUESTS (ADJ.)
2. ELSE, IF THE ZONE TEMPERATURE EXCEEDS THE ZONES COOLING SETPOINT BY 3°F (ADJ.) FOR 2 MINUTES (ADJ.), SEND 2 REQUESTS (ADJ.)
3. ELSE, IF THE ZONE COOLING LOOP IS GREATER THAN 95% SEND 1 REQUEST UNTIL THE COOLING LOOP IS LESS THAN 85%.
4. ELSE, IF THE COOLING LOOP IS LESS THAN 95%, SEND 0 REQUESTS.

CONTROLS SEQUENCE TO ACCOUNT FOR A SUPPRESSION PERIOD DUE TO LOCAL SETPOINT CHANGE; PROVIDE 5 MINUTE (ADJ.) PER 1°F.

VAV SETPOINT RESET: REFER TO ASHRAE GUIDELINE 36 SECTION 5.6.6.2

A REQUEST IS A CALL TO RESET STATIC PRESSURE SETPOINT GENERATED BY THE VAV BOX CONTROLLER. EACH VAV BOX WILL BE EQUALLY WEIGHTED IN IMPORTANCE (INITIAL IMPORTANCE MULTIPLIER VALUE OF 1).

PROVIDE THE FOLLOWING STATIC PRESSURE REQUESTS COMMANDS:

1. IF THE MEASURED AIRFLOW IS LESS THAN 50% (ADJ.) OF SETPOINT WHILE SETPOINT IS GREATER THAN ZERO AND THE DAMPER POSITION IS GREATER THAN 95% (ADJ.) FOR 1 MINUTE (ADJ.), SEND 3 REQUESTS (ADJ.).
2. ELSE IF THE MEASURED AIRFLOW IS LESS THAN 70% (ADJ.) OF SETPOINT WHILE SETPOINT IS GREATER THAN ZERO AND THE DAMPER POSITION IS GREATER THAN 95% (ADJ.) FOR 1 MINUTE (ADJ.), SEND 2 REQUESTS (ADJ.).
3. ELSE IF THE DAMPER POSITION IS GREATER THAN 95% (ADJ.), SEND 1 REQUEST (ADJ.) UNTIL THE DAMPER POSITION IS LESS THAN 85% (ADJ.).
4. ELSE IF THE DAMPER POSITION IS LESS THAN 95% (ADJ.), SEND 0 REQUESTS.

HOT WATER RESET: REFER TO ASHRAE GUIDELINE 36 SECTION 5.6.6.2

A REQUEST IS A CALL TO RESET HEATING CONTROL VALVE POSITION GENERATED BY THE VAV BOX CONTROLLER. EACH VAV BOX WILL BE EQUALLY WEIGHTED IN IMPORTANCE (INITIAL IMPORTANCE MULTIPLIER VALUE OF 1).

PROVIDE THE FOLLOWING STATIC PRESSURE REQUESTS COMMANDS:

1. IF THE DAT IS 30°F (ADJ.) LESS THAN SETPOINT FOR 5 MINS (ADJ.), SEND 3 REQUESTS.
2. ELSE IF THE DAT IS 15°F (ADJ.) LESS THAN SETPOINT FOR 5 MINS (ADJ.), SET 2 REQUESTS.
3. ELSE IF HW VALVE POSITION IS GREATHER THAN 95% (ADJ.), SEND 1 REQUERST UNTIL THE HEATING CONTROL VALVE POSTION IS LESS THAN 95% (ADJ.)
4. ELSE IF THE HEATING CONTROL VALVE POSITION IS LESS THAN 95%, SEND 0 REQUESTS.

ZONE MINIMUM OUTDOOR AIR AND MINIMUM AIRFLOW SETPOINTS (DCV): REFER TO ASHRAE GUIDELINE 36 SECTION 5.2.1

WHEN IN OCCUPIED MODE, THE VAV BOX CONTROLLER/BAS SHALL INCLUDE MEANS TO AUTOMATICALLY CALCULATE THE REQUIRED OUTDOOR AIR AND MINIMUM AIRFLOW SETPOINTS.

MINIMUM OUTDOOR AIR CONTROLS SHALL GENERALLY FOLLOW THE LOGIC BELOW:

1. ESTABLISH VBZ-A AND VBZ-P VALUES FOR TERMINAL UNIT (REFER TO VENTILATION SCHEDULES)
2. DETERMINE ZONE AIR DISTRIBUTION EFFECTIVENESS (EZ)
   A. IF DAT IS LESS THAN OR EQUAL TO SPACE TEMPERATURE, EZ SHALL BE EQUAL TO 1.0.
   B. IF DAT IS GREATER THAN SPACE TEMPERATURE, EZ SHALL BE EQUAL TO 0.8.
3. DETERMINE VBZ-A* AND VBZ-P
   A. VBZ-A* IS THE AREA COMPONENT OF THE REQUIRED BREATHING ZONE OUTDOOR AIRFLOW. THE NORMAL VALUE OF VBZ-A* SHALL BE VBZ-A (REFER TO VENTILATION SCHEDULE, BREATHING ZONE OUTDOOR AIRFLOW (AREA RELATED)(CFM)).
   B. VBZ-P* IS THE PEOPLE COMPONENT OF THE REQUIRED BREATHING ZONE OUTDOOR AIRFLOW. THE NORMAL VALUE OF VBZ-P* SHALL BE VBZ-P (REFER TO VENTILATION SCHEDULE, BREATHING ZONE OUTDOOR AIRFLOW (PEOPLE RELATED)(CFM)).
4. DETERMINE VMIN. NOTE: VMIN IS THE ZONE MINIMUM AIRFLOW SETPOINT (VOZ). VMIN SHALL BE SET TO "AUTO" TO ALLOW VMIN TO BE CALCULATED AUTOMATICALLY AND DYNAMICALLY TO MEET VENTILATION NEEDS.
   A. VMIN SHALL BE EQUAL TO VOZ IF THE ASSOCIATED AIR HANDLER IS AT 100% OA.
   B. ELSE, VMIN SHALL BE EQUAL TO 1.5*VOZ IF THE ASSOCIATED AIR HANDLER IS NOT AT 100% OA (AND VMIN IS SET TO AUTO).
   C. ELSE, VMIN SHALL BE EQUAL TO VMIN AS ENTERED IN THE SCHEDULE.
5. THE OCCUPIED MINIMUM AIRFLOW (VMIN) SHALL BE EQUAL TO VMIN EXCEPT AS NOTED IN STEP 6. (REF. 636 5.2.1.3.B.R)
6. THE REQUIRED ZONE OUTDOOR AIRFLOW VOZ SHALL BE CALCULATED AS VOZ = (VBZ-A* + VBZ-P*)/EZ, WHERE THE NORMAL VALUES OF VBZ-A* AND VBZ-P* ARE MODIFIED IF ANY OF THE FOLLOWING CONDITIONS ARE MET (IN ORDER FROM HIGHER TO LOWER PRIORITY)
   A. IF ZONE IS IN ANY OTHER MODE THAN OCCUPIED (I.E. OCCUPANCY SENSOR PLACING ZONE IN UNOCCUPIED STANDBY, TIME OF DAY SCHEDULE PLACING ZONE IN UNOCCUPIED MODE, ETC.), SET ALL VALUES (VBZ-A*, VBZ-P*, VMIN*) EQUAL TO 0.
   B. IF THE ZONE HAS A CO2 SENSOR.
      a. SEE VAV TERMINAL UNIT SCHEDULE FOR MAXIMUM CO2 (CMAX) LEVELS PER ZONE TYPE. IF VALUE IS UNLISTED USE 1000 PPM CO2 CMAX AS DEFAULT. AMBIENT CO2 (CAMB) IS ASSUMED AT 400 PPM.
      b. CMAX = DELTA C (MAXIMUM DELTA CO2 CONCENTRATION) + CAMB
      c. DURING OCCUPIED MODE, A P-ONLY LOOP SHALL LIMIT CO2 CONCENTRATION TO CMAX; LOOP OUTPUT SHALL RANGE FROM 0% AT CAMB PROPORTIONALLY UP TO 100% AT CMAX. LOOP IS DISABLED AND OUTPUT SET TO 0 WHEN ZONE IS UNOCCUPIED.
      d. THE CO2 CONTROL LOOP OUTPUT SHALL RESET BOTH THE OCCUPIED MINIMUM AIRFLOW SETPOINT (VMIN*) AND POPULATION COMPONENT OF THE REQUIRED BREATHING ZONE OUTDOOR AIRFLOW (VBZ-P*) IN PARALLEL. VMIN* SHALL BE RESET FROM THE ZONE MINIMUM AIRFLOW SETPOINT VMIN (I.E. VBZ-P* = 0) AT 0% LOOP OUTPUT UP TO THE MAXIMUM HEATING AIRFLOW SETPOINT (REFER TO VAV TERMINAL UNIT SCHEDULE) AT 100% LOOP OUTPUT. VPZ-P* SHALL BE RESET FROM 0 CFM AT 0% LOOP OUTPUT UP TO THE VBZ-P AT 100% LOOP OUTPUT.

UNOCCUPIED STANDBY MODE CONTROL:

WHEN THE SPACE HAS BEEN UNOCCUPIED FOR 5 MINS, THE UNIT SHALL ENTER UNOCCUPIED STANDBY MODE. THE ACTIVE HEATING SETPOINT SHALL BE SETBACK 11°F. THE ACTIVE COOLING SETPOINT SHALL BE SETUP 11°F. ALL AIRFLOW SUPPLIED TO THE ZONE SHALL BE SHUT OFF WHENEVER SPACE TEMPERATURE IS BETWEEN THE ACTIVE HEATING AND COOLING SETPOINTS.

ALARMS AND SAFETIES:

LOW AIRFLOW: IF THE MEASURED AIRFLOW IS LESS THAN 50% OF SETPOINT FOR MORE THAN 10 MINS, GENERATE AN ALARM AT THE BAS.

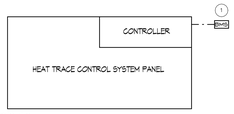
LOW TEMPERATURE: IF THE MEASURED DAT IS LESS THAN 15°F FOR MORE THAN 10 MINS, GENERATE AN ALARM AT THE BAS.

HIGH/LOW ZONE CO2 LEVEL: IF THE MEASURED CO2 IS OUTSIDE OF 25% SETPOINT FOR MORE THAN 30 MINS, GENERATE AN ALARM AT THE BAS.

HIGH/LOW ZONE TEMPERATURE: IF THE ZONE TEMPERATURE IS BELOW 55°F OR ABOVE 90°F WHILE IN OCCUPIED MODE FOR MORE THAN 15 MINS, GENERATE AN ALARM AT THE BAS

VAV BOX W/ HHW REHEAT AND CO2 CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

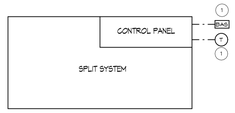
TEMPERATURE CONTROLS CONTRACTOR SHALL WIRE TO/FROM HEAT TRACE CONTROL PANEL CONTROL PANEL BY ELECTRICAL CONTRACTOR.

ALARMS

THE BAS SHALL MONITOR THE HEAT TRACE CONTROL PANEL(S). IF ANY ALARM IS GENERATED AT THE UNITS CONTROLLER, GENERATE AN ALARM AT THE BAS.

HEAT TRACE ALARM MONITORING CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

TEMPERATURE CONTROLS CONTRACTOR SHALL VERIFY ALL READ/WRITE POINTS WITH FINAL APPROVED EQUIPMENTS CONTROLLER. UNIT SHALL OPERATE FROM PACKAGED CONTROLS FROM MANU. WITH BACNET MS/TP OR IP COMMUNICATION CARD.

ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

SPLIT-SYSTEM UNIT

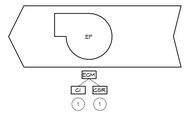
THE UNIT SHALL OPERATE TO MAINTAIN ZONE SETPOINT AT 72°F (ADJ.)

ALARMS

THE BAS SHALL MONITOR THE SPLIT SYSTEM. IF ANY ALARM IS GENERATED AT THE UNITS CONTROLLER, GENERATE AN ALARM AT THE BAS.

SPLIT SYSTEM CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

INLINE EXHAUST FAN CONTROLS TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR AND TIE INTO THE BAS.

ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

EXHAUST FAN

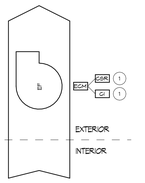
THE EXHAUST FAN SHALL BE STARTED/STOPPED THROUGH THE BAS. THE EXHAUST FAN SHALL RUN CONTINUOUSLY AT A CONSTANT VOLUME BASED ON THE BUILDING OCCUPANCY SCHEDULE.

ALARMS

IF THE EXHAUST FAN IS COMMANDED ON BUT NO CURRENT IS SENSED, THE EXHAUST FAN SHALL BE DE-ENERGIZED AND AN ALARM SHALL BE GENERATED AT THE BAS.

EXHAUST FAN (INLINE) CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

ROOF MOUNTED EXHAUST FAN CONTROLS TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR AND TIE INTO THE BAS.

ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

EXHAUST FAN

THE EXHAUST FAN SHALL BE STARTED/STOPPED THROUGH THE BAS. THE EXHAUST FAN SHALL RUN CONTINUOUSLY AT A CONSTANT VOLUME BASED ON THE BUILDING OCCUPANCY SCHEDULE.

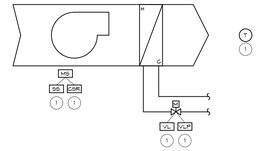
FOR EXISTING EXHAUST FANS: PROVIDE SAME OPERATING SCHEDULE AS PREVIOUS FANS. PROVIDE INSTRUMENTATION AND CONTROL DEVICES AS REQUIRED TO INTENT - GI (AO) POINT MAY BE S/S (DO) IF MOTOR DOES NOT HAVE VFD OR ISN'T ECM.

ALARMS

IF THE EXHAUST FAN IS COMMANDED ON BUT NO CURRENT IS SENSED, THE EXHAUST FAN SHALL BE DE-ENERGIZED AND AN ALARM SHALL BE GENERATED AT THE BAS.

EXHAUST FAN (ROOF MOUNTED) CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

CABINET UNIT HEATER CONTROLS TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR AND TIE INTO THE BAS.

ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

CABINET UNIT HEATER

THE CABINET UNIT HEATER FAN SHALL START/STOP THE FAN AND MODULATE THE HEATING CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT. SPACE TEMPERATURE SETPOINT SHALL BE SET TO 60°F.

PROVIDE AUTOMATIC CONTROLS TO DISABLE UNIT WHEN GLOBAL OUTDOOR AIR TEMPERATURE IS ABOVE 45°F.

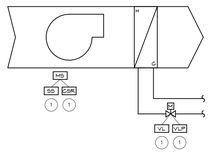
ALARMS

IF THE GUH FAN IS COMMANDED ON BUT NO CURRENT IS SENSED, THE GUH FAN SHALL BE DE-ENERGIZED AND AN ALARM SHALL BE GENERATED AT THE BAS.

IF THE ZONE TEMPERATURE IS BELOW 45°F OR ABOVE 85°F, GENERATE AN ALARM AT THE BAS.

HEATING HOT WATER CABINET UNIT HEATER CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

UNIT HEATER CONTROLS TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR AND TIE INTO THE BAS.

ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

CABINET UNIT HEATER

THE UNIT HEATER FAN SHALL START/STOP THE FAN AND MODULATE THE HEATING CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT. SPACE TEMPERATURE SETPOINT SHALL BE SET TO 60°F.

PROVIDE AUTOMATIC CONTROLS TO DISABLE UNIT WHEN GLOBAL OUTDOOR AIR TEMPERATURE IS ABOVE 45°F.

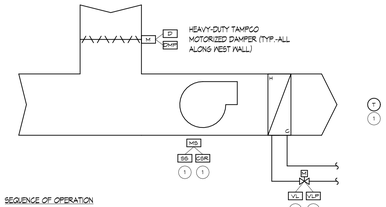
ALARMS

IF THE GUH FAN IS COMMANDED ON BUT NO CURRENT IS SENSED, THE GUH FAN SHALL BE DE-ENERGIZED AND AN ALARM SHALL BE GENERATED AT THE BAS.

IF THE ZONE TEMPERATURE IS BELOW 45°F OR ABOVE 80°F, GENERATE AN ALARM AT THE BAS.

HEATING HOT WATER UNIT HEATER CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

CABINET UNIT HEATER CONTROLS TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR AND TIE INTO THE BAS.

ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

CABINET UNIT HEATER (ZONE CONDITIONING)

WHENEVER THE BUILDING IS OCCUPIED THE OUTDOOR AIR DAMPER SHALL OPEN TO BRING IN REQUIRED VENTILATION AIR.

THE CABINET UNIT HEATER FAN SHALL START/STOP THE FAN AND MODULATE THE HEATING CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT. SPACE TEMPERATURE SETPOINT SHALL BE SET TO 70°F.

CABINET UNIT HEATERS IN THE PEMB SHALL BE USED FOR MORNING WARM-UP IN CONJUNCTION WITH THE DOAS UNITS.

CABINET UNIT HEATER (VESTIBULE)

THE CABINET UNIT HEATER FAN SHALL START/STOP THE FAN AND MODULATE THE HEATING CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT. SPACE TEMPERATURE SETPOINT SHALL BE SET TO 80°F.

PROVIDE AUTOMATIC CONTROLS TO DISABLE UNIT WHEN GLOBAL OUTDOOR AIR TEMPERATURE IS ABOVE 45°F.

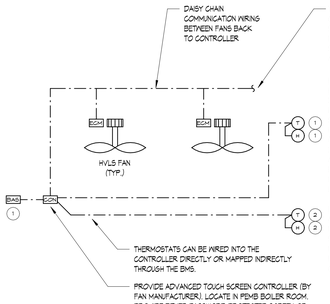
ALARMS

IF THE GUH FAN IS COMMANDED ON BUT NO CURRENT IS SENSED, THE GUH FAN SHALL BE DE-ENERGIZED AND AN ALARM SHALL BE GENERATED AT THE BAS.

IF THE ZONE TEMPERATURE IS BELOW 45°F OR ABOVE 65°F, GENERATE AN ALARM AT THE BAS.

HEATING HOT WATER CABINET UNIT HEATER W/ OA DAMPER CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

PROVIDE HVLS FANS WITH PACKASED BACNET CONTROLS.

TCC TO MOUNT MANUFACTURER PROVIDED TEMPERATURE AND HUMIDITY SENOSR HIGH IN THE SPACE AND ANOTHER AT STANDARD MOUNTING HEIGHT TO MEASURE TEMPERATURE AND TEMPERATURE DIFFERENTIAL FOR AUTOMATED CONTROLS.

BMS SHALL DETERMINE SUMMER AND WINTER MODES.

ALL FANS SHALL HAVE THE ABILITY TO BE INDIVIDUALLY CONTROLLED OR OPERATE IN GROUPS (PROGRAMMABLE SCENES). REFER TO FLOOR PLANS FOR INDIVIDUAL OR PRE-SET GROUPINGS TO BE PROGRAMMED.

FANS SHALL HAVE THE ABILITY TO OPERATE MANUALLY (AS INDICATED ABOVE) OR OPERATE AUTOMATICALLY BASED ON THE HIGH/LOW TEMPERATURE SENSOR (ENVIRONMENTAL CONTROL). ENVIROMENTAL CONTROL SHALL BE CONFIGURED (PACKAGED SEQUENCE) TO HAVE SUMMER AND WINTER OPERATING MODES. COORDINATE WITH OWNER ON FINAL TEMPERATURES.

THE FANS SHALL BE CONTROLLABLE AT THE MANUFACTURER HMI OR THROUGH THE BMS.

ALARMS

PROVIDE AN ALARM AT THE BMS IF THE FAN SYSTEM CONTROLLER GOES INTO ALARM.

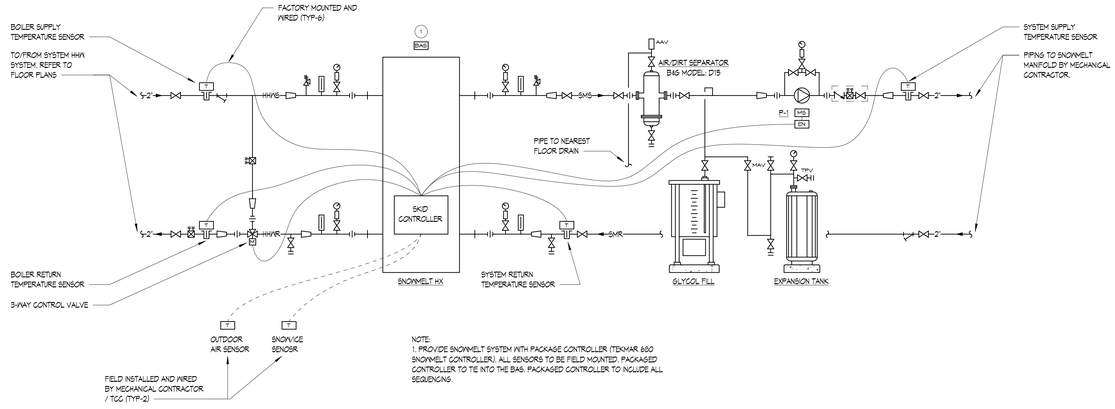
PROVIDE AN ALARM AT THE BMS IF DURING WINTER MODE THE DIFFERENTIAL EXCEEDS 19°F FOR 15 MINS.

HVLS CONTROLS DIAGRAM

NOT TO SCALE

MECHANICAL CONTROLS GENERAL NOTES

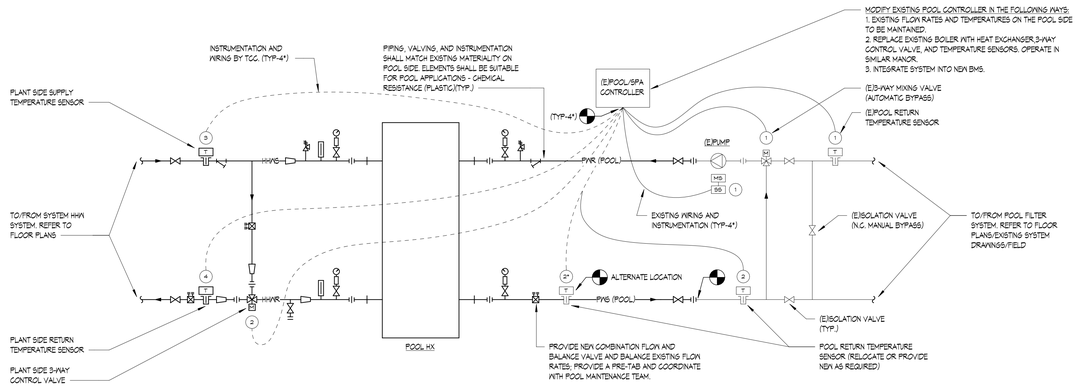
1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS
3. DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
4. COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
5. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MSI TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS. SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENC



NOTE:
1. PROVIDE SNOWMELT SYSTEM WITH PACKAGE CONTROLLER (TEXMAR 880 SNOWMELT CONTROLLER). ALL SENSORS TO BE FIELD MOUNTED. PACKAGED CONTROLLER TO TIE INTO THE BAS. PACKAGED CONTROLLER TO INCLUDE ALL SEQUENCING.

SNOWMELT SYSTEM PIPING AND CONTROLS DIAGRAM

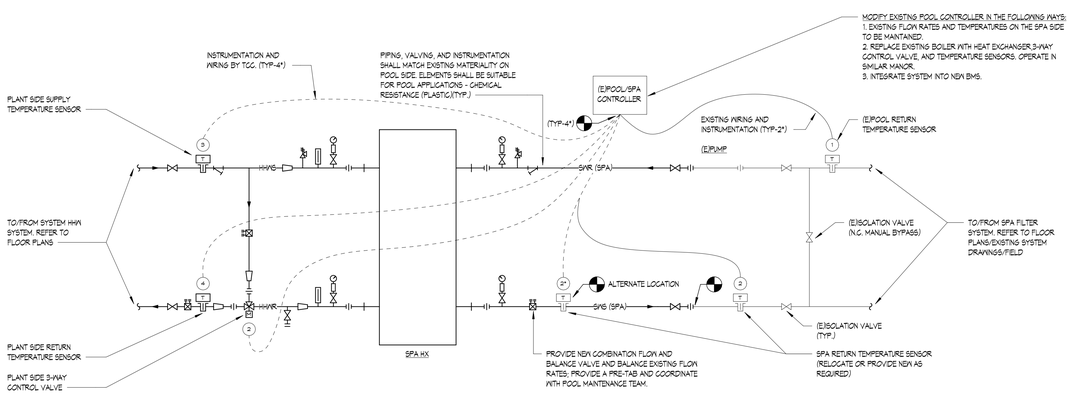
NOT TO SCALE



NOTE:
1. NEW HEAT EXCHANGER TO REPLACE EXISTING BOILER. PLANT SIDE OF HEAT EXCHANGER SHALL BE TIED TO THE NEW HHW PLANT IN THE PEMB AND CONTROLLED WITH A 3-WAY VALVE. THE POOL SIDE OF THE HEAT EXCHANGER TO OPERATE IN A SIMILAR MANNER AS BEFORE. COORDINATE EXACT REQUIREMENTS WITH EXISTING POOL EQUIPMENT TO MATCH CURRENT SEQUENCES AND OPERATION.
*ALTERNATE LOCATION AFFECTS QUANT.

POOL HEAT EXCHANGER CONTROLS DIAGRAM

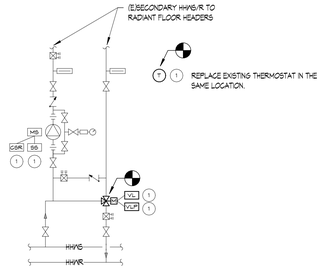
NOT TO SCALE



NOTE:
1. NEW HEAT EXCHANGER TO REPLACE EXISTING BOILER. PLANT SIDE OF HEAT EXCHANGER SHALL BE TIED TO THE NEW HHW PLANT IN THE PEMB AND CONTROLLED WITH A 3-WAY VALVE. THE SPA SIDE OF THE HEAT EXCHANGER TO OPERATE IN A SIMILAR MANNER AS BEFORE. COORDINATE EXACT REQUIREMENTS WITH EXISTING SPA EQUIPMENT TO MATCH CURRENT SEQUENCES AND OPERATION.
* ALTERNATE LOCATION AFFECTS QUANT.

SPA HEAT EXCHANGER CONTROLS DIAGRAM

NOT TO SCALE



NOTES:
1. PERFORM A PRE-TEST AND BALANCE ON RADIANT FLOOR SYSTEM.
2. PROVIDE A NEW CONTROLLER AND THERMOSTAT. INTEGRATE ALL EXISTING POINTS INTO THE NEW BMS. PROVIDE NEW GRAPHICS AND TRENDING.
3. MATCH EXISTING CONTROL SEQUENCE OF OPERATIONS.

(E)POOL RADIANT FLOOR PIPING DIAGRAM AND CONTROLS

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.
3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
4. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.
5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MSI TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH (X)120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR THE DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT& NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS. SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M3.1b

POINT NAME	HARDWARE: ID DATA TAG	NO.	POINT TYPE AI	AO	BI	BO	AV	BV	SOFTWARE: TREND	SHOW ON GRAPHIC	FAIL MODE: FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM: ALARM	ALARM LIMIT	REMARKS
(E)POOL RADIANT FLOOR CONTROLS AND PIPING DIAGRAM																	
(E)GRG PUMP START/STOP	SS	1				■			10 MINS	■				■			
(E)GRG PUMP STATUS	GSR	1			■				COV	■					■		
HEATING COIL VALVE CONTROL	VL	1	■						1 MINS	■		■					
HEATING COIL VALVE POSITION FEEDBACK	VLP	1	■						1 MINS	■					■		
ZONE TEMPERATURE	T	1	■						1 MINS	■					■	LOW: 55°F / HIGH: 90°F	
POOL HEAT EXACANGER CONTROLS DIAGRAM																	
EXISTING TO REMAIN POINTS AND/OR PACKAGED POINTS. (E)3-WAY BYPASS VALVE		1			■	■			COV	■		■					
EXISTING TO REMAIN POINTS AND/OR PACKAGED POINTS. (E)P-1 START/STOP	SS	1				■				■				■			
(E)POOL RETURN TEMPERATUR	T	1	■						1 MINS	■							
(E)POOL RETURN TEMPERATURE SENSOR	T	2	■						1 MINS	■					■	110°F	
(E)POOL SUPPLY TEMPERATUR	T	2*	■						1 MINS	■					■	110°F	ALTERNATE LOCATION
PLANT SIDE HHWR TEMPERATURE	T	4	■						1 MINS	■							
PLANT SIDE HHWS TEMPERATURE	T	3	■						1 MINS	■							
POOL 3-WAY CONTROL VALVE	VL	2		■							■						
SNOWMELT SKID CONTROLLER																	
SNOWMELT SYSTEM PIPING AND CONTROLS DIAGRAM	BAS	1								■					■		TCC TO WIRE TO SNOWMELT CONTROLLER (BACNET MS/TP). EACH POINT INDICATED ON THE DRAWING SHALL BE SHOWN ON THE BMS (ADJ.)
SPA HEAT EXACANGER CONTROLS DIAGRAM																	
EXISTING TO REMAIN POINTS AND/OR PACKAGED POINTS. (E)POOL RETURN TEMPERATUR	T	1	■						1 MINS	■							
(E)POOL RETURN TEMPERATURE SENSOR	T	2	■						1 MINS	■					■	110°F	
(E)POOL SUPPLY TEMPERATUR	T	2*	■						1 MINS	■					■	110°F	ALTERNATE LOCATION
PLANT SIDE HHWR TEMPERATURE	T	4	■						1 MINS	■							
PLANT SIDE HHWS TEMPERATURE	T	3	■						1 MINS	■							
SPA 3-WAY CONTROL VALVE	VL	2		■							■						

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS (MISC. WATER)

SHEET NO.
M817

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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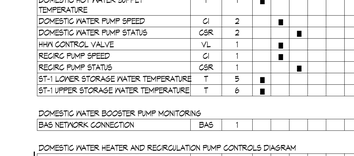
MAKE NOTICE

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M3.1.7

	HARDWARE								SOFTWARE		FAIL MODE				ALARM		
	ID DATA		POINT TYPE														
POINT NAME	TAG	NO.	AI	AO	BI	BO	AV	BV	TREND	SHOW ON GRAPHIC	FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	LOCAL DEFAULT	ALARM	ALARM LIMIT	REMARKS
BUILDING MAIN DCW FLOW MONITORING CONTROL DIAGRAM																	
DCW FLOW METER	FM	1	■						1 MNS	■							
BUILDING MAIN NG FLOW MONITORING CONTROL DIAGRAM																	
NG FLOW METER	FM	1	■						1 MNS	■							
DOMESTIC HOT WATER CONTROLS DIAGRAM																	
DHX-1 ENTERING WATER TEMPERATURE	T	3	■						1 MNS	■							
DHX-1 HHWR ENTERING WATER TEMPERATURE	T	8	■						1 MNS	■							
DHX-1 HHWS ENTERING WATER TEMPERATURE	T	7	■						1 MNS	■							
DHX-1 LEAVING WATER TEMPERATURE	T	4	■						1 MNS	■							
DOMESTIC HOT WATER RETURN TEMPERATURE	T	2	■						1 MNS	■							
DOMESTIC HOT WATER SUPPLY TEMPERATURE	T	1	■						1 MNS	■							
DOMESTIC WATER PUMP SPEED	CI	2		■					10 MNS	■				■			
DOMESTIC WATER PUMP STATUS	CSR	2			■				COV	■					■		
HWH CONTROL VALVE	VL	1		■					1 MNS	■							
RECIRC PUMP SPEED	CI	1		■					10 MNS	■				■			
RECIRC PUMP STATUS	CSR	1			■				COV	■					■		
ST-1 LOWER STORAGE WATER TEMPERATURE	T	5	■						1 MNS	■							
ST-1 UPPER STORAGE WATER TEMPERATURE	T	6	■						1 MNS	■							
DOMESTIC WATER BOOSTER PUMP MONITORING																	
BAS NETWORK CONNECTION	BAS	1															MS/TP
DOMESTIC WATER HEATER AND RECIRCULATION PUMP CONTROLS DIAGRAM																	
DOMESTIC HOT WATER RETURN TEMPERATURE	T	2	■							■					■	120°F	
DOMESTIC HOT WATER SUPPLY TEMPERATURE	T	1	■							■					■	120°F	
RCP START/STOP	SS	1				■							■				
RCP STATUS	CSR	1			■				COV	■					■		
FIRE PUMP MONITORING CONTROLS																	
BAS NETWORK CONNECTION	BAS	1															
GENERATOR MONITORING																	
BAS NETWORK CONNECTION	BAS	1															REFER TO RISER
MAIN ELECTRICAL GEAR MONITORING																	
BAS NETWORK CONNECTION	BAS	1															TCP/IP, PULL FROM OWNERS NETWORK
MEPF VENTILATION CONTROLS DIAGRAM																	
EXHAUST AIR DAMPER CONTROL	D	1		■						■		■					
EXHAUST AIR DAMPER POSITION FEEDBACK	DMP	1	■						COV	■							
EXHAUST FAN SPEED CONTROL	CI	1		■						■				■			0-1.9 STOP, 2-10V START/OPPERATE
EXHAUST FAN STATUS	CSR	1			■				COV	■					■		
OUTDOOR AIR DAMPER CONTROL	D	1		■						■		■					
OUTDOOR AIR DAMPER POSITION FEEDBACK	DMP	1	■						COV	■							
ZONE TEMPERATURE	T	1	■						1 MNS	■					■	LOW: 55°F / HIGH: 110°F	
MISC ELECTRICAL MONITORING																	
BAS NETWORK CONNECTION	BAS	1															REFER TO RISER



SEQUENCE OF OPERATION

GENERAL

CONTROL/MONITORING POINTS TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR AND TIE INTO THE BAS.

ALL SETPONTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

DOMESTIC WATER HEATER

THE (E)DOMESTIC HOT WATER SUPPLY AND RETURN TEMPERATURES SHALL BE MONITORED AT THE BAS. IF THE TEMPERATURES FALL BELOW 120°F, GENERATE AN ALARM AT THE BAS

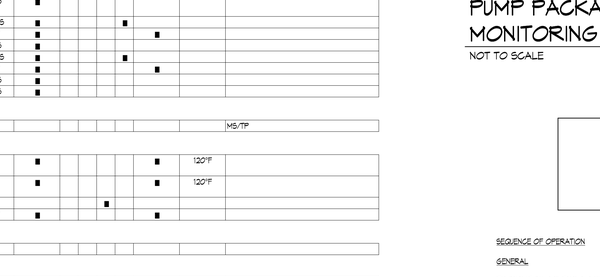
DOMESTIC HOT WATER RECIRCULATION PUMP

THE DOMESTIC HOT WATER RECIRCULATION PUMP SHALL BE STARTED/STOPPED AUTOMATICALLY THROUGH THE BAS. THE BAS SHALL START THE RECIRCULATING PUMP WHEN THE BUILDING IS OCCUPIED. THE PUMPS SHALL RUN TO MAINTAIN A RETURN WATER TEMPERATURE OF 5 DEGREES LESS THAN THE SUPPLY TEMPERATURE.

IF THE DRP IS COMMANDED ON BUT NO CURRENT IS SENSED, THE DRP SHALL BE DE-ENERGIZED AND AN ALARM SHALL BE GENERATED AT THE BAS.

DOMESTIC WATER HEATER AND RECIRCULATION PUMP CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION
NOTE: ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

1. THE BMS SYSTEM SHALL MONITOR DOMESTIC HOT WATER SUPPLY/RETURN WATER TEMPERATURES. THE BMS SHALL MONITOR PUMP STATUS.
2. UPON A CALL FOR DOMESTIC HOT WATER GENERATION VIA THE MAIN HOT WATER SUPPLY TEMPERATURE, THE BMS SHALL START THE LOAD PUMP (DWP-1) AND ENSURE THE PEMB BOILER PLANT IS ON AND SECONDARY PUMPS ARE OPERATING.
   A. IF THE BOILER PLANT IS OFF, THE BAS SHALL ACTIVATE THE BOILER PLANT.
3. THE BMS SHALL MODULATE THE HHW CONTROL VALVE TO MAINTAIN DOMESTIC HOT WATER SUPPLY TEMPERATURE AT 130 DEGREES (ADJ.).
4. THE BMS SHALL MONITOR THE DOMESTIC HOT WATER RETURN TEMPERATURES AND TURN ON/OFF THE RECIRCULATION PUMP TO MAINTAIN RETURN WATER TEMPERATURE SETPOINT (5 DEGREES BELOW DOMESTIC HOT WATER SUPPLY TEMPERATURE SETPOINT).

DOMESTIC HOT WATER CONTROLS DIAGRAM

NOT TO SCALE

SEQUENCE OF OPERATION

GENERAL

FLOW METER BY TCC. INSTALLED BY MC.

THE BAS SHALL MONITOR THE BULDING NATURAL GAS FLOW RATE.

THE ENERGY USE OF THE BUILDING SHALL BE RECORDED AT A MINIMUM OF EVERY 60 MINUTES AND REPORTED AT LEAST HOURLY, DAILY, MONTHLY, AND ANNUALLY. THE SYSTEM SHALL BE CAPABLE OF MAINTAINING ALL DATA COLLECTED FOR A MINIMUM OF 36 MONTHS AND CREATING USER REPORTS SHOWING AT LEAST HOURLY, DAILY, MONTHLY, AND ANNUAL ENERGY CONSUMPTION AND DEMAND.

BUILDING MAIN NG FLOW MONITORING CONTROL DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

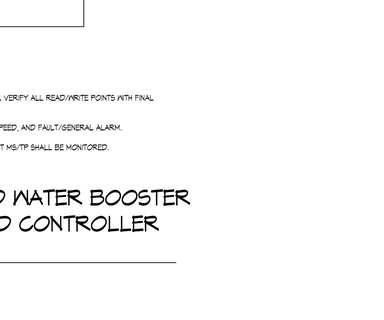
GENERAL

FLOW METER BY TCC. INSTALLED BY PC.

THE BAS SHALL MONITOR THE BULDING NATURAL GAS FLOWRATE

BUILDING MAIN DCW FLOW MONITORING CONTROL DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

MEPF VENTILATION AND EXHAUST FAN CONTROLS TO BE SUPPLIED BY THE TEMPERATURE CONTROLS CONTRACTOR AND TIE INTO THE BAS.

ALL SETPONTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

EXHAUST FAN

THE EXHAUST FAN SHALL BE STARTED/STOPPED THROUGH THE LOCAL THERMOSTAT. WHENEVER THE TEMPERATURE IN THE ROOM EXCEEDS 80°F (ADJ.) AND THE GLOBAL OUTDOOR AIR TEMPERATURE SENSORY IS LOWER THAN CURRENT ROOM TEMPERATURE, ENERGIZE EXHAUST FAN AND RUN AT FULL SPEED UNTIL TEMPERATURE REACHES 70°F (ADJ.) OR ROOM TEMPERATURE IS WITHIN 5°F OF GLOBAL OUTDOOR AIR TEMPERATURE SENSOR.

PRIOR TO THE EXHAUST FAN STARTING, BOTH THE OUTDOOR AIR DAMPER AND THE EXHAUST AIR DAMPER SHALL OPEN FULLY.

ALARMS

IF THE EXHAUST FAN IS COMMANDED ON BUT NO CURRENT IS SENSED, THE EXHAUST FAN SHALL BE DE-ENERGIZED AND AN ALARM SHALL BE GENERATED AT THE BAS.

IF EITHER DAMPER IS COMMANDED TO OPEN BUT FAIL TOO, GENERATE AN ALARM AT THE BMS AND DE-ENERGIZE THE FAN.

MEPF VENTILATION CONTROLS DIAGRAM

NOT TO SCALE

SEQUENCE OF OPERATION

GENERAL

TEMPERATURE CONTROLS CONTRACTOR SHALL VERIFY ALL READ/WRITE POINTS WITH FINAL APPROVED EQUIPMENT'S SUBMITTAL.

MINIMUM REQUIRED POINTS: STATUS, RUNTIME, SPEED, AND FAULT/GENERAL ALARM.

ALL ADDITIONAL POINTS AVAILABLE VIA BACNET MS/TP SHALL BE MONITORED.

DOMESTIC COLD WATER BOOSTER PUMP PACKAGED CONTROLLER MONITORING

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

TEMPERATURE CONTROLS CONTRACTOR SHALL VERIFY ALL READ/WRITE POINTS WITH FINAL APPROVED EQUIPMENT'S SUBMITTAL. TCC TO COORDINATE COMMUNICATION PROTOCOL WITH FINAL EQUIPMENT SUBMITTAL. UNIT SHALL OPERATE FROM PACKAGED CONTROLS FROM MFR (DIV 26).

ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

GENERATOR MONITORING

THE BMS SHALL MONITORING THE FOLLOWING POINTS: THREE PHASE VOLTAGE, AMPERAGE, KW, KVA, KVAR, SELECTABLE LINE TO LINE OR LINE TO NEUTRAL MEASUREMENTS, FREQUENCY, ENGINE SPEED, ENGINE COOLANT TEMPERATURE, ENGINE OIL PRESSURE, ENGINE OIL TEMPERATURE, BATTERY VOLTAGE, AND HOURMETER.

THE BMS SHALL MONITORING THE FOLLOWING ALARMS AND WARNINGS: LOW OIL PRESSURE, LOW COOLANT LEVEL, HIGH/LOW COOLANT TEMPERATURE, SENSOR FAILURE, OIL TEMPERATURE, OVER-UNDER SPEED, OVER-UNDER VOLTAGE, OVER-UNDER FREQUENCY, OVER-UNDER CURRENT, OVER LOAD, HIGH/LOW BATTERY VOLTAGE, BATTERY CHARGER CURRENT, AND PHASE TO PHASE AND PHASE TO NEUTRAL SHORT CIRCUITS.

GENERATOR MONITORING CONTROLS DIAGRAM

NOT TO SCALE

SEQUENCE OF OPERATION

GENERAL

TEMPERATURE CONTROLS CONTRACTOR SHALL VERIFY ALL READ/WRITE POINTS WITH FINAL APPROVED EQUIPMENT'S SUBMITTAL. TCC TO COORDINATE COMMUNICATION PROTOCOL WITH FINAL EQUIPMENT SUBMITTAL. UNIT SHALL OPERATE FROM PACKAGED CONTROLS FROM MFR.

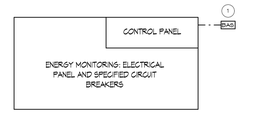
ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

GENERATOR MONITORING

THE BMS SHALL MONITORING THE FIRE PUMP AND JOCKEY PUMP CONTROLLER VIA A BACNET COMMUNICATION SOFTWARE DATA-LINK. REMOTELY MONITOR THE FOLLOWING POINTS: RUN STATUS, TROUBLE OR FAULT STATUS, PHASE REVERSAL STATUS, AND SUPERVISORY ALARM NOTIFICATION.

FIRE PUMP AND JOCKEY PUMP MONITORING CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

TEMPERATURE CONTROLS CONTRACTOR SHALL VERIFY ALL READ POINTS WITH FINAL APPROVED EQUIPMENT'S SUBMITTAL AND ELECTRICAL TRADES.

MONITORING REQUIRED PER ASHRAE 90.1-2019

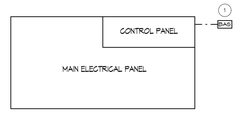
BMS SHALL STORAGE INFORMATION FOR A MINIMUM OF R 3-YEARS.

ENERGY MONITORING: ELECTRICAL PANEL AND SPECIFIED CIRCUIT BREAKERS

THE BMS SHALL MONITORING THE FOLLOWING POINTS: VOLTAGE (PHASE-PHASE, PHASE-NEUTRAL); CURRENTS; ACTIVE, REACTIVE AND APPARENT POWER (PER PHASE AND TOTAL); POWER FACTOR; FREQUENCY; PHASE ANGLE; CURRENT DEMAND AND KW DEMAND; MAX VALUES FOR CURRENT DEMAND, CURRENT, KW DEMAND, AND KW; AVERAGE VALUES FOR VOLTAGE AND CURRENT; ACTIVE ENERGY (KWH); REACTIVE ENERGY (KVARH); APPARENT ENERGY (KVAH); PHASE LOSS ALARM; OVER CURRENT WARNING; OVER CURRENT ALARM; OVER KW DEMAND ALARM; AND UNDER/OVER VOLTAGE ALARM.

MISC ELECTRICAL MONITORING CONTROLS DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL

TEMPERATURE CONTROLS CONTRACTOR SHALL VERIFY ALL READ/WRITE POINTS WITH FINAL APPROVED EQUIPMENTS SUBMITTAL AND ELECTRICAL TRADES.

MAIN ELECTRICAL PANEL MONITORING

THE BMS SHALL MONITORING THE FOLLOWING POINTS: BREAKER STATUS; PHASE, VOLTAGE AND CURRENT; TOTAL KW/KVA/POWER FACTOR; FREQUENCY; PHASE LOSS INDICATION; AND OVERALL NORMAL POWER AVAILABILITY

MAIN ELECTRICAL GEAR PHASE MONITORING CONTROLS DIAGRAM

NOT TO SCALE

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS; SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
3. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MSI TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
4. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH 1X120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
5. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
6. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
7. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR TIME DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
8. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT NETWORK) SHALL BE INCLUDED ON GRAPHICS.
9. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
10. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
11. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
12. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS; SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
13. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS
14. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
15. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL. COORDINATE WITH SUBMITTAL.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS (MISC)

SHEET NO.
M818

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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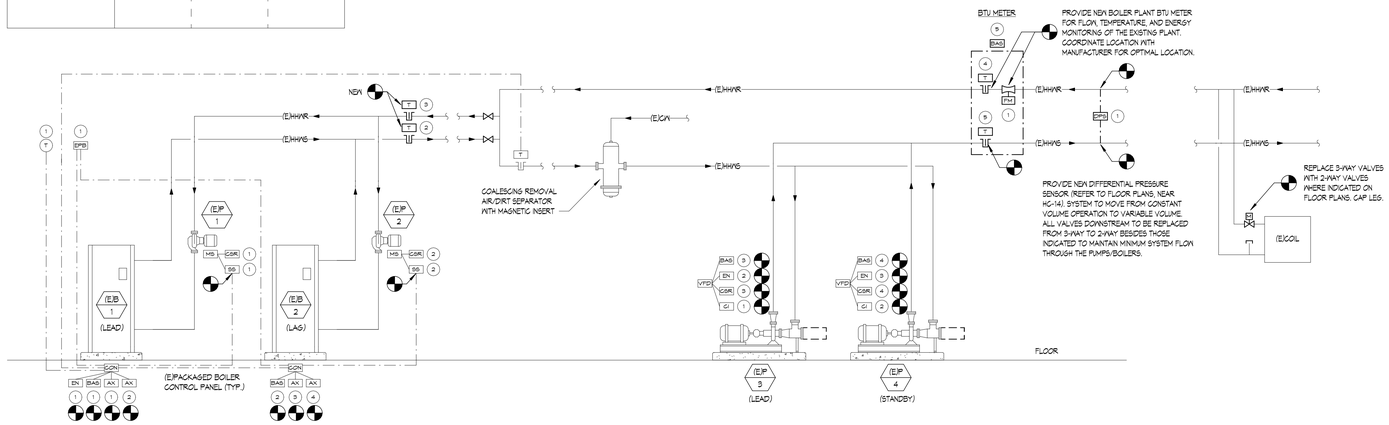
HEATING HOT WATER SUPPLY TEMPERATURE RESET SCHEDULE		
OUTSIDE AIR TEMPERATURE	0°F (ADJ.)	55°F (ADJ.)
HWG TEMPERATURE		
180°F (ADJ.)		
110°F (ADJ.)		



SEQUENCE OF OPERATION

EXISTING BOILER PLANT (FOR REFERENCE):
THE (E)BOILER PLANT CONSISTS OF CONSTANT PRIMARY/ CONSTANT SECONDARY PUMPING CONFIGURATION WITH TWO (2) EQUALLY SIZED BOILERS, EACH SIZED FOR 100% OF THE HEATING LOAD, WITH ONE UNIT BEING REDUNDANT. THE (E)BOILERS HAVE PACKAGE CONTROLS. EACH BOILER HAS A DEDICATED INLINE PRIMARY PUMP WITH MOTOR STARTER. TWO SECONDARY HEATING HOT WATER PUMPS ARE SIZED FOR 100% TOTAL DEMAND FLOW WITH ONE BEING REDUNDANT, HAVE VFD 'S, AND OPERATE AT CONSTANT SPEED. REMOTE 3-WAY VALVES ARE ON ALL EQUIPMENT.

DESIGN INTENT SCOPE:

AS APART OF THE CONTROLS UPGRADES IN THE ENTIRE FACILITY, WHICH WILL REPLACE ALL SENSORS, CONTROL VALVES, DAMPER ACTUATORS ETC., A DIFFERENTIAL PRESSURE SENSOR WILL BE ADDED TO THE SYSTEM AS WELL AS A NUMBER OF DOWNSTREAM VALVES/ PIPING ARRANGEMENTS WILL BE SWITCHED FROM 3-WAY TO 2-WAY. 3-WAY VALVES WILL ONLY REMAIN AS REQUIRED TO MAINTAIN MINIMUM FLOW WITHIN THE SYSTEM. EXISTING EQUIPMENT (SUCH AS BOILERS, PUMPS, VFD'S, ETC.) ARE ASSUMED TO BE FULLY FUNCTIONAL. THE TEMPERATURE CONTROLS CONTRACTOR SHALL TEST AND VERIFY EXISTING SYSTEM COMPONENTS PRIOR TO TURNING OVER CONTROL TO OWNER. IF NON-FUNCTIONING COMPONENTS ARE FOUND, CONTRACTOR IS TO BRING THIS TO THE ATTENTION OF THE ARCHITECT, ENGINEER, AND OWNER. REPLACEMENT OF EXISTING TO REMAIN EQUIPMENT SHOULD NOT BE INCLUDED IN THE BID.

THE FOLLOWING SEQUENCES SHALL BE FOLLOWED IN THE FOLLOWING SCENARIOS

- CHANGE IN SEQUENCES ARE RELATED TO MOVING FROM CONSTANT VOLUME SECONDARY TO VARIABLE VOLUME SECONDARY PUMPING;
- CHANGES ARE REQUIRED FOR ENERGY SAVINGS (RESETS, ETC.);
- THERE WAS NO EXISTING SEQUENCES (FOR EXAMPLE, IF THERE IS NO MINIMUM RUN TIME PREVIOUSLY, PROVIDE NEW SEQUENCE.)

IN OTHER INSTANCES, DEFAULTS ALREADY PROGRAMMED SHALL NOT BE MODIFIED.

BOILER PLANT STAGING AND OPERATION:

THE BOILER CONTROLS ARE BE PROVIDED BY THE MANUFACTURER AND SHALL BE RESPONSIBLE FOR CONTROLLING ALL BOILER FUNCTIONS INCLUDING, BUT NOT LIMITED TO, LEAD/STANDBY STAGING, EQUAL START/STOP TIMES, MONITORING/SETTING SYSTEM TEMPERATURE SETPOINTS, TEMPERATURE RESETS (T&R), PRIMARY PUMP MODULATION, AND FIRING RATE MODULATION. THE MANUFACTURER SHALL PROVIDE ALL NECESSARY DEVICES TO INTERFACE WITH THE BAS VIA BACNET.

THE BOILER PLANT/BAS SHALL INCLUDE AN ENABLING/DISABLE SCHEDULE THAT ALLOWS OPERATORS TO TURN-ON AND LOCK-OUT THE BOILER PLANT DURING ON-HOURS AND OFF-HOURS RESPECTIVELY.

START/STOP TIMES:

TO PREVENT SHORT CYCLING, THE BOILER PLANT SHALL HAVE A MINIMUM RUN TIME OF AT LEAST 15 MINS (ADJ.) SIMILARLY, ONCE DISABLED, THE BOILER PLANT SHALL BE OFF FOR A MINIMUM OF 15 MINS. (ADJ.)

BOILERS SHALL BE LEAD/STANDBY AND ROTATED TO MAINTAIN EVEN WEAR. DURATION SHALL BE SET, ADJUSTED, AND MONITORED ON THE BAS.

ENABLE BOILER PLANT:

ENABLE BOILER PLANT WHEN THE NUMBER OF HEATING-HOT WATER PLANT REQUESTS EXCEEDS 5 REQUESTS (ADJ.) FROM ASSOCIATED HHW CONTROL VALVES, THE OAT IS LESS THAN OR EQUAL TO 70°F (ADJ.), AND THE ENABLING SCHEDULE IS ACTIVE.

WHEN THE BOILER PLANT IS ENABLED, STAGE ON THE LEAD PRIMARY BOILER PUMP AND LEAD SECONDARY HW PUMPS PER CONTROLS SEQUENCES OF OPERATION. ONCE ASSOCIATED LEAD PRIMARY PUMP HAS PROVEN ON AND FLOW IS SENSED THROUGH THE LEAD BOILER, ENABLE THE LEAD BOILER.

DISABLE BOILER PLANT:
WHEN THE BOILER PLANT IS DISABLED, SHUT OFF ENABLED BOILER(S). THEN DISABLE ASSOCIATED PRIMARY HHW PUMPS PER CONTROLS SECTION. LASTLY, DISABLE SECONDARY HHW PUMPS PER SEQUENCE.

DISABLE THE BOILER PLANT WHEN THERE IS NO CALL FOR HEATING, THE OAT IS ABOVE 70°F (ADJ.), AN/OR THE ENABLING SCHEDULE IS INACTIVE.

BOILERS (B-1, B-2):

BOILER CONTROLS SHALL STAGE AND MODULATE BOILERS AS FOLLOWS (OR SIMILAR PER BOILER MANUFACTURER'S STANDARD OPERATING PROCEDURES):

1. WHEN THE LEAD BOILER IS ENABLED AND FLOW IS SENSED THROUGH THE BOILER, THE LEAD BOILER SHALL MODULATE THE FIRING RATE TO MAINTAIN THE HHW SUPPLY TEMPERATURE AT SETPOINT.
2. IF THE LEAD BOILER FAILS TO START, THE BOILER CONTROL PANEL SHALL OPERATE THE STANDBY BOILER IN PLACE OF THE FAILED LEAD BOILER TO MEET HEATING DEMAND AND AN ALARM SHALL BE GENERATED AT THE BAS.
3. IF BOTH BOILERS FAIL TO START, SEND A CRITICAL ALARM TO THE BMS AS WELL AS A NOTIFICATION EMAIL AND TEXT MESSAGE TO OWNERSHIP TEAM. OWNERSHIP TO PROVIDE LIST OF CONTACTS.

PRIMARY PUMP (CONSTANT FLOW CONTROL)

THE PRIMARY BOILER PUMPS SHALL BE CONTROLLED BY THEIR ASSOCIATED BOILER CONTROLLERS OR BMS. SETUP SHALL MATCH EXISTING CONDITIONS.

ENABLE THE PRIMARY PUMP WHEN THE ASSOCIATED BOILER IS ENABLED. DISABLE PRIMARY PUMPS OTHERWISE. WHEN A ENABLED BOILER IS DISABLED, THE ASSOCIATED PRIMARY PUMP SHALL CONTINUE TO RUN FOR 5 MINS (ADJ.) BEFORE BEING DISABLED.
IF ANY PRIMARY PUMP FAILS, DISABLE ASSOCIATED BOILER AND GENERATE AN ALARM AT THE BAS.

THE PUMPS STATUS SHALL BE PROVIDED THROUGH THE VFD AND VERIFIED WITH A CURRENT SWITCH.

THE BOILER CONTROLLER SHALL ENABLE THE ASSOCIATED PRIMARY PUMP AND RUN THE PUMP AT A CONSTANT SPEED. A SYSTEM SUPPLY TEMPERATURE SHALL BE HARD-WIRED INTO ONE OF THE BOILER CONTROLLERS.

SECONDARY PUMPS

SECONDARY PUMPS SHALL BE CONFIGURED LEAD/STANDBY AND ROTATED TO MAINTAIN EVEN WEAR. DURATION SHALL BE SET, ADJUSTED, AND MONITORED ON THE BMS.

ENABLE LEAD SECONDARY PUMP WHEN THE PLANT IS ENABLED AND ANY LOAD SERVED BY THE PUMP IS GENERATING A HEATING HOT WATER PLANT REQUEST. DISABLE THE LEAD PUMP OTHERWISE.

IF THE LEAD SECONDARY PUMP FAILS TO START, THE BAS SHALL OPERATE THE STANDBY PUMP IN PLACE OF THE FAILED LEAD PUMP, AND AN ALARM SHALL BE GENERATED AT THE BMS.

IF BOTH PUMPS FAIL TO START, SEND A CRITICAL ALARM TO THE BMS AS WELL AS A NOTIFICATION EMAIL AND TEXT MESSAGE TO OWNERSHIP TEAM. OWNERSHIP TO PROVIDE LIST OF CONTACTS.

THE PUMPS STATUS SHALL BE PROVIDED THROUGH THE VFD AND VERIFIED WITH A CURRENT SWITCH (OR THROUGH VFD IF POINT IS AVAILABLE).

PUMP SPEED SHALL BE CONTROLLED TO MAINTAIN DIFFERENTIAL PRESSURE SETPOINT (AS DETERMINED BY THE BALANCING CONTRACTOR). LOOP OUTPUT SHALL BE MAPPED FROM 0% AT MINIMUM PUMP SPEED (20% ADJ.) TO 100% AT PUMP MAXIMUM SPEED (1800 RPM).

HEATING HOT WATER SUPPLY TEMPERATURE RESET (OAT)

HEATING HOT WATER SUPPLY TEMPERATURE SHALL BE RESET LINEARLY BY THE BOILER CONTROLLER BASED ON OUTSIDE AIR TEMPERATURE. REFER TO GRAPH.

UPON A LOSS OF COMMUNICATION WITH THE OUTDOOR AIR TEMPERATURE SENSOR, THE BOILERS SHALL PROVIDE THE DEFAULT 180°F TEMPERATURE (ADJ.)

MONITOR, ALARM, AND SAFETIES

THE FOLLOWING SHALL BE MONITORED, TRENDED, AND SHOWN GRAPHICALLY ON THE BAS (AT A MINIMUM). INFORMATION READ AT BAS AND COLLECTED SHOULD INCLUDE INSTANTANEOUS DATA, YEAR-TO-DATE DATA, AND PREVIOUS YEAR DATA:

BOILER
1. BOILER STATUS, STAGING, AND ALARMS
2. BOILER RUN TIMES AND START/STOPS
3. BOILER ENTERING AND LEAVING WATER TEMPERATURES
4. BOILER LOW AND HIGH LIMITS
5. SYSTEM SUPPLY WATER TEMPERATURE
6. HHW DEMAND, USAGE, AND PEAK

PUMPS
1. PRIMARY PUMPS SPEED, STATUS, AND ALARMS
2. SECONDARY PUMPS SPEED, STATUS, AND ALARMS

SYSTEM
1. ALL TEMPERATURE POINTS INDICATED ON THE DIAGRAM
2. OUTDOOR AIR TEMPERATURE
3. SYSTEM DIFFERENTIAL PRESSURE
4. BTU METER & SYSTEM FLOW RATE

THE BOILER CONTROL PANEL(S) SHALL INDICATE ALL ALARMS TO THE BAS

AN EMERGENCY PUSH BUTTON IS LOCATED IN THE BOILER ROOM TO DISABLE THE BOILERS/ BOILERS CONTROLS. ADDITIONALLY, ALL ASSOCIATED PUMPS SHALL BE DISABLED EITHER FROM THE BOILER CONTROLLER OR BY THE BAS. VERIFY EMERGENCY PUSH BUTTON EXISTS AND IS FUNCTIONAL.

MECHANICAL CONTROLS GENERAL NOTES

1. THESE DRAWINGS CONTAIN THE GENERAL CONTROL REQUIREMENTS AND DICTATE GENERAL INTENT OF OPERATION. IMPLEMENTATIONS THAT PROVIDE THE SAME FUNCTIONALITY BUT DIFFER IN THE UNDERLYING DETAILED LOGIC AS COMPARED TO THE DRAWINGS AND SEQUENCE OF OPERATION WILL BE ACCEPTABLE UPON REVIEW. THESE STRATEGIES WILL BE CLARIFIED AND MODIFIED THROUGHOUT THE SUBMITTAL PROCESS BETWEEN THE TCC/MSI, COMMISSIONING AUTHORITY, OWNER, AND ENGINEER PRIOR TO IMPLEMENTATION.
2. NOT ALL ELEMENTS AND COMPONENTS (SUCH AS VALVE AND DAMPER ACTUATORS; SENSORS AND TRANSMITTERS; RELAYS AND CONTRACTORS; SWITCHES; TRANSDUCERS; ETC.) AS WELL AS OTHER NETWORK COMMUNICATION DEVICES (SUCH AS SERVERS, SWITCHES; HUBS; ROUTERS; SUB-NETWORK DEVICES; WIRES; ETC.) ARE SHOWN ON CONTROLS
3. DRAWINGS. REFER TO THE MANUFACTURER LITERATURE, PROJECT PLANS, AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS. TCC IS RESPONSIBLE TO PROVIDE ALL
4. COMPONENTS FOR A FULLY OPERATIONAL CONTROLS SYSTEM.3. TCC TO CONFIRM INTIAL SET POINTS AND RESET SCHEDULES WITH OWNER BEFORE PROGRAMMING
5. PROVIDE PROGRAMMING FOR ADDITIONAL ALARMS AS REQUESTED BY THE OWNER, ENGINEER, OR COMMISSIONING AUTHORITY. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BMS AT THE OPERATOR'S WORKING STATION.5. TCC/MSI TO COORDINATE WITH THE OWNER'S IT DEPARTMENT AND IT CONTRACTOR AS REQUIRED FOR ACCESS, CONNECTION, AND INTEGRATION INTO THE OWNER'S IT NETWORK. TCC/MSI TO COORDINATE WITH IT DEPARTMENT FOR INTERNET ACCESS. TCC/MS TO FOLLOW BEST INDUSTRY PRACTICES FOR CYBER SECURITY PROTOCOLS. ALL VLANS FOR SEGMENTING SHALL BE DETERMINED BY THE MSI, TCC, AND OWNER'S IT DEPARTMENT AT TIME OF SUBMITTAL.
6. DDC PANELS/ENCLOSURES ARE SHOWN ON FLOOR PLANS (IN THE MECHANICAL, ELECTRICAL ROOM, IT CLOSETS, ETC.) WITH 1X120V CONTROL POWER JUNCTION BOX AT EACH. REFER TO PLANS. IF ADDITIONAL DDC PANELS/ENCLOSURES AND/OR POWER SUPPLIES ARE REQUIRED, IT IS THE TCC RESPONSIBILITY TO PROVIDE POWER TO THOSE PANELS AND COORDINATE WITH THE ELECTRICAL ENGINEER/CONTRACTOR.
7. SEE DRAWINGS AND SPECIFICATIONS FOR MINIMUM CLEARANCE OF ALL MECHANICAL EQUIPMENT, PIPING, DUCTWORK, AND DEVICES IN ALL GENERAL AND PUBLIC ACCESS AREAS. MAINTAIN ACCEPTABLE CLEARANCE IN ALL AREAS REQUIRED FOR SERVICE AND ACCESS OF MECHANICAL EQUIPMENT AS PER ANY APPLICABLE CODES AND/OR MANUFACTURER RECOMMENDATIONS.
8. MAINTAIN CODE-REQUIRED MINIMUM CLEARANCES ABOVE AND IN FRONT OF ALL ELECTRICAL PANELS, INCLUDING THOSE INCLUDED AS A PART OF MECHANICAL EQUIPMENT.
9. EDIT THE LOADING AND UNLOADING SEQUENCES TO COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS FOR TIME DELAYS BETWEEN STAGING ON/OFF COMPONENTS.
10. ALL POINTS SHOWN ON THE DIAGRAM (DIRECT# NETWORK) SHALL BE INCLUDED ON GRAPHICS.
11. CONTROL POINTS SHALL BE TRENDABLE AS SHOWN ON THE POINTS LIST. AFTER THE SYSTEM IS BALANCED, COMMISSIONED, AND OPERATIONAL, TRENDING WILL BE REQUIRED TO VERIFY THE ACCURACY AND ACCEPTABILITY OF THE CONTROL SEQUENCES. PROVIDE ADDITIONAL ADJUSTMENTS AND/OR CHANGES IN STRATEGY IN ORDER TO HONE BUILDING OPERATION AND OPTIMIZE ENERGY USAGE. ALL SET POINTS SHALL BE OPERATOR ADJUSTABLE THROUGH THE BAS AT THE OPERATOR'S WORKSTATION.
12. PROVIDE ALL DEVICES SHOWN IN THE DIAGRAM NOT PROVIDED BY THE UNIT MANUFACTURER AND AS REQUIRED TO PROVIDE COMPLETE FUNCTIONALITY PER THE SEQUENCE OF OPERATION.
13. FOR EQUIPMENT PROVIDED WITH BACNET OR MODBUS COMMUNICATION INTERFACE, PROVIDE SUB GRAPHIC FOR EACH TO GRAPHICALLY DISPLAY THE POINTS LISTED AND UP TO AN ADDITIONAL 10 POINTS SELECTED BY THE OWNER.
14. UNLESS OTHERWISE NOTED, ROOM THERMOSTATS IN CORRIDORS, GYMS, CAFETERIAS, TOILET ROOMS, AND OTHER PUBLIC AREAS SHALL BE SIMPLE TEMPERATURE SENSORS (NO ADJUSTABILITY / NO DISPLAY) WITH LOCKABLE COVERS. SET-POINTS ARE DETERMINED BY GLOBAL / REMOTE OPERATOR PROGRAMMING. THERMOSTATS IN CLASSROOMS, PRIVATE OFFICES, CONFERENCE ROOMS, AND ADMIN SPACES SHALL HAVE SET-POINT ADJUSTMENTS CAPABILITY (±2°F) WITH NO DISPLAY. SETPOINT SHALL RESET BACK TO GLOBAL AFTER 2 HOURS. REFER TO FLOOR PLANS AND/OR SEQUENCE OF OPERATION FOR ADDITIONAL DETAIL.
15. THERMOSTAT SYMBOLS SHOWN ON FLOOR PLANS MAY REPRESENT THERMOSTATS W/ CO2, HUMIDITY, AND/OR OCCUPANCY SENSING CAPABILITIES. REFER TO SEQUENCE OF OPERATIONS FOR SPECIFIC ROOM DEVICE REQUIREMENTS.
16. 24 MONTHS OF TREND DATA SHALL BE STORED IN THE SYSTEM.
17. CONFIRM FAN CONFIGURATION, QTY, ARRAY, CONTROLLERS, ETC. WITH FINAL EQUIPMENT SUBMITTAL; COORDINATE WITH SUBMITTAL.

BAS CONTOL SYSTEM OBJECT/POINTS LIST FOR SHEET M3.1T

POINT NAME	TAG	HARDWARE ID DATA NO.	HARDWARE POINT TYPE AI	AO	BI	BO	AV	BV	SOFTWARE TREND	SHOW ON GRAPHIC	FAIL MODE FAIL ON (OPEN)	FAIL OFF (CLOSED)	LAST COMMANDED	ALARM LOCAL DEFAULT	ALARM	ALARM LIMIT	REMARKS
(E)HHW MULTI-BOILER PLANT (VARIABLE PRIMARY/ VARIABLE SECONDARY)																	
(E)B-1 BOILER BAS NETWORK CONNECTION	BAS	1															(E)BOILER CONTROLLER POINTS TO TIE INTO NEW BOILER PLANT CONTROLLER
(E)B-1 ENABLE/DISABLE	EN	1				■			GOV	■							(E)BOILER CONTROLLER POINTS TO TIE INTO NEW BOILER PLANT CONTROLLER
(E)B-1 GENERAL ALARM STATUS	AX	1			■					■					■		(E)BOILER CONTROLLER POINTS TO TIE INTO NEW BOILER PLANT CONTROLLER
(E)B-1 RUNTIME STATUS	AX	2			■				GOV	■					■		(E)BOILER CONTROLLER POINTS TO TIE INTO NEW BOILER PLANT CONTROLLER
(E)B-2 BOILER BAS NETWORK CONNECTION	BAS	2															(E)BOILER CONTROLLER POINTS TO TIE INTO NEW BOILER PLANT CONTROLLER
(E)B-2 GENERAL ALARM STATUS	AX	3			■					■					■		(E)BOILER CONTROLLER POINTS TO TIE INTO NEW BOILER PLANT CONTROLLER
(E)B-2 RUNTIME STATUS	AX	4			■				GOV	■					■		(E)BOILER CONTROLLER POINTS TO TIE INTO NEW BOILER PLANT CONTROLLER
(E)B-2 STATUS	GSR	2			■				GOV	■					■		(E)GSR TO BE TIED INTO NEW BOILER PLANT CONTROLLER
(E)EMERGENCY SHUT-OFF	EPB	1			■					■							
(E)LEAD BOILER HHWS TEMPERATURE	T	1	■						1 MINS	■							
(E)OUTDOOR AIR TEMPERATURE SENSOR	T	1	■						10 MINS	■							MAY BE FROM GLOBAL WEATHER STATION FOR BLDG
(E)P-1 START/STOP	SS	1				■				■							(E)MOTOR START/STOP POINT TO BE TIED INTO NEW BOILER PLANT CONTROLLER
(E)P-1 STATUS	GSR	1			■				GOV	■					■		(E)GSR TO BE TIED INTO NEW BOILER PLANT CONTROLLER
(E)P-2 START/STOP	SS	2				■				■							(E)MOTOR START/STOP POINT TO BE TIED INTO NEW BOILER PLANT CONTROLLER
(E)P-3 ENABLE/DISABLE	EN	2				■				■							TIE (E)VFD POINTS INTO NEW BOILER PLANT CONTROLLER
(E)P-3 SPEED CONTROL	CI	1		■						■							TIE (E)VFD POINTS INTO NEW BOILER PLANT CONTROLLER
(E)P-3 STATUS	GSR	3			■				GOV	■					■		TIE (E)VFD POINTS INTO NEW BOILER PLANT CONTROLLER
(E)P-3 VFD NETWORK CONNECTION	BAS	3															TIE (E)VFD POINTS INTO NEW BOILER PLANT CONTROLLER
(E)P-4 ENABLE/DISABLE	EN	3				■				■							TIE (E)VFD POINTS INTO NEW BOILER PLANT CONTROLLER
(E)P-4 SPEED CONTROL	CI	2		■						■							TIE (E)VFD POINTS INTO NEW BOILER PLANT CONTROLLER
(E)P-4 STATUS	GSR	4			■				GOV	■					■		TIE (E)VFD POINTS INTO NEW BOILER PLANT CONTROLLER
(E)P-4 VFD NETWORK CONNECTION	BAS	4															TIE (E)VFD POINTS INTO NEW BOILER PLANT CONTROLLER
BTU METER VFD NETWORK CONNECTION	BAS	5															MS/TP OR IP
HHW FLOW METER	FM	1	■						1 MINS	■							FROM BTU METER
HHWR TEMPERATURE (BOILER SIDE)	T	3	■						1 MINS	■							
HHWR TEMPERATURE (SYSTEM SIDE)	T	4	■						1 MINS	■							FROM BTU METER
HHWS TEMPERATURE (BOILER SIDE)	T	2	■						1 MINS	■							
HHWS TEMPERATURE (SYSTEM SIDE)	T	5	■						1 MINS	■							FROM BTU METER

EXISTING HHW MULTI-BOILER PLANT (PRIMARY/SECONDARY) CONTROLS UPGRADE DIAGRAM - MECH ROOM 1127 IN EXISTING FIELD HOUSE

NOT TO SCALE

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
MECHANICAL CONTROLS ((E)FIELDHOUSE BOILER PLANT UPGRADES)

SHEET NO.
M819

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061673
07/30/2026

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LAST PLOTTED: 2026-07-30 03:29:39 AM
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BUILDING CODE INFORMATION

BUILDING CODE:	MICHIGAN BUILDING CODE 2021
PLUMBING CODE:	MICHIGAN PLUMBING CODE 2021
MECHANICAL CODE:	MICHIGAN MECHANICAL CODE 2021
ENERGY CODE:	MICHIGAN UNIFORM ENERGY CODE 2021
FIRE CODE:	INTERNATIONAL FIRE CODE 2021
FUEL GAS CODE:	NTERNATIONAL FUEL GAS CODE 2021
ELECTRICAL CODE:	MICHIGAN ELECTRICAL CODE 2023
NFPA STANDARDS:	NFPA 13 & 20 2019 NFPA 101 WITH BFS AMENDMENTS 2012
ICC/ANSI STANDARDS:	ICC/ANSI A117.1 ACCESSIBLE AND USABLE BUILDING AND FACILITIES 2017
ADA STANDARDS:	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA-AG)

GENERAL SYMBOLS

- EXISTING CONSTRUCTION
- DEMOLITION
- NEW CONSTRUCTION
- NEW KEYNOTE TAG
- DEMOLITION KEYNOTE TAG
- EQUIPMENT TAG
- TYPE-NO.
  NECK Ø
  CFM-NO.
  DIFFUSER TAG
- ELEVATION
- WALL SECTION (A101)
- BUILDING SECTION (DTL # SHEET #, A101)
- PLAN/SECTION DETAIL
- NEW CONNECTION

PLUMBING SHEET INDEX

NO.	NAME
PLUMBING	
P001	PLUMBING DATA SHEET
P120.a	UNDERGROUND PLUMBING DEMOLITION PLAN - UNIT 0000
P120.b	UNDERGROUND PLUMBING DEMOLITION PLAN - UNIT 0100
P120.d	UNDERGROUND PLUMBING DEMOLITION PLAN - UNIT 0300A
P121.a	FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT 1000
P121.b	FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT 1100
P121.c	FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT 1200
P121.d	FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT 1300A
P122.a	SECOND FLOOR PLUMBING DEMOLITION PLAN - UNIT 2000
P122.b	SECOND FLOOR PLUMBING DEMOLITION PLAN - UNIT 2100
P122.c	SECOND FLOOR PLUMBING DEMOLITION PLAN - UNIT 2200
P210.a	UNDERGROUND PLUMBING PLAN - UNIT 0000
P210.b	UNDERGROUND PLUMBING PLAN - UNIT 0100
P210.d	UNDERGROUND PLUMBING PLAN - UNIT 0300A
P210.f	UNDERGROUND PLUMBING PLAN - UNIT 0400A
P210.h	UNDERGROUND PLUMBING PLAN - UNIT 0400C
P210.k	UNDERGROUND PLUMBING PLAN - UNIT 0400E
P211.a	FIRST FLOOR PLUMBING PLAN - UNIT 1000
P211.b	FIRST FLOOR PLUMBING PLAN - UNIT 1100
P211.c	FIRST FLOOR PLUMBING PLAN - UNIT 1200
P211.d	FIRST FLOOR PLUMBING PLAN - UNIT 1300A
P211.e	FIRST FLOOR PLUMBING PLAN - UNIT 1300B
P211.f	FIRST FLOOR PLUMBING PLAN - UNIT 1400A
P211.g	FIRST FLOOR PLUMBING PLAN - UNIT 1400B
P211.h	FIRST FLOOR PLUMBING PLAN - UNIT 1400C
P211.j	FIRST FLOOR PLUMBING PLAN - UNIT 1400D
P211.k	FIRST FLOOR PLUMBING PLAN - UNIT 1400E
P211.m	FIRST FLOOR PLUMBING PLAN - UNIT 1400F
P212.a	SECOND FLOOR PLUMBING PLAN - UNIT 2000
P212.b	SECOND FLOOR PLUMBING PLAN - UNIT 2100
P212.c	SECOND FLOOR PLUMBING PLAN - UNIT 2200
P212.d	SECOND FLOOR PLUMBING PLAN - UNIT 2300A
P212.f	SECOND FLOOR PLUMBING PLAN - UNIT 2400A
P212.g	SECOND FLOOR PLUMBING PLAN - UNIT 2400B
P212.j	SECOND FLOOR PLUMBING PLAN - UNIT 2400D
P212.k	SECOND FLOOR PLUMBING PLAN - UNIT 2400E
P212.m	SECOND FLOOR PLUMBING PLAN - UNIT 2400F
P219.d	PLUMBING ROOF PLAN - UNIT 1300A
P400	PLUMBING ENLARGED PLANS
P401	PLUMBING ENLARGED PLANS
P402	PLUMBING ENLARGED PLANS
P500	PLUMBING DETAILS
P600	PLUMBING SCHEDULES

WATER FLOW TEST DATA

DATE PERFORMED	REPORTED PRESSURES	
	STATIC	RESIDUAL
03-25-2025	40 PSI @ 0 GPM	36 PSI @ 1150 GPM

PIPING, VALVES, AND SPECIALTIES SYMBOLS

- ANGLE VALVE
- AUTOMATIC AIR VENT
- BACK FLOW PREVENTER
- BALANCING VALVE
- BLOWDOWN VALVE
- CHECK VALVE
- CLEANOUT (FLOOR)
- CLEANOUT (INLINE)
- CLEANOUT (WALL)
- COMBINATION FLOW MEASURING AND BALANCING VALVE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- ELBOW DOWN
- ELBOW UP
- FLANGE
- FLEXIBLE CONNECTION
- FLOOR DRAIN
- FLOOR DRAIN (SECTION)
- FLOOR DRAIN W/ FUNNEL (SECTION)
- FLOW ARROW
- HOSE BIBB
- HOSE END DRAIN VALVE
- ISOLATION VALVE
- MANUAL AIR VENT
- METER
- NEEDLE VALVE
- OUTSIDE SCREW AND YOKE VALVE (OSBY)
- P-TRAP (PLAN)
- P-TRAP (SECTION)
- PIPE CAP
- PIPE BREAK / CONTINUTATION
- PLUG VALVE
- PRESSURE GAUGE
- PRESSURE REGULATING VALVE
- P/T PORT
- RELIEF VALVE
- SIAMESE CONNECTION
- STRAINER
- THERMOMETER
- TRIPLE DUTY VALVE
- UNION
- WATER METER ASSEMBLY
- CONCEALED/SEMI-RECESSED SPRINKLER HEAD
- PENDENT SPRINKLER HEAD
- UPRIGHT SPRINKLER HEAD

EQUIPMENT SYMBOLS

- AIR AND DIRT SEPARATOR
- EXPANSION TANK (VERTICAL)
- PUMP (CIRCULATION)
- PUMP (END SUCTION)
- PUMP (INLINE)
- PUMP (SUMP)
- SIDE STREAM FILTER

ABBREVIATIONS

(E)	EXISTING
°F	DEGREES FAHRENHEIT
2D	TWO-DIMENSIONAL
3D	THREE-DIMENSIONAL
AAC	ADVANCED APPLICATION CONTROLLER
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
ABV	ABOVE
AC	AIR CONDITIONING
ACB	ACTIVE CHILLED BEAM
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
ACFM	ABSOLUTE CUBIC FEET PER MINUTE
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AFM	AIRFLOW MEASURING DEVICE
AFMS	AIRFLOW MEASURING STATION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
ALT	ALTERNATOR
AO	ANALOG OUTPUT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
APPROX	APPROXIMATE
AS	AIR SEPARATOR
ASC	APPLICATION SPECIFIC CONTROLLER
ASR	AUTOMATIC SPRINKLER RISER
AX	AUXILIARY CONTACT
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BC	BUILDING CONTROLLER
BD	BACKDRAFT DAMPER
BDD	BACKDRAFT DAMPER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
CA	COMBUSTION AIR
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CB	CHILLED BEAM
CBCHW	CHILLED BEAM CHILLED WATER
CBHW	CHILLED BEAM HOT WATER
CC	COOLING COIL
CCDT	COOLING COIL DISCHARGE TEMPERATURE
CDSR	CONDENSER
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CURRENT INPUT
CIRC	CIRCULATING
CLG	COOLING
CM	CONTROL MODULE
CO	CLEAN OUT
CO2	CARBON DIOXIDE
COMP	COMPRESSOR
CONC	CONCRETE
COND	CONDENSATE
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CP	CONDENSATE PUMP
CR	CONTROL RELAY
CS	CLEAN STEAM
CSFD	COMBINATION SMOKE/FIRE DAMPER
CSR	CURRENT SWITCH OR CURRENT SENSING RELAY
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D	DAMPER
D&T	DRIP & TRAP
DB	DRY BULB TEMPERATURE
DBA	DECIBELS (A-WEIGHTED SCALE)
DBT	DRY BULB TEMPERATURE °F
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREES
DF	DIESEL FUEL
DI	DIGITAL INPUT
DIA	DIAMETER
DN	DOWN
DO	DIGITAL OUTPUT
DP	DIFFERENTIAL PRESSURE
DPS	DIFFERENTIAL PRESSURE SENSOR
DPT	DEW POINT TEMPERATURE °F
DTC	DRAIN TILE CONNECTION
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DX	DIRECT EXPANSION
EA	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECM	ELECTRONICALLY COMMUTATED MOTOR
ED	ENABLE / DISABLE
EDB	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	ETHYLENE GLYCOL WATER SOLUTION
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
EN	ENABLE / DISABLE
ENT	ENTERING
EP	ELECTRIC TO PNEUMATIC RELAY
EQ	EQUIVALENT
ERU	ENERGY RECOVERY UNIT
ES	END SWITCH
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EV	EXHAUST VALVE
EWB	ENTERING WET BULB TEMPERATURE
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERAL
F	FAHRENHEIT
F	FIRE PROTECTION SYSTEM - WET
F-DRY	FIRE PROTECTION SYSTEM - DRY
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAH	FAHRENHEIT
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FD/SD	COMBINATION FIRE AND SMOKE DAMPER
FDAT	FAN DISCHARGE AIR TEMPERATURE
FDC	FIRE DEPARTMENT CONNECTION
FFFD	FUNNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FH	FUME HOOD
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FL	FLUE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONNECTION
FLR	FLOOR
FM	FLOW METER
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
FR	FIELD RELAY
FS	FLOW SWITCH
FSD	FIRE & SMOKE DAMPER
FT	FEET or FOOT
FTR	FIN TUBE RADIATION
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
FZ	FREEZESTAT
G	GLYCOL
GA	GAUGE
GAL	GALLONS
GCF	GARAGE CIRCULATION FAN
GCO	GRADE CLEAN OUT
GEF	GARAGE EXHAUST FAN
GIF	GARAGE INTAKE FAN
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRAINS
H	HEIGHT
HB	HOSE BIBB
HC	HEATING COIL
HEX	HEAT EXCHANGER
HG	MERCURY
HHW	HEATING HOT WATER
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HI	HIGH
HL	HIGH LEVEL
HO	HUB OUTLET
HP	HORSE POWER
HR	HOUR
HTG	HEATING
HUM	HUMIDIFIER
HVAC	HEATING VENTILATING AND AIR CONDITIONING
HYD	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IFB	INTEGRAL FACE AND BY-PASS
IN	INCHES
INST	INSTALLED
INV	INVERT
IPLV	INTEGRATED PART LOAD VALUE
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATTS
KWH	KILOWATT HOURS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS	POUNDS
LBS/HR	POUNDS PER HOUR
LBSHR	POUNDS PER HOUR
LCP	LOCAL CONTROL PANEL
LDB	LEAVING DRY BULB TEMPERATURE
LEF	LAB EXHAUST FAN
LL	LOW LEVEL
LO	LOW
LP	LOW POINT
LRA	LOCKED ROTOR AMPERES
LV	LEVEL
LVG	LEAVING
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBH	1,000 BTU/HR
MC	MECHANICAL CONTRACTOR
MCA	MAXIMUM CURRENT AMPACITY
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MFR	MANUFACTURER
MH	MANHOLE
MHP	MOTOR HORSEPOWER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOCP	MAXIMUM OVER CURRENT PROTECTION
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)
MOCP	MAXIMUM OVER-CURRENT PROTECTION
MS	MOTOR STARTER
MSI	MASTER SYSTEMS INTEGRATER
MTG	MOUNTING
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NC	NOISE CRITERIA
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NPLV	NON STANDARD PART LOAD VALUE
NPSH	NET POSITIVE SUCTION HEAD
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
OAH	OUTDOOR AIR HUMIDITY
OAT	OUTDOOR AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER / CENTER TO CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
OPR	OPERATING
ORS	OVERFLOW ROOF SUMP
OSBY	OUTSIDE SCREW AND YOKE
OV	OUTLET VELOCITY
OWS	OPERATOR WORK STATION
P	PUMP
PC	PLUMBING CONTRACTOR
PCB	PASSIVE CHILLED BEAM
PD	PRESSURE DROP (FEET OF WATER)
PG	PROPYLENE GLYCOL WATER SOLUTION
PH	PHASE
PHDT	PREHEAT DISCHARGE TEMPERATURE
PICCV	PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE
PMCS	POWER MONITORING & CONTROL SYSTEM
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRV	PRESSURE REGULATING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PSI(G)	POUNDS PER SQUARE INCH (GAUGE)
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE Q
P/T	PRESSURE / TEMPERATURE PORT
QTY	QUANTITY
RA	RETURN/RELIEF AIR
RAH	RETURN AIR HUMIDITY
RAT	RETURN AIR TEMPERATURE
RC	ROOF CONDUCTOR
RE	REFERENCE
RELA	RELIEF AIR
REQD	REQUIRED
RET	RETURN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RUNNING LOAD AMPS
RLF	RELIEF
RLMS	REFRIGERANT LEAK MONITORING SYSTEM
ROT	ROTATION MONITORING SENSOR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
RS	ROOF SUMP
RTU	ROOFTOP UNIT
S	SOLENOID
SA	SUPPLY AIR
SAN	SANITARY WASTE
SC	SELF CONTAINED UNIT
SCFM	STANDARD CUBIC FEET PER MINUTE
SD	SMOKE DAMPER/SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS	SENSIBLE
SF	SQUARE FEET
SG	SPECIFIC GRAVITY
SH	SHOWER
SL	SOUND LINING
SMW	SNOW MELT WATER
SP	STATIC PRESSURE (INCHES OF WATER)
SPD	SPEED
SPL	SOUND POWER LEVEL
SPS	STATIC PRESSURE SENSOR
SQ	SQUARE
SS	STAINLESS STEEL
STM	STEAM
SV	SUPPLY VALVE
SW	SWITCH
T	TEMPERATURE
T & P	TEMPERATURE AND PRESSURE
TAB	TESTING, ADJUSTING AND BALANCING
TC	TEMPERATURE CONTROL
TCC	TEMPERATURE CONTROLS CONTRACTOR
TEF	TOILET EXHAUST FAN
TH	THERMOSTAT
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TP	TOTAL PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
UR	URINAL
V	VOLTAGE/VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VIFB	VERTICAL INTEGRAL FACE AND BYPASS
VL	VALVE
VLP	VALVE POSITION
VO	VOLTAGE OUTPUT
VP	VIRTUAL POINT
VS	VIBRATION SWITCH
VTR	VENT THRU ROOF
W	WATTS/WIDTH
WAV	WASTE AND VENT
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WG	WATER GAUGE
WH	WALL HYDRANT
WMS	WIRE MESH SCREEN
YCO	YARD CLEAN OUT

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

THERESA LYN CARD
ENGINEER
No. 6201061679
STATE OF MICHIGAN
07/30/2026

JOB NO. 2600.41F

SHEET TITLE
PLUMBING DATA SHEET

SHEET NO.
P001

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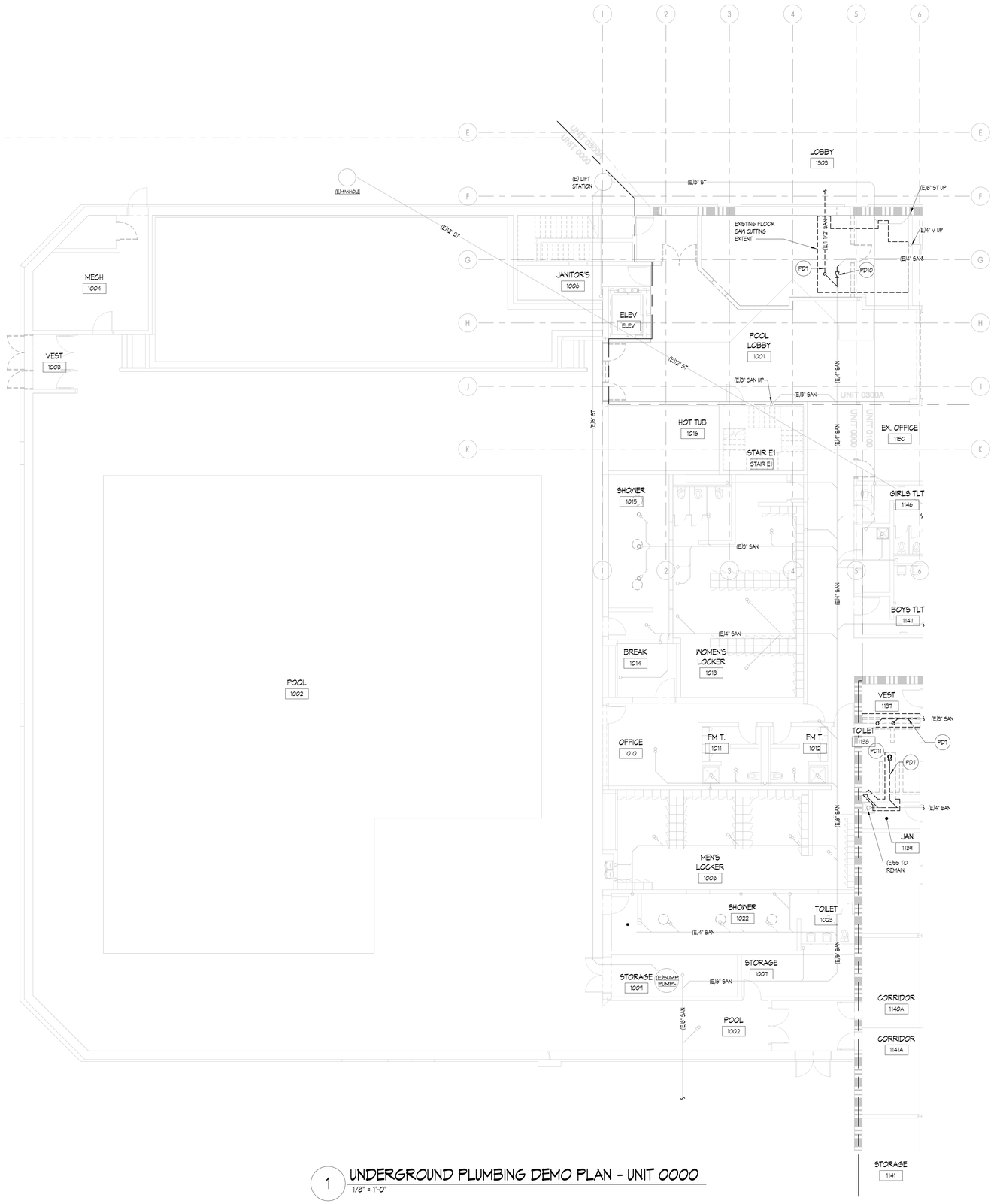

1 UNDERGROUND PLUMBING DEMO PLAN - UNIT 0000
1/8" = 1'-0"

PLUMBING DEMO PLAN GENERAL NOTES

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3. VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNERS REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
5. ALL ITEMS ON DEMOLITION PLANS SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION BY CONTRACTOR.
6. ALL ITEMS INDICATED WITH BROKEN LINES SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
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8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE DISPOSED LEGALLY. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING, RELOCATED, AND OWNER-PROVIDED EQUIPMENT.
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10. EXISTING TO REMAIN PIPING IN THE SCOPE AREA SHALL BE EXAMINED FOR LEAKS, HOLES, BREAKS, ETC. AND SEALED/INSULATED COMPLETELY.

PLUMBING DEMOLITION KEYNOTE

PD1 DEMOLISH SANITARY LEAD FROM EXISTING PUMP STATION TO BUILDING, REFER TO AND COORDINATE WITH CIVIL.
PD2 REMOVE EXISTING LAVATORY SINK, FAUCET, AND PIPING BACK TO WALL, PREPARE PIPING FOR NEW FIXTURE. CARRIER TO REMAIN.
PD3 REMOVE EXISTING WATER CLOSET, FLUSH VALVE, AND PIPING BACK TO WALL, PREPARE PIPING FOR NEW FIXTURE. EXISTING CARRIER TO REMAIN.
PD4 REMOVE EXISTING URINAL, FLUSH VALVE, AND PIPING BACK TO WALL, PREPARE PIPING FOR NEW FIXTURE. EXISTING CARRIER TO REMAIN.
PD6 REMOVE PLUMBING FIXTURE COMPLETE. REMOVE PIPING, VALVES, AND ACCESSORIES BACK TO MAIN.
PD7 REMOVE SANITARY/VENT PIPING WHERE INDICATED.
PD8 REMOVE DOMESTIC WATER PIPING, VALVES, INSULATION, AND ASSOCIATED COMPONENTS WHERE INDICATED. CAP WHERE INDICATED.
PD9 EXISTING WATER COOLER TO REMAIN.
PD10 REMOVE BACKWATER VALVE.
PD11 REMOVE FLOOR DRAIN AND SANITARY PIPING BACK TO MAIN.
PD12 REMOVE SINK, FAUCET, SANITARY, VENT, COLD WATER, AND HOT WATER PIPING. REMOVE VALVES, INSULATION, AND ASSOCIATED COMPONENTS BACK TO MAIN.
PD13 REMOVE FLOOR DRAIN STRAINER TO ACCOMMODATE NEW FLOORING. DRAIN BODY, TRAP, AND ASSOCIATED PIPING TO REMAIN.
PD14 REMOVE SANITARY BACK TO WALL AND CAP PIPING WITHIN WALL. UNDERGROUND PIPING TO REMAIN.
PD15 EXISTING WATER COOLER TO BE REMOVED AND REINSTALLED IN NEW WALL TO ACCOMMODATE NEW TOILET ROOM LAYOUT. DEMOLISH EXISTING WATER, WASTE AND VENT PIPING AS REQUIRED TO ACCOMMODATE NEW LAYOUT.
PD16 EXISTING VENT PIPING UP TO VTR TO BE DEMOLISHED COMPLETE. VTR TO BE CAPPED ABOVE AND BELOW ROOF AND SEALED WEATHER TIGHT.
PD17 REMOVE EXISTING DOMESTIC RECIRCULATION PUMP, AQUASTAT, AND ASSOCIATED 3/4" PIPING WHERE INDICATED.
PD18 REMOVE EXISTING GOLUMN SHOWER. PREPARE EXISTING COLD WATER, HOT WATER, SANITARY, AND VENT PIPING FOR NEW CONNECTION. REMOVE COLUMN MOUNTED CURTAIN PARTITION WHERE APPLICABLE.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
UNDERGROUND PLUMBING DEMOLITION PLAN - UNIT 0000

SHEET NO.
P120.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

KINGSCOTT ASSOCIATES INC. PORTAGE, MICHIGAN

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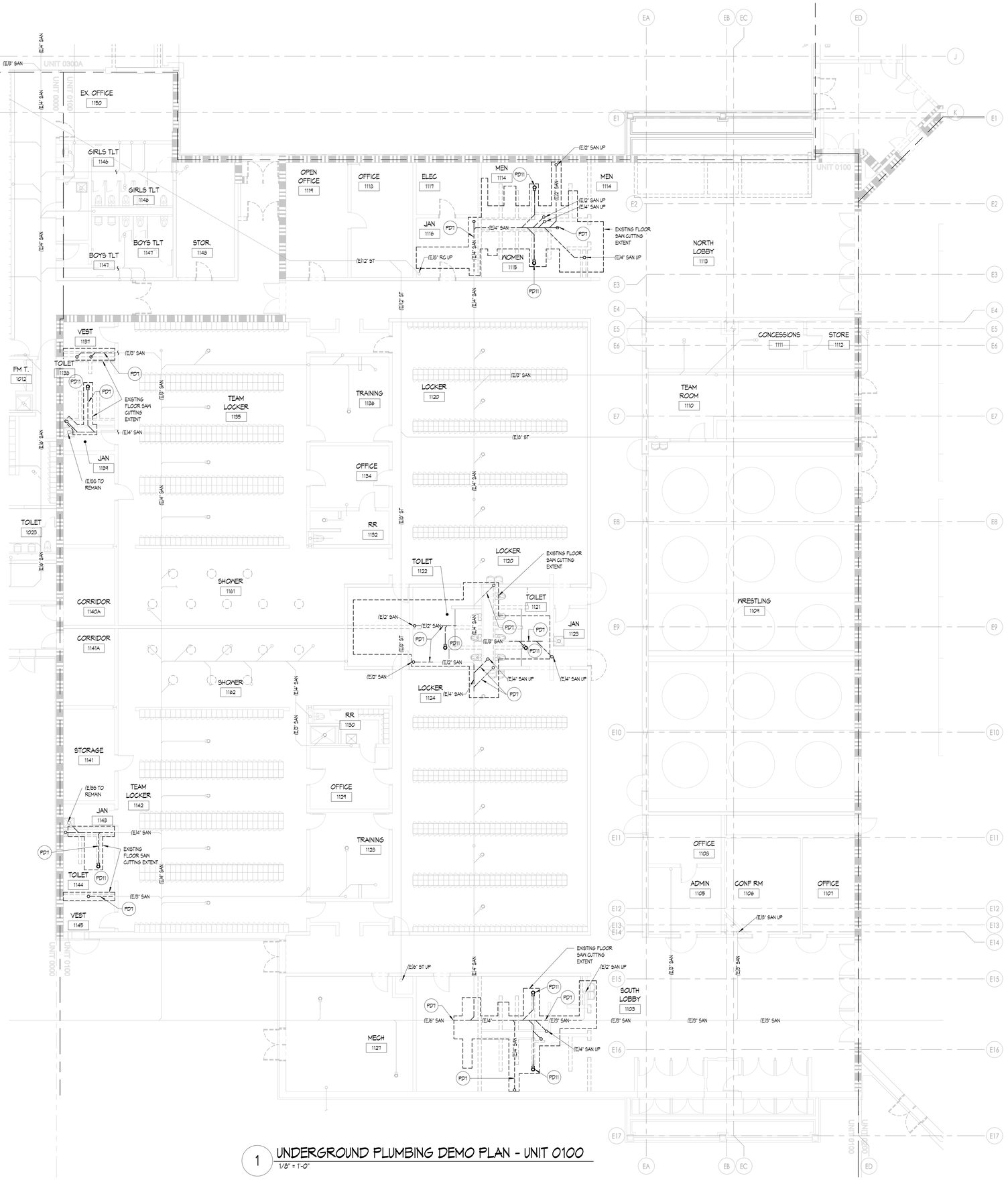

1 UNDERGROUND PLUMBING DEMO PLAN - UNIT 0100
1/8" = 1'-0"

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
UNDERGROUND PLUMBING DEMOLITION PLAN - UNIT 0100

SHEET NO.
P120.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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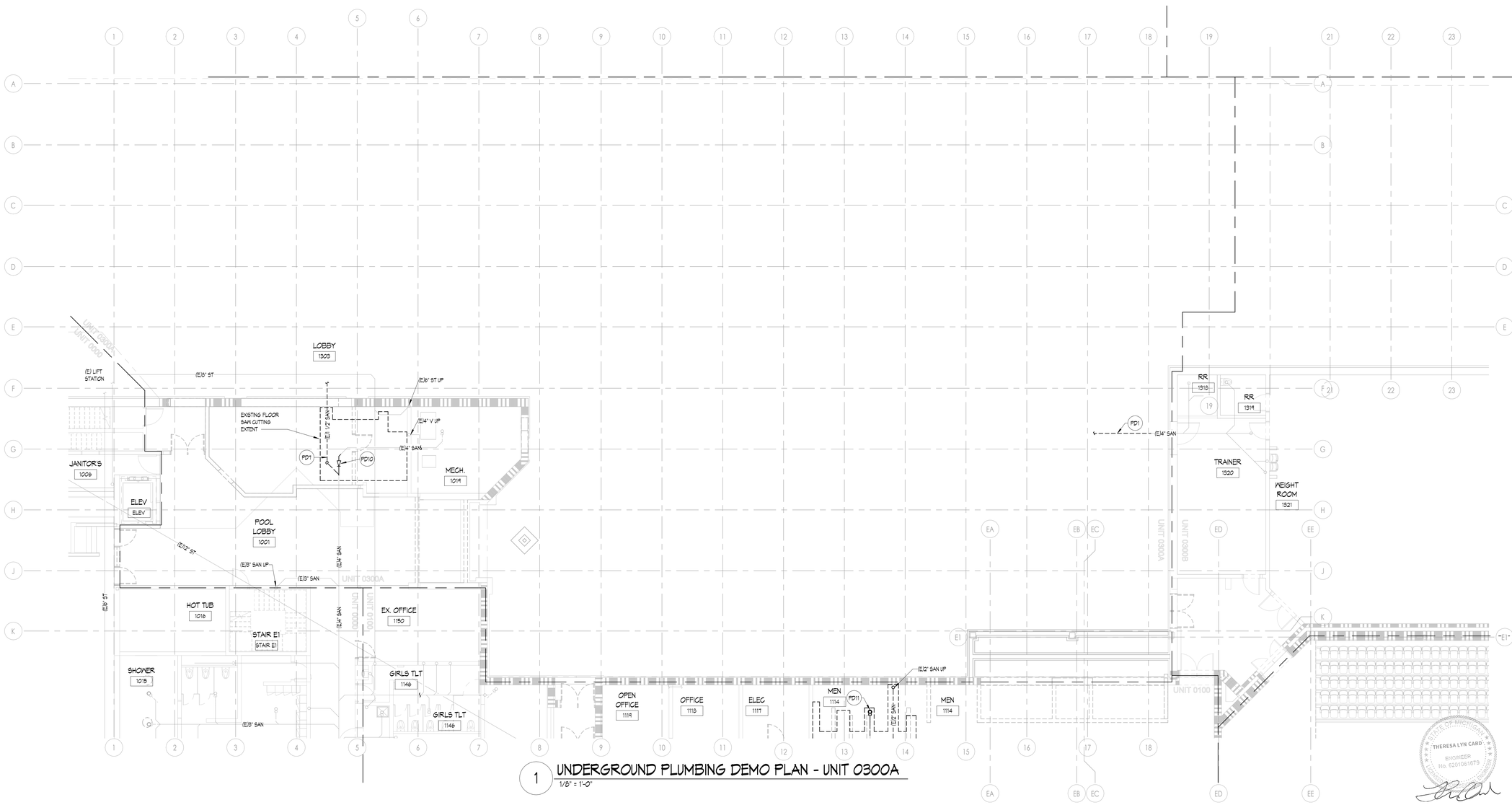
PLUMBING DEMOLITION KEYNOTE

PD1 DEMOLISH SANITARY LEAD FROM EXISTING PUMP STATION TO BUILDING, REFER TO AND COORDINATE WITH CIVIL.
PD2 REMOVE EXISTING LAVATORY SINK, FAUCET, AND PIPING BACK TO WALL, PREPARE PIPING FOR NEW FIXTURE. CARRIER TO REMAIN.
PD3 REMOVE EXISTING WATER CLOSET, FLUSH VALVE, AND PIPING BACK TO WALL, PREPARE PIPING FOR NEW FIXTURE. EXISTING CARRIER TO REMAIN.
PD4 REMOVE EXISTING URINAL, FLUSH VALVE, AND PIPING BACK TO WALL, PREPARE PIPING FOR NEW FIXTURE. EXISTING CARRIER TO REMAIN.
PD6 REMOVE PLUMBING FIXTURE COMPLETE. REMOVE PIPING, VALVES, AND ACCESSORIES BACK TO MAIN.
PD7 REMOVE SANITARY/VENT PIPING WHERE INDICATED.
PD8 REMOVE DOMESTIC WATER PIPING, VALVES, INSULATION, AND ASSOCIATED COMPONENTS WHERE INDICATED. CAP WHERE INDICATED.
PD9 EXISTING WATER COOLER TO REMAIN.
PD10 REMOVE BACKWATER VALVE.
PD11 REMOVE FLOOR DRAIN AND SANITARY PIPING BACK TO MAIN.
PD12 REMOVE SINK, FAUCET, SANITARY, VENT, COLD WATER, AND HOT WATER PIPING. REMOVE VALVES, INSULATION, AND ASSOCIATED COMPONENTS BACK TO MAIN.
PD13 REMOVE FLOOR DRAIN STRAINER TO ACCOMMODATE NEW FLOORING. DRAIN BODY, TRAP, AND ASSOCIATED PIPING TO REMAIN.
PD14 REMOVE SANITARY BACK TO WALL AND CAP PIPING WITHIN WALL. UNDERGROUND PIPING TO REMAIN.
PD15 EXISTING WATER COOLER TO BE REMOVED AND REINSTALLED IN NEW WALL TO ACCOMMODATE NEW TOILET ROOM LAYOUT. DEMOLISH EXISTING WATER, WASTE AND VENT PIPING AS REQUIRED TO ACCOMMODATE NEW LAYOUT.
PD16 EXISTING VENT PIPING UP TO VTR TO BE DEMOLISHED COMPLETE. VTR TO BE CAPPED ABOVE AND BELOW ROOF AND SEALED WEATHER TIGHT.
PD17 REMOVE EXISTING DOMESTIC RECIRCULATION PUMP, AQUASTAT, AND ASSOCIATED 3/4" PIPING WHERE INDICATED.
PD18 REMOVE EXISTING GOLUMN SHOWER. PREPARE EXISTING GOLD WATER, HOT WATER, SANITARY, AND VENT PIPING FOR NEW CONNECTION. REMOVE GOLUMN MOUNTED CURTAIN PARTITION WHERE APPLICABLE.



1 UNDERGROUND PLUMBING DEMO PLAN - UNIT 0300A
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
UNDERGROUND PLUMBING DEMOLITION PLAN - UNIT 0300A

SHEET NO.
P120.d

THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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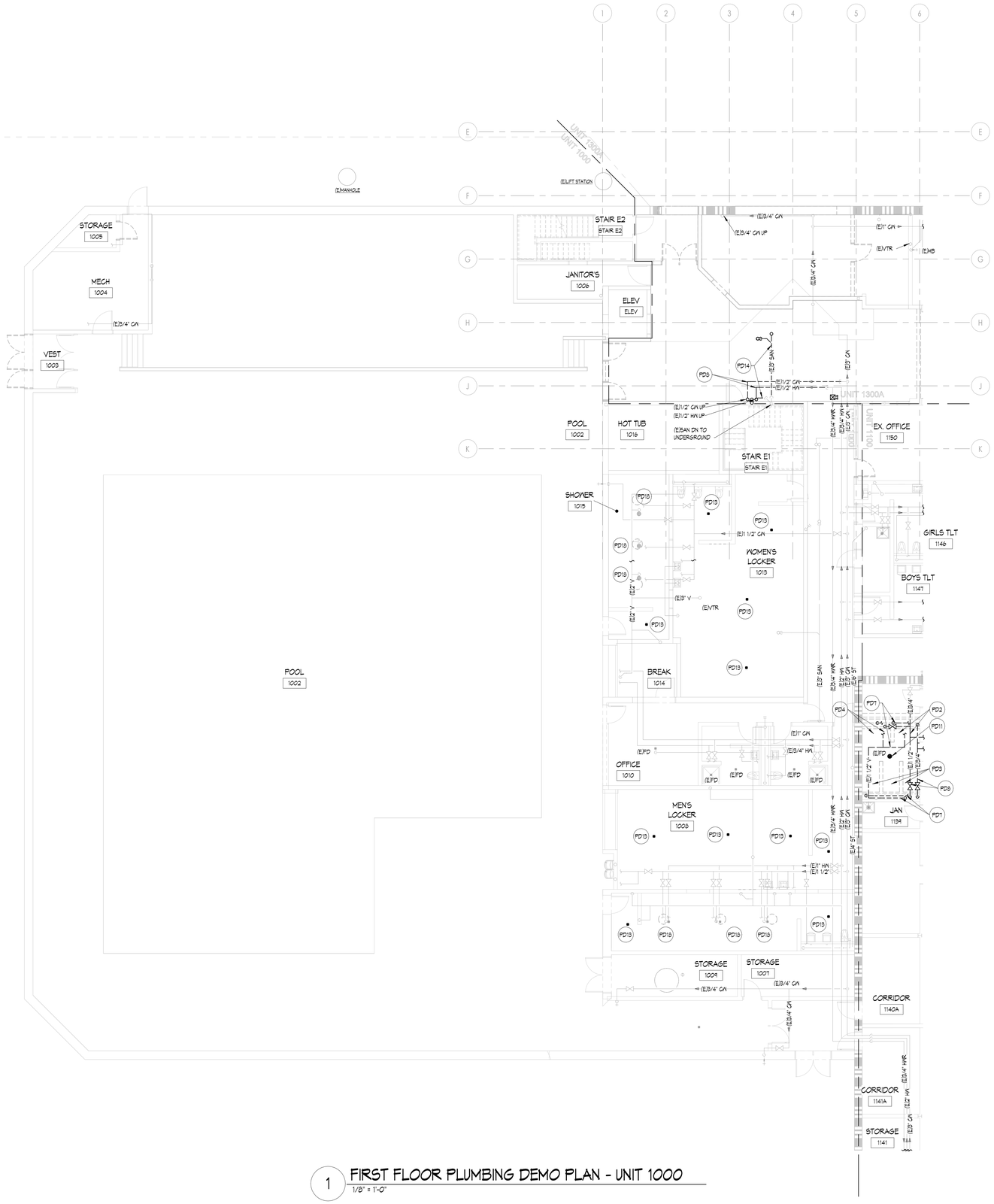

1 FIRST FLOOR PLUMBING DEMO PLAN - UNIT 1000
1/8" = 1'-0"

PLUMBING DEMO PLAN GENERAL NOTES

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT 1000

SHEET NO.
P121.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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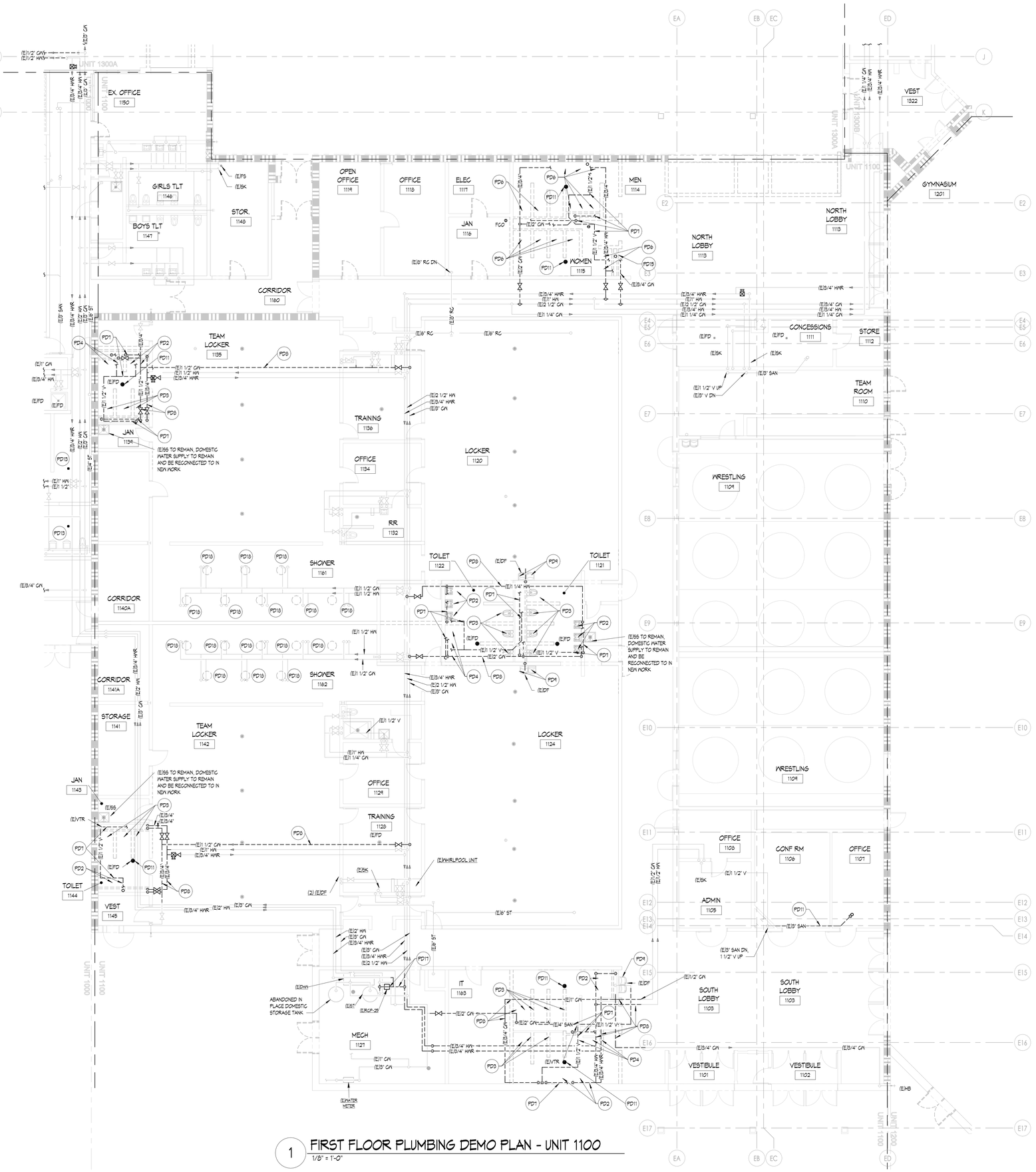

1 FIRST FLOOR PLUMBING DEMO PLAN - UNIT 1100
1/8" = 1'-0"

PLUMBING DEMO PLAN GENERAL NOTES

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F
N

SHEET TITLE
FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT 1100

SHEET NO.
P121.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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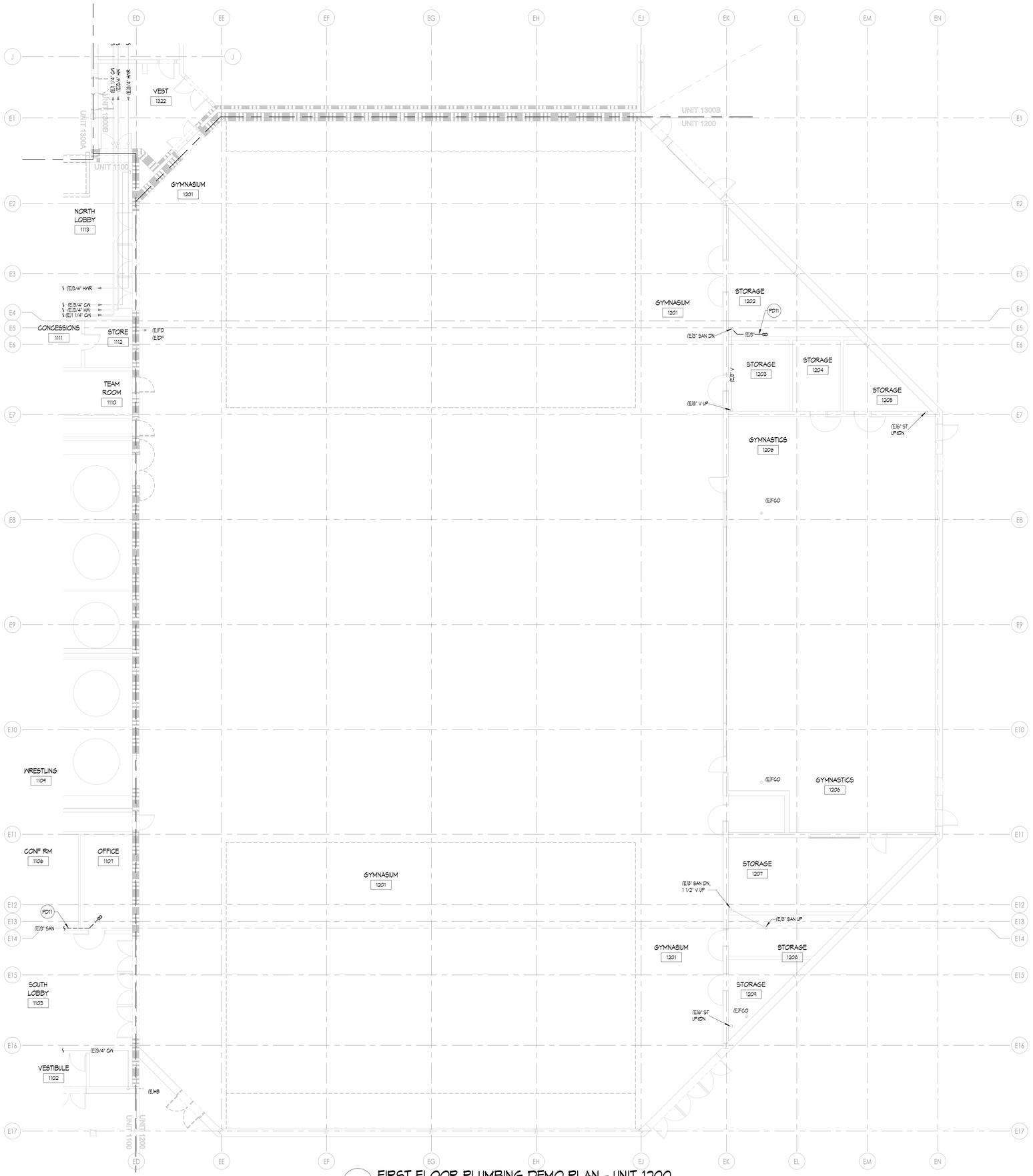

1 FIRST FLOOR PLUMBING DEMO PLAN - UNIT 1200
1/8" = 1'-0"

PLUMBING DEMO PLAN GENERAL NOTES

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HOWELL PUBLIC SCHOOLS

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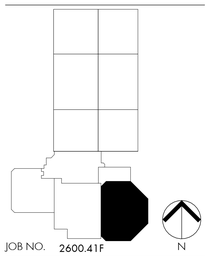

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT 1200

SHEET NO.
P121.c

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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PD2 REMOVE EXISTING LAVATORY SINK, FAUCET, AND PIPING BACK TO WALL, PREPARE PIPING FOR NEW FIXTURE. CARRIER TO REMAIN.
PD3 REMOVE EXISTING WATER CLOSET, FLUSH VALVE, AND PIPING BACK TO WALL, PREPARE PIPING FOR NEW FIXTURE. EXISTING CARRIER TO REMAIN.
PD4 REMOVE EXISTING URINAL, FLUSH VALVE, AND PIPING BACK TO WALL, PREPARE PIPING FOR NEW FIXTURE. EXISTING CARRIER TO REMAIN.
PD6 REMOVE PLUMBING FIXTURE COMPLETE. REMOVE PIPING, VALVES, AND ACCESSORIES BACK TO MAIN.
PD7 REMOVE SANITARY/VENT PIPING WHERE INDICATED.
PD8 REMOVE DOMESTIC WATER PIPING, VALVES, INSULATION, AND ASSOCIATED COMPONENTS WHERE INDICATED. CAP WHERE INDICATED.
PD9 EXISTING WATER COOLER TO REMAIN.
PD10 REMOVE BACKWATER VALVE.
PD11 REMOVE FLOOR DRAIN AND SANITARY PIPING BACK TO MAIN.
PD12 REMOVE SINK, FAUCET, SANITARY, VENT, COLD WATER, AND HOT WATER PIPING. REMOVE VALVES, INSULATION, AND ASSOCIATED COMPONENTS BACK TO MAIN.
PD13 REMOVE FLOOR DRAIN STRAINER TO ACCOMMODATE NEW FLOORING. DRAIN BODY, TRAP, AND ASSOCIATED PIPING TO REMAIN.
PD14 REMOVE SANITARY BACK TO WALL AND CAP PIPING WITHIN WALL. UNDERGROUND PIPING TO REMAIN.
PD15 EXISTING WATER COOLER TO BE REMOVED AND REINSTALLED IN NEW WALL TO ACCOMMODATE NEW TOILET ROOM LAYOUT. DEMOLISH EXISTING WATER, WASTE AND VENT PIPING AS REQUIRED TO ACCOMMODATE NEW LAYOUT.
PD16 EXISTING VENT PIPING UP TO VTR TO BE DEMOLISHED COMPLETE. VTR TO BE CAPPED ABOVE AND BELOW ROOF AND SEALED WEATHER TIGHT.
PD17 REMOVE EXISTING DOMESTIC RECIRCULATION PUMP, AQUASTAT, AND ASSOCIATED 3/4" PIPING WHERE INDICATED.
PD18 REMOVE EXISTING GOLUMN SHOWER. PREPARE EXISTING GOLD WATER, HOT WATER, SANITARY, AND VENT PIPING FOR NEW CONNECTION. REMOVE GOLUMN MOUNTED CURTAIN PARTITION WHERE APPLICABLE.



1 FIRST FLOOR PLUMBING DEMO PLAN - UNIT 1300A
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT 1300A

SHEET NO.
P121.d

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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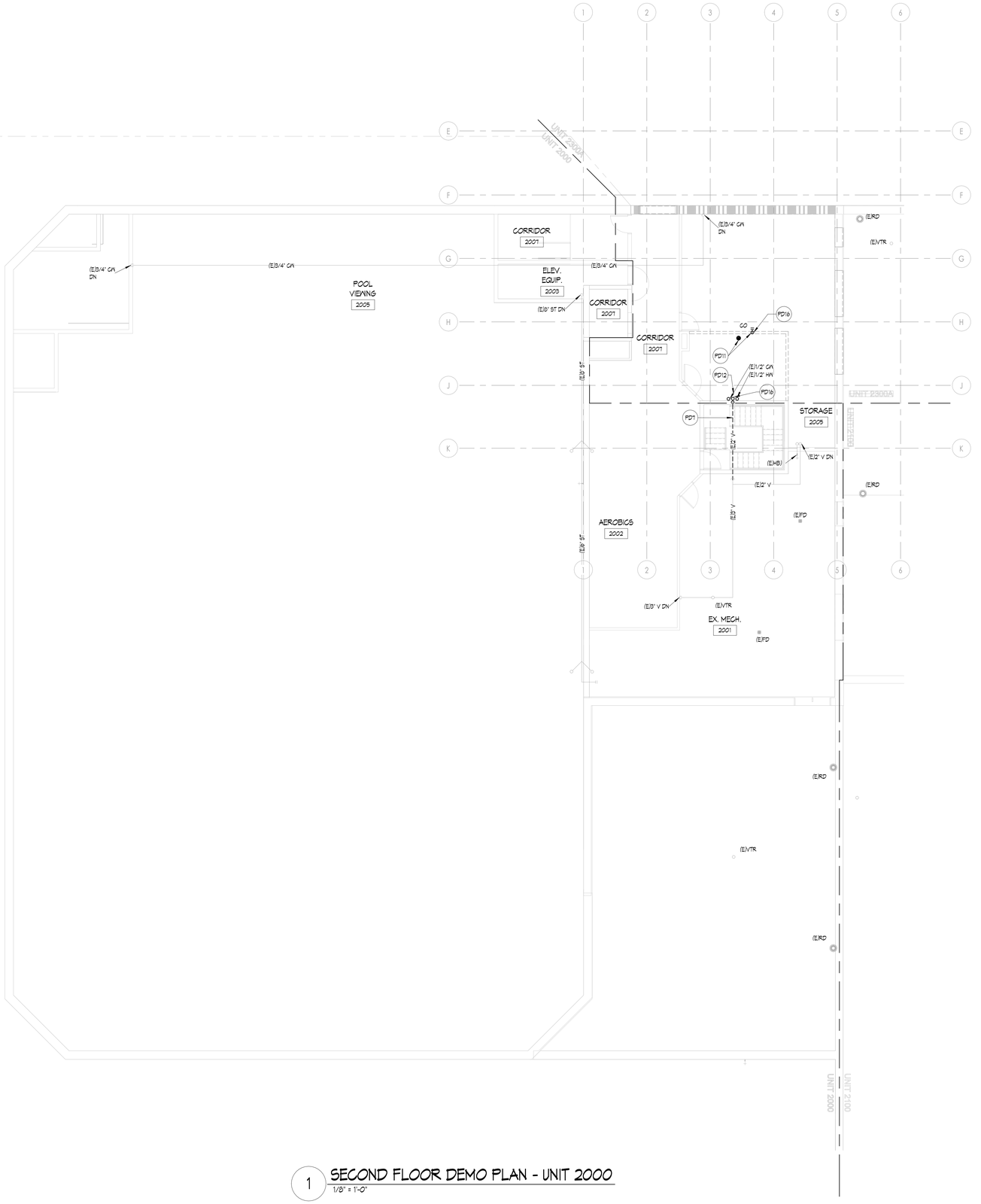

1 SECOND FLOOR DEMO PLAN - UNIT 2000
1/8" = 1'-0"

PLUMBING DEMO PLAN GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL EXTEND OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE EXISTING FIELD CONDITIONS AND NEW WORK. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, FOOD SERVICE, ETC.)
2. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY ARCHITECT OF ANY INTERFERENCES OR DISCREPANCIES.
3. VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITION OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
4. ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNERS REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
5. ALL ITEMS ON DEMOLITION PLANS SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION BY CONTRACTOR.
6. ALL ITEMS INDICATED WITH BROKEN LINES SHALL BE REMOVED COMPLETE, WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
7. ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT OR PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
8. THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE DISPOSED LEGALLY. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING, RELOCATED, AND OWNER-PROVIDED EQUIPMENT.
9. ANY SYSTEM WITH PARTIAL DEMOLITION PIPING, DUCTWORK, CONTROLS, ETC. AND WHICH IS INTENDED TO REMAIN OPERATIONAL DURING OR AFTER CONSTRUCTION SHALL BE CAPPED AND SEALED PROPERLY TO MAINTAIN FUNCTIONALITY. THIS INCLUDES BUT IS NOT LIMITED TO DUCTWORK, PIPING SYSTEMS, AND PNEUMATIC TUBING.
10. EXISTING TO REMAIN PIPING IN THE SCOPE AREA SHALL BE EXAMINED FOR LEAKS, HOLES, BREAKS, ETC. AND SEALED/INSULATED COMPLETELY.

PLUMBING DEMOLITION KEYNOTE

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F
N

SHEET TITLE
SECOND FLOOR PLUMBING DEMOLITION PLAN - UNIT 2000

SHEET NO.
P122.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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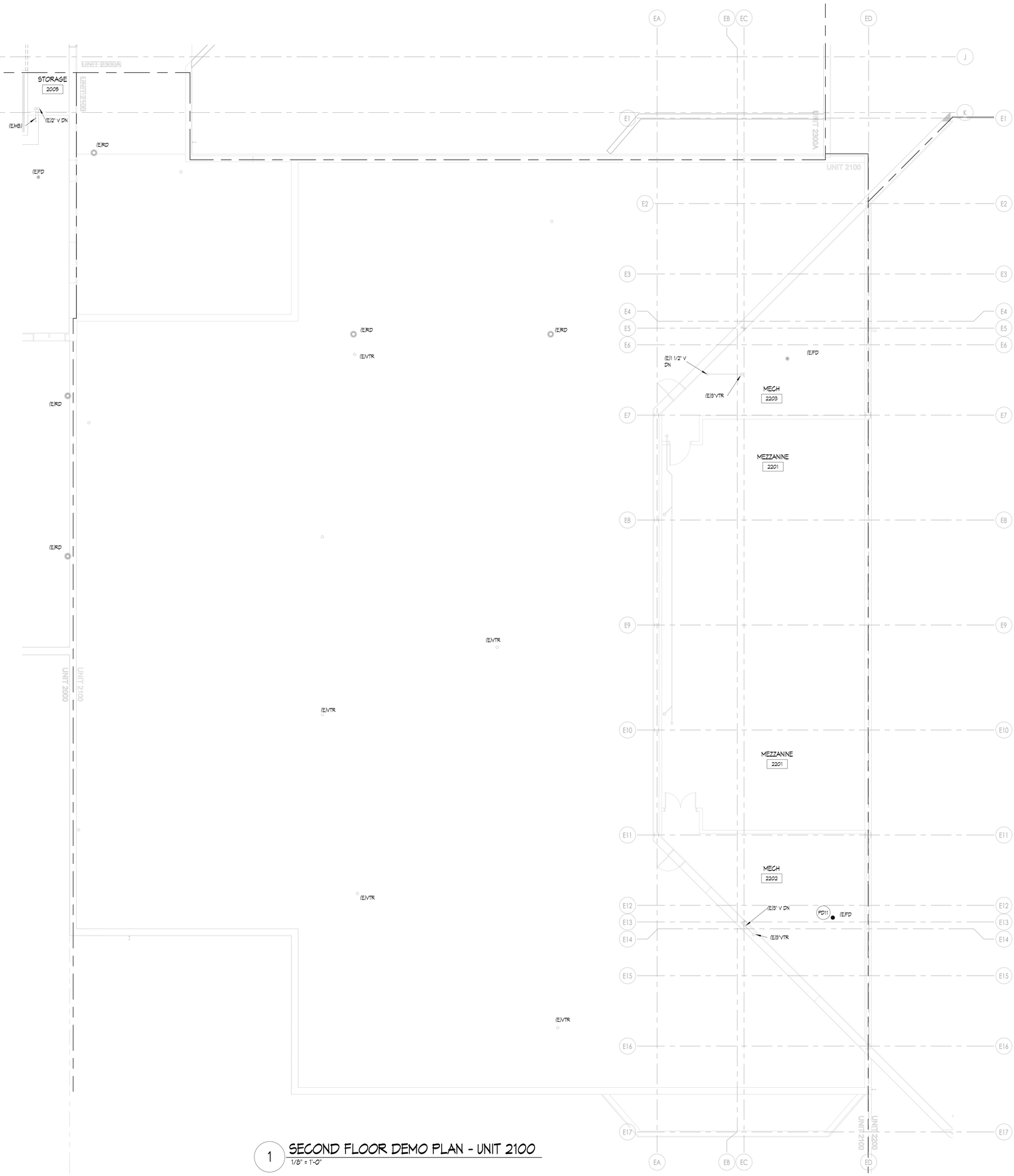

1 SECOND FLOOR DEMO PLAN - UNIT 2100
1/8" = 1'-0"

PLUMBING DEMO PLAN GENERAL NOTES

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR PLUMBING DEMOLITION PLAN - UNIT 2100

SHEET NO.
P122.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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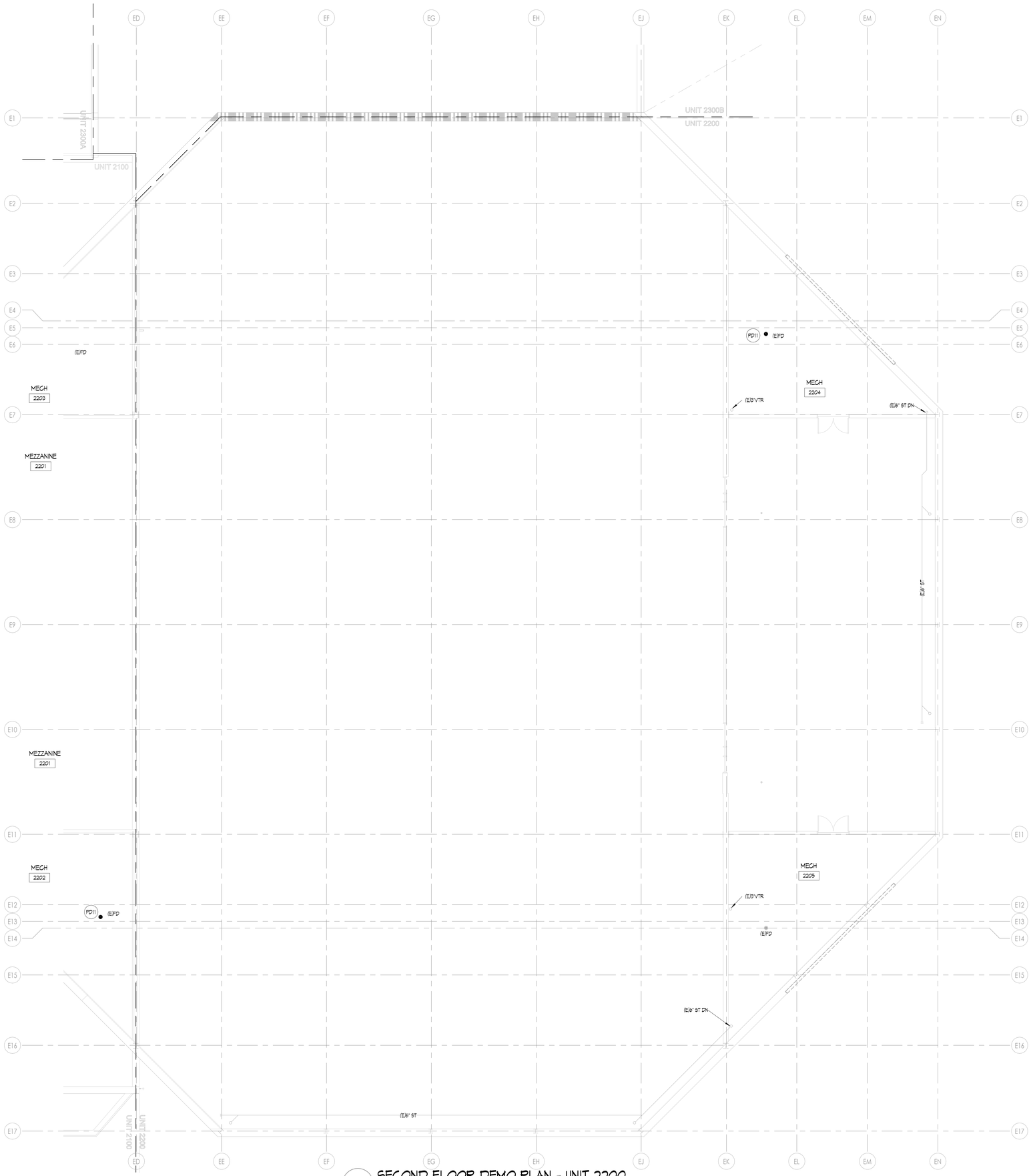

1 SECOND FLOOR DEMO PLAN - UNIT 2200
1/8" = 1'-0"

PLUMBING DEMO PLAN GENERAL NOTES

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
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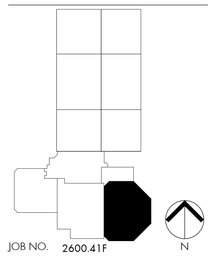

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR PLUMBING DEMOLITION PLAN - UNIT 2200

SHEET NO.
P122.c

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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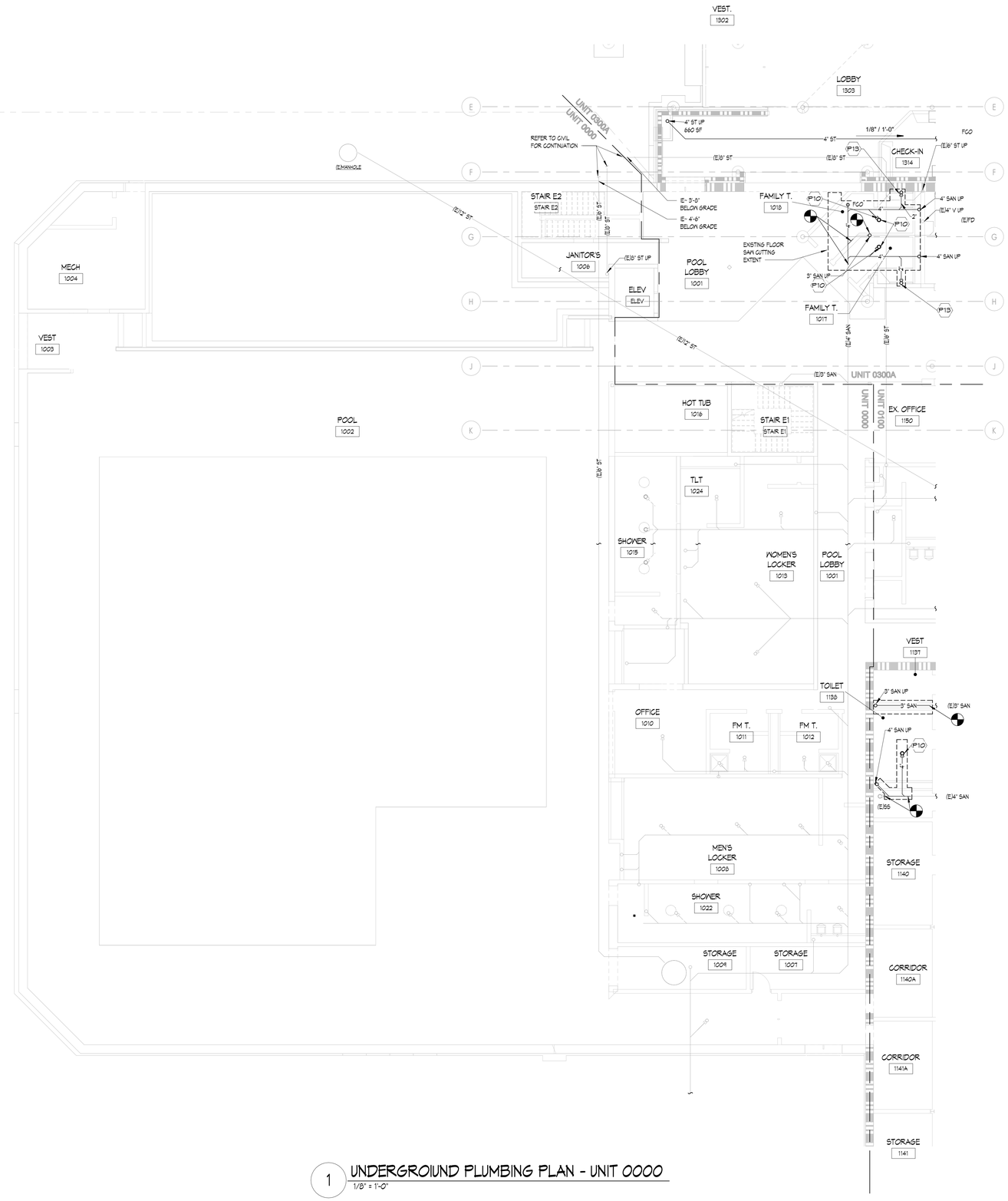

1 UNDERGROUND PLUMBING PLAN - UNIT 0000
1/8" = 1'-0"

PLUMBING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
12. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
13. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WITH REQUIRED SERVICE ACCESS.
14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 15" CLEAR FROM THE INSIDE FACE OF PARAPET.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
UNDERGROUND PLUMBING PLAN - UNIT 0000

SHEET NO.
P210.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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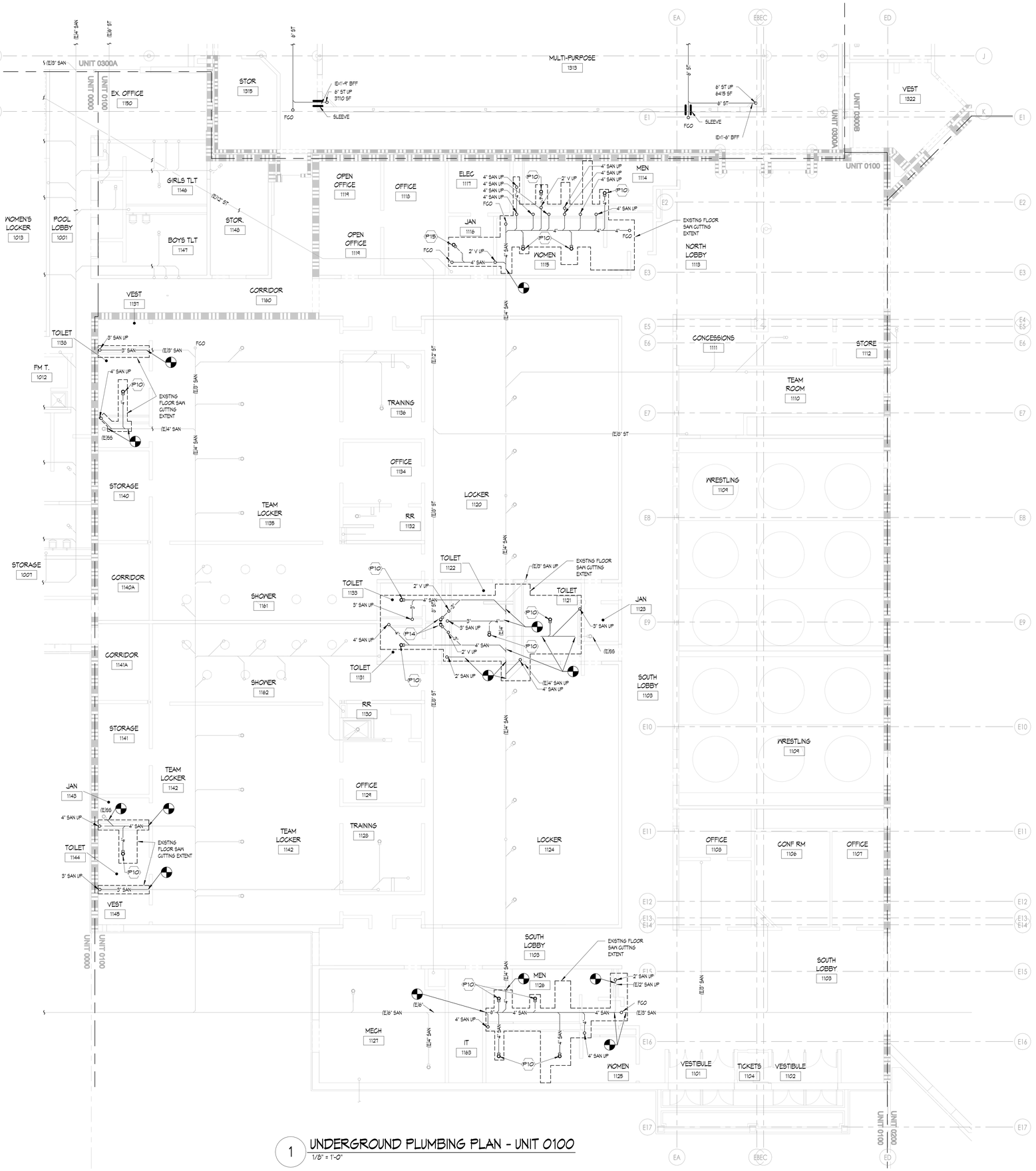

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1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE

UNDERGROUND PLUMBING PLAN - UNIT 0100

SHEET NO.

P210.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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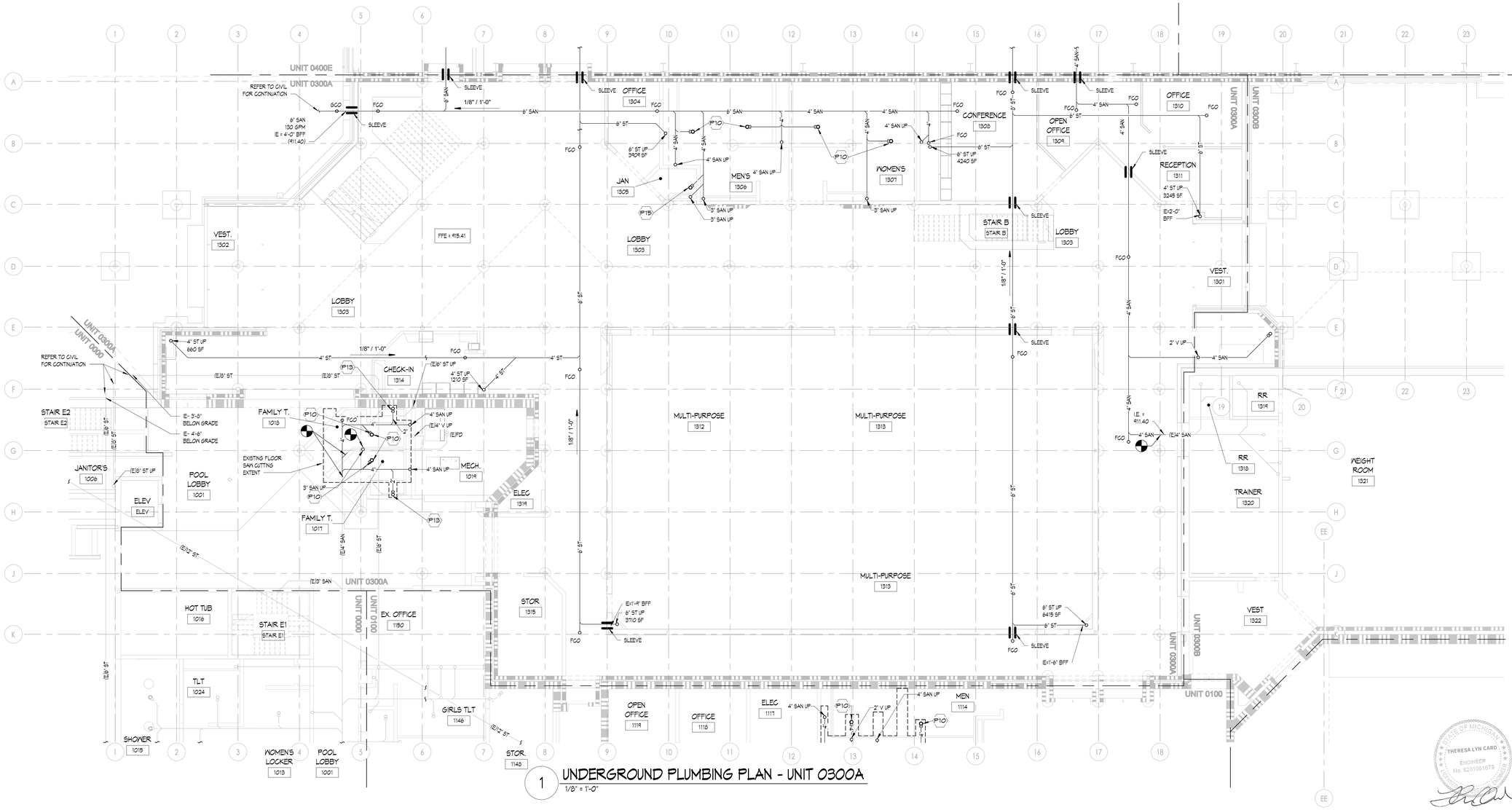

1 UNDERGROUND PLUMBING PLAN - UNIT 0300A
1/8" = 1'-0"

Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
UNDERGROUND PLUMBING PLAN - UNIT 0300A

SHEET NO.
P210.d

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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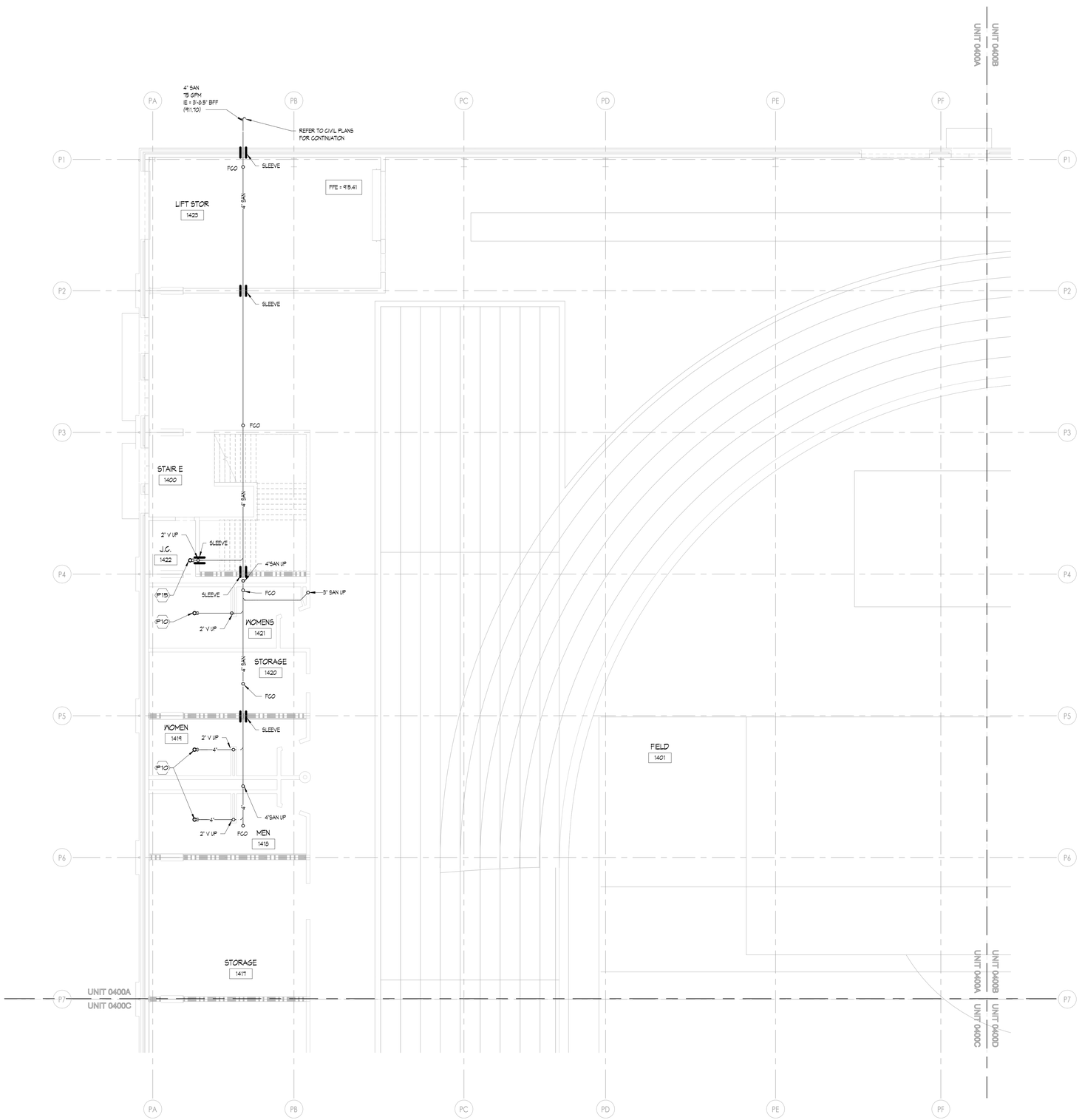

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HOWELL
PUBLIC SCHOOLS

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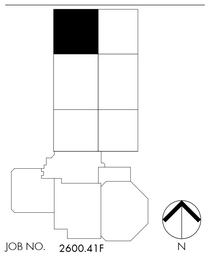

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SHEET TITLE

UNDERGROUND PLUMBING PLAN - UNIT 0400A

SHEET NO.

P210.f

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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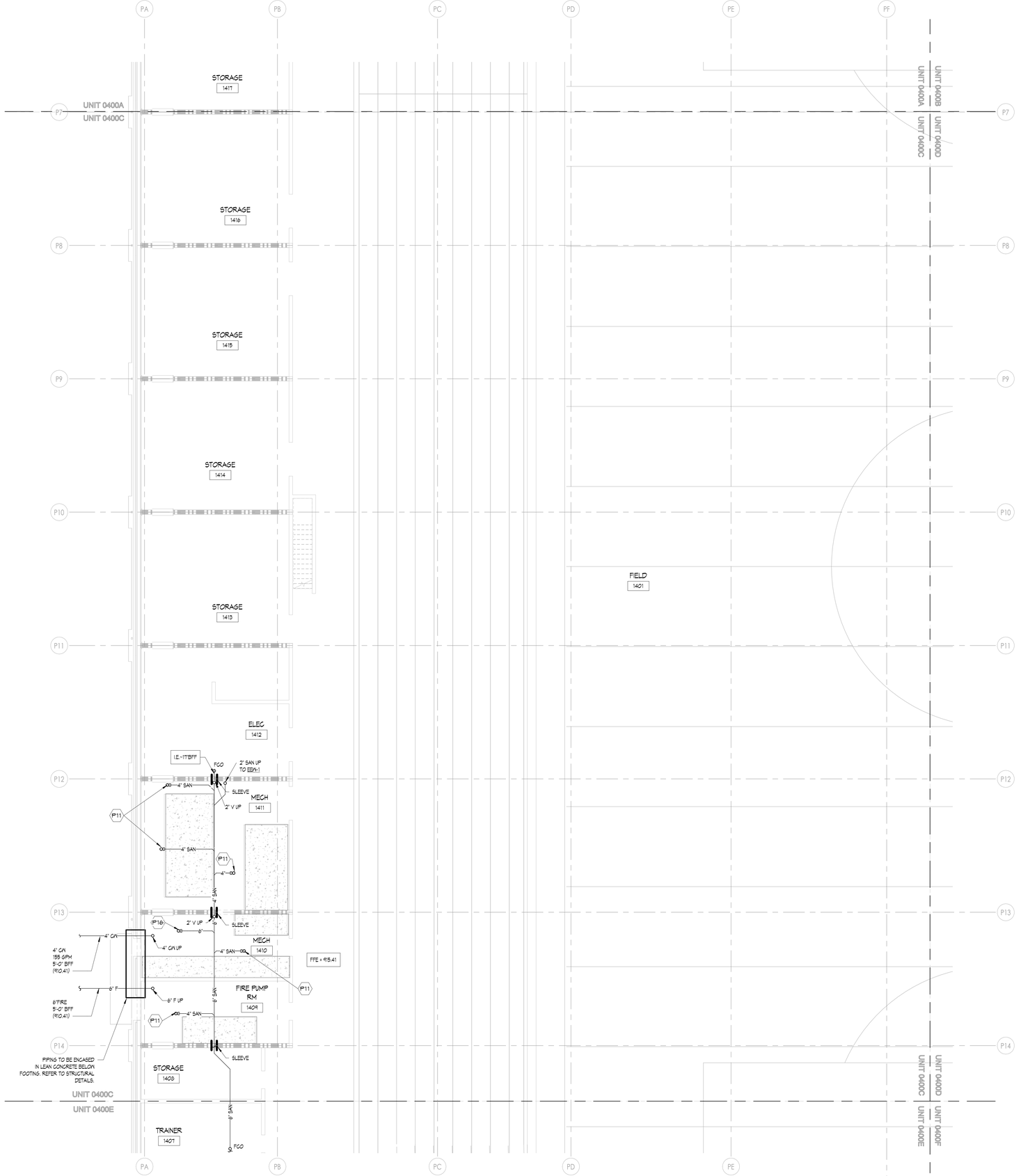

1 UNDERGROUND PLUMBING PLAN - UNIT 0400C
1/8" = 1'-0"

PLUMBING GENERAL NOTES

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2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
12. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
13. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WITH REQUIRED SERVICE ACCESS.
14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 10" CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. KITCHEN GREASE WASTE SHALL BE RUN AT A 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

PLUMBING KEYNOTE

P1 PROVIDE ISOLATION VALVE AT BRANCH CONNECTION.
P2 PROVIDE NEW FLOOR DRAIN STRAINER. CONTRACTOR TO VERIFY SIZE AND TYPE IN FIELD PRIOR TO ORDER. COORDINATE WITH NEW FLOOR SURFACE.
P3 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR CW, HW, AND HWR.
P4 RECONNECT HOT WATER, COLD WATER, AND SANITARY PIPING TO EXISTING SERVICE SINK.
P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 7 GPM.
P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCP-2S). REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON P5G0. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
P10 4" SAN UP TO FD-1.
P11 4" SAN UP TO FD-2.
P12 3" SAN UP TO FD-3.
P13 2" SAN UP TO FD-4.
P14 2" SAN UP TO FD-5.
P15 2" SAN UP TO SS-1.
P16 6" SAN UP TO FS-2.
P17 4" SAN UP TO FS-1.
P18 PROVIDE ADDITIONAL ISOLATION VALVE ON PIPING IN VERTICAL AT 7'-0" AFF.
P19 RECONNECT NEW COLUMN SHOWER TO EXISTING HOT WATER, COLD WATER, SANITARY, AND VENT PIPING.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
UNDERGROUND PLUMBING PLAN - UNIT 0400C

SHEET NO.
P210.h

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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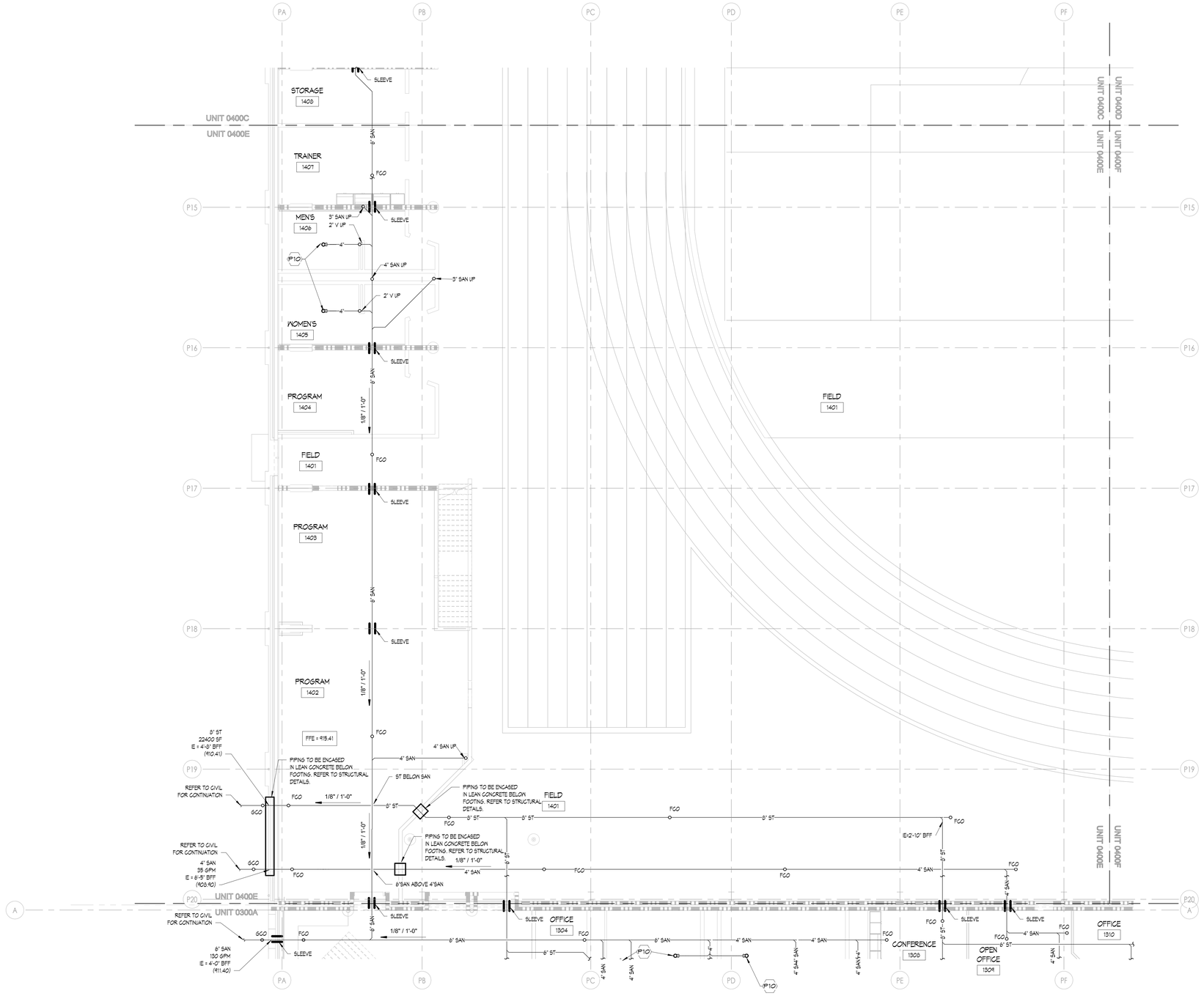

1 UNDERGROUND PLUMBING PLAN - UNIT 0400E
1/8" = 1'-0"

PLUMBING GENERAL NOTES

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4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
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7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
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15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 15' CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
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PLUMBING KEYNOTE

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- P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
- P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 1 GPM.
- P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
- P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
- P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCIP-2B). REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON P800. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
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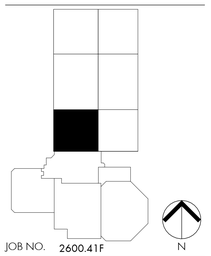
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE

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SHEET NO.

P210.k

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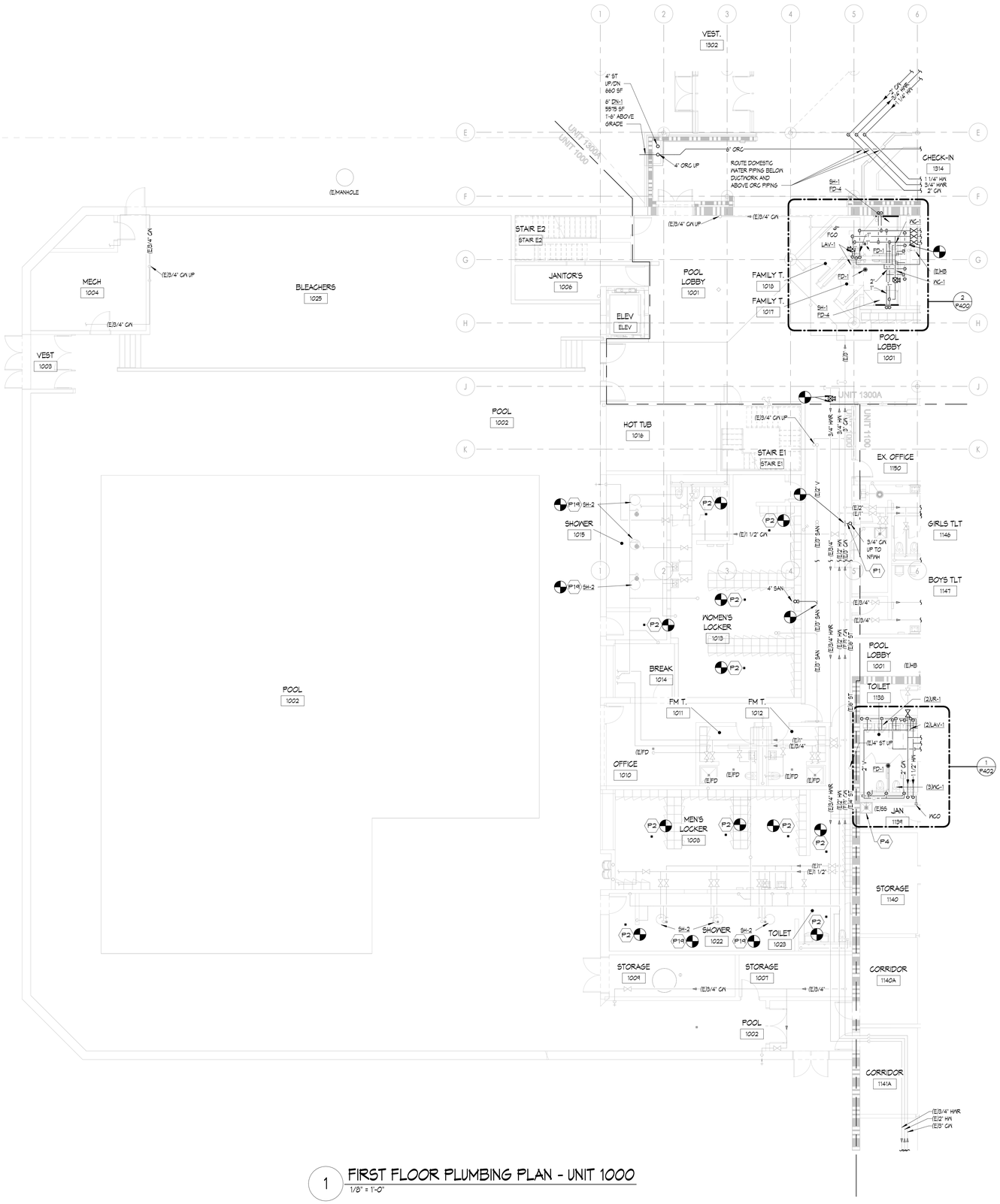

1 FIRST FLOOR PLUMBING PLAN - UNIT 1000
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1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

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P211.a

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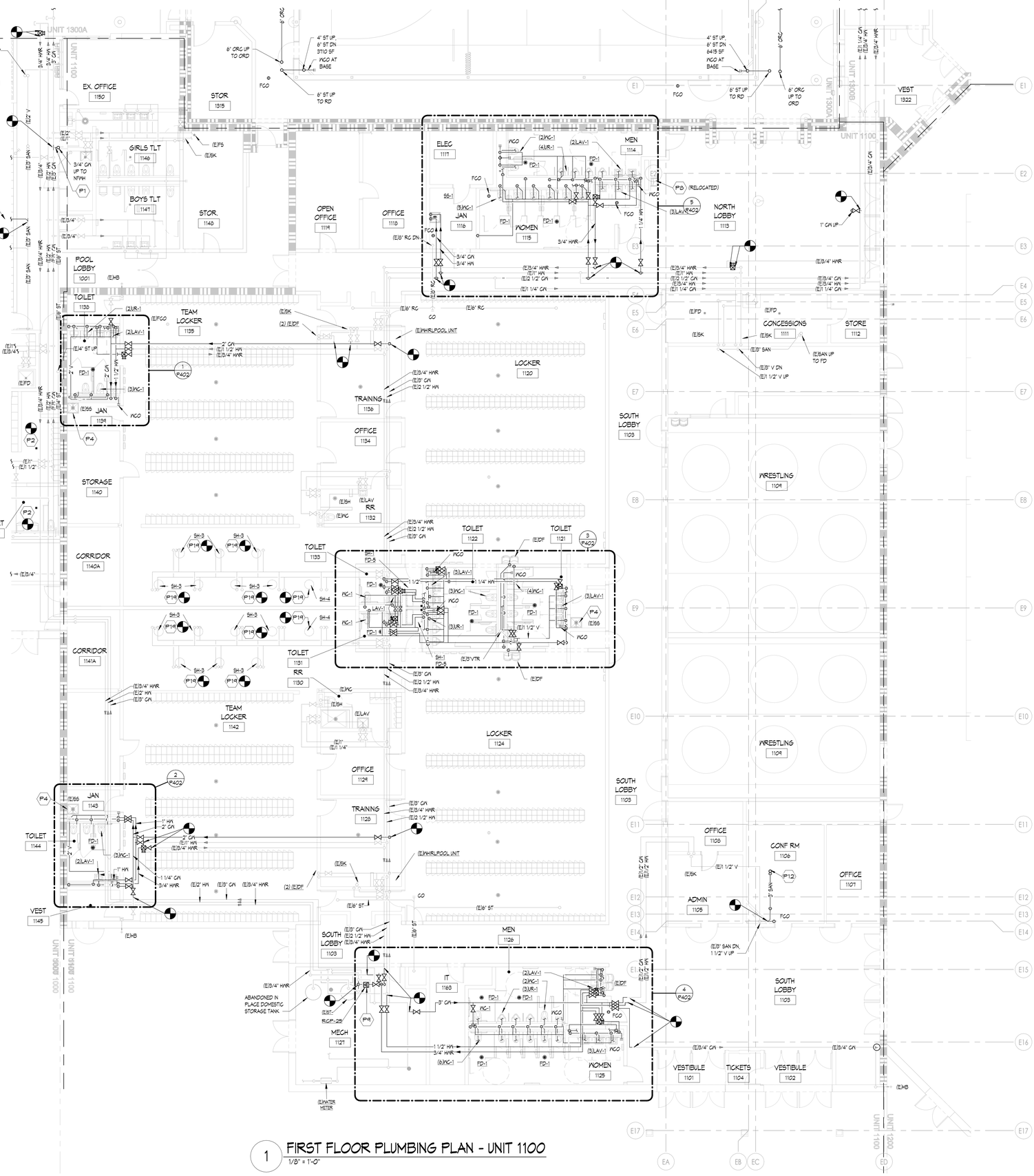
UNIT 1300A
UNIT 1100
UNIT 1300B
UNIT 1400
UNIT 1200
UNIT 900B 1000
STAIR E1
EX. OFFICE 1150
STOR 1315
GIRLS TLT 1146
BOYS TLT 1147
STOR 1148
OPEN OFFICE 1114
OFFICE 1118
ELEC 1117
MEN 1114
WOMEN 1115
JAN 1116
NORTH LOBBY 1113
VEST 1322
POOL LOBBY 1001
TOILET 1138
TEAM LOCKER 1135
JAN 1134
LOCKER 1120
TRAINING 1136
OFFICE 1134
STORAGE 1140
TOILET 1023
CORRIDOR 1140A
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RR 1132
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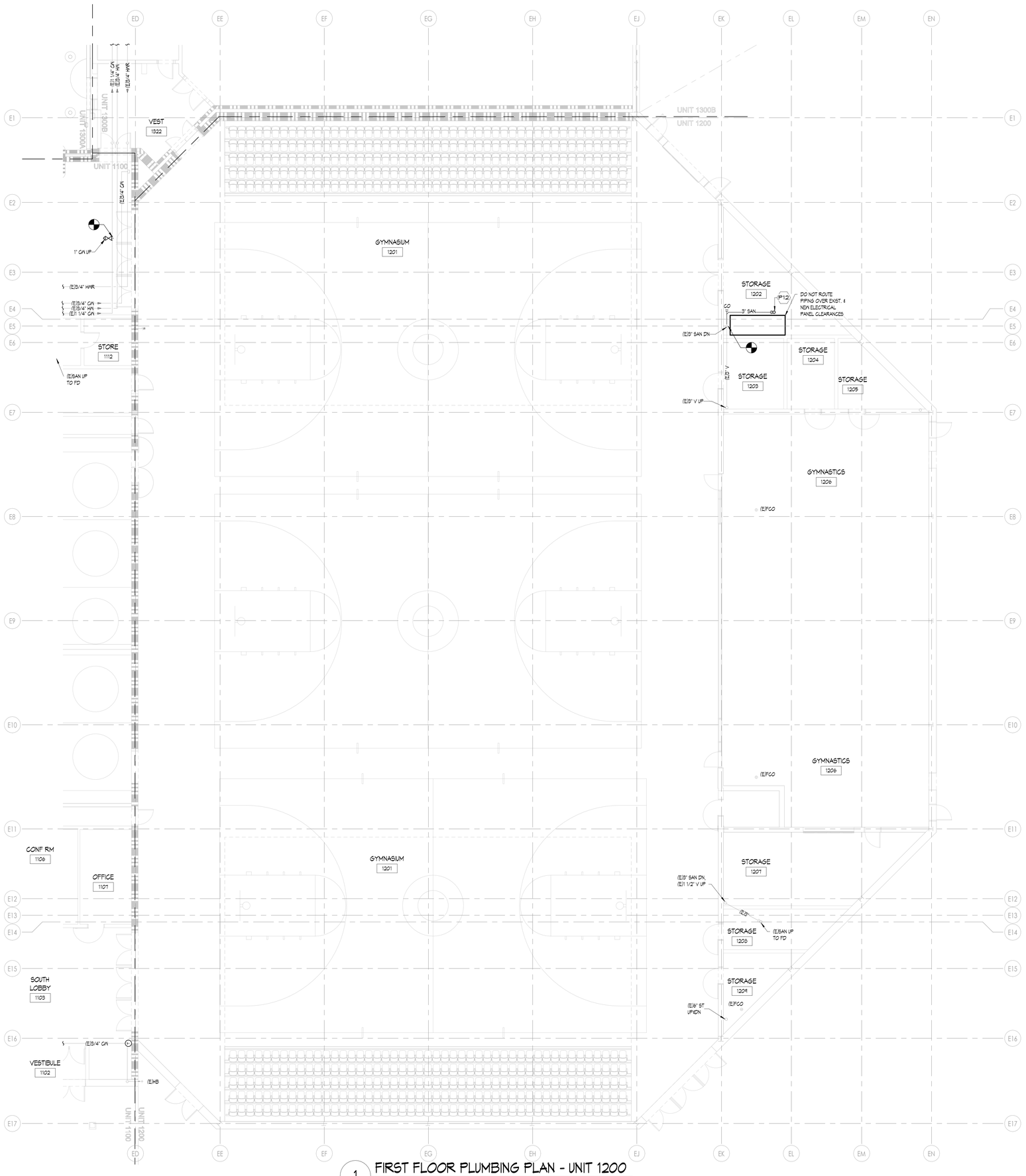
TOILET 1131
RR 1130
TEAM LOCKER 1142
LOCKER 1124
OFFICE 1129
TRAINING 1128
JAN 1143
TOILET 1144
VEST 1145
SOUTH LOBBY 1103
MEN 1126
IT 1163
MECH 1127
WOMEN 1125
CONCESSIONS 1111
STORE 1112
WRESTLING 1104
OFFICE 1108
CONF RM 1106
OFFICE 1107
ADMIN 1105
VESTIBULE 1101
TICKETS 1104
VESTIBULE 1102
(E)WHIRLPOOL UNIT
(E)WATER HEATER
ABANDONED IN PLACE DOMESTIC STORAGE TANK
P1 (RELOCATED)
(E)SAN UP TO FD
1" GN UP
4" SAN
(E)3/4" GN UP
3/4" HWR
3/4" GN UP TO NPW
(E)2" V
(E)3" SAN
(E)3/4" HWR
(E)3/4" GN
(E)3/4" HWR
(E)1" HW
(E)1" GN
(E)1 1/2" GN
(E)1 1/4" GN
(E)1 1/2" V UP
(E)3" V DN
(E)3" SAN DN, 1 1/2" V UP
(E)1 1/2" V
(E)1" (E)1 1/2"
(E)1" (E)1 1/4"
(E)3/4" GN UP
(E)3/4" GN
(E)3/4" HW
(E)1 1/2" GN
(E)1 1/4" GN
(E)3/4" HWR
(E)1" HW
(E)2" GN
(E)1" HW
(E)3/4" HWR
(E)1 1/4" GN
3/4" HWR
(E)2" HW
(E)3" GN
(E)3/4" HWR
(E)2 1/2" HW
(E)3/4" HWR
(E)3" GN



1 FIRST FLOOR PLUMBING PLAN - UNIT 1200
1/8" = 1'-0"

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4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
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14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 10" CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
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18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

PLUMBING KEYNOTE

- P1 PROVIDE ISOLATION VALVE AT BRANCH CONNECTION.
- P2 PROVIDE NEW FLOOR DRAIN STRAINER. CONTRACTOR TO VERIFY SIZE AND TYPE IN FIELD PRIOR TO ORDER. COORDINATE WITH NEW FLOOR SURFACE.
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- P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
- P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 7 GPM.
- P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
- P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
- P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCP-2B). REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON P500. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
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- P11 4" SAN UP TO FD-2.
- P12 3" SAN UP TO FD-3.
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- P14 2" SAN UP TO FD-5.
- P15 2" SAN UP TO SS-1.
- P16 6" SAN UP TO FS-2.
- P17 4" SAN UP TO FS-1.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR PLUMBING PLAN - UNIT 1200

SHEET NO.
P211.c

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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- P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 1 GPM.
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- P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCP-2B). REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON P300. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
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- P11 4" SAN UP TO FD-2.
- P12 3" SAN UP TO FD-3.
- P13 2" SAN UP TO FD-4.
- P14 2" SAN UP TO FD-5.
- P15 2" SAN UP TO SS-1.
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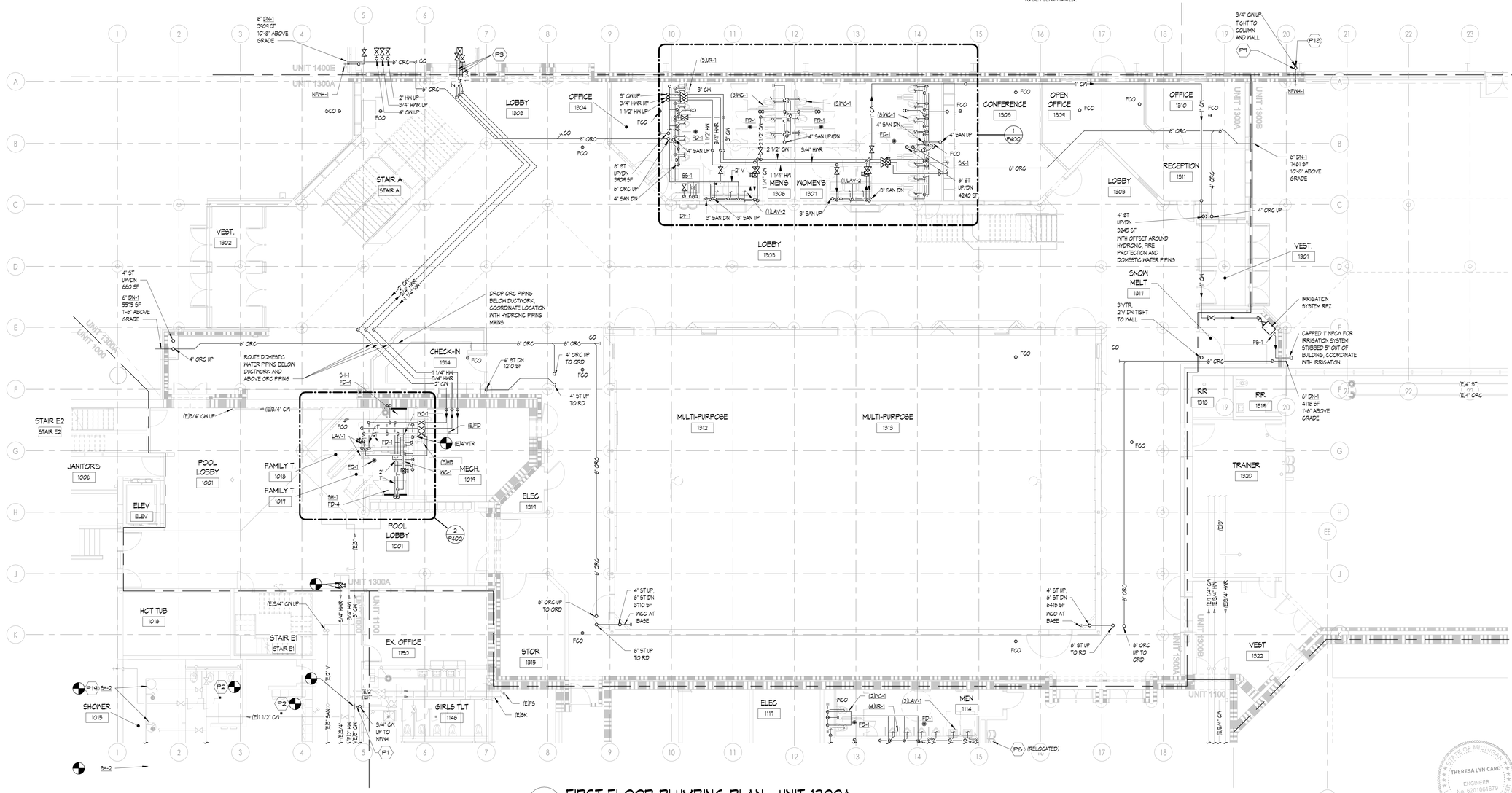
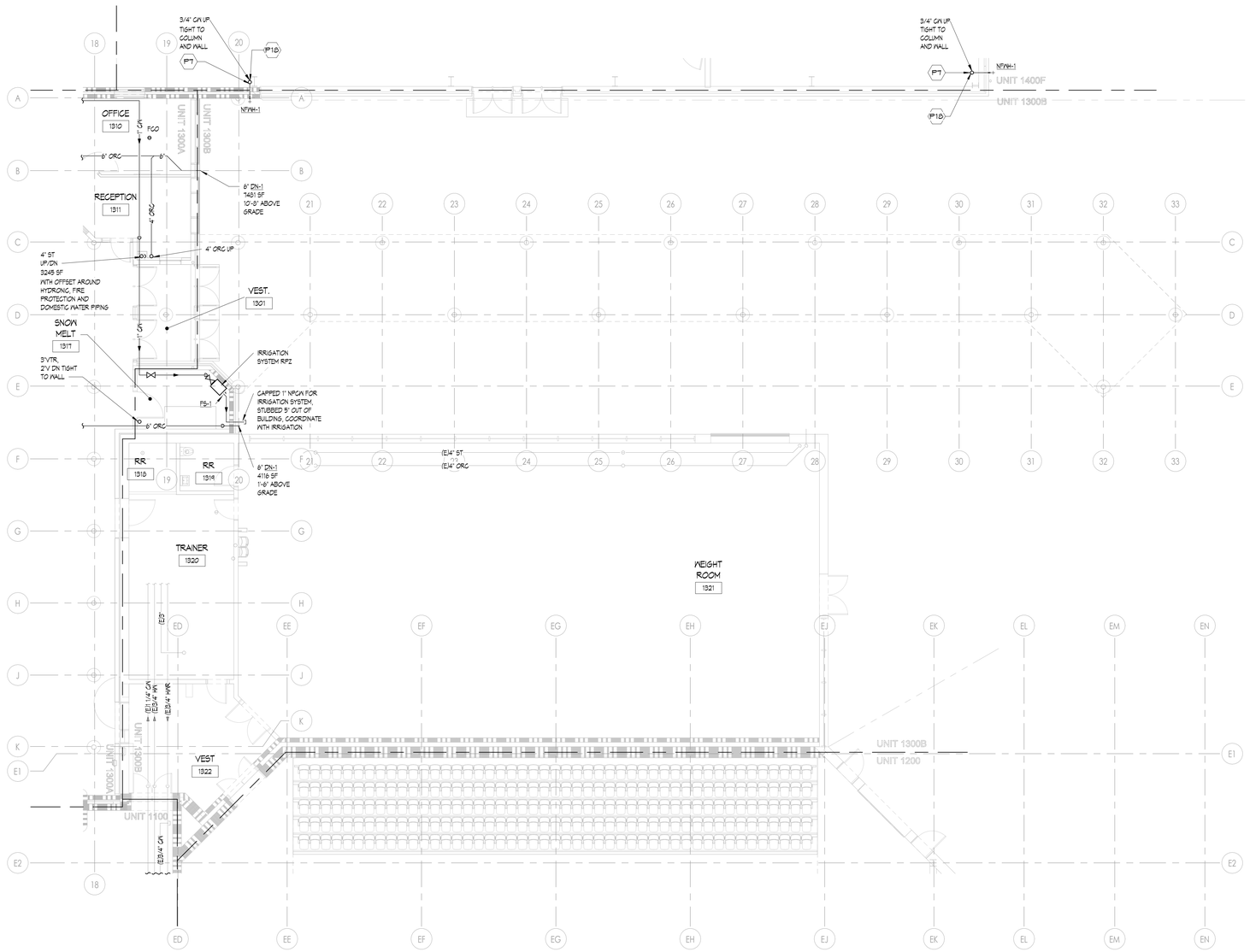

UNIT 1400E
UNIT 1300A
UNIT 1300B
UNIT 1100
LOBBY 1303
OFFICE 1304
CONFERENCE 1308
OPEN OFFICE 1309
OFFICE 1310
RECEPTION 1311
STAIR A
VEST. 1302
VEST. 1301
MEN'S 1306
WOMEN'S 1307
CHECK-IN 1314
MULTI-PURPOSE 1312
MULTI-PURPOSE 1313
SNOW MELT 1317
RR 1318
RR 1319
TRAINER 1320
STAIR E2
JANITOR'S 1006
POOL LOBBY 1001
FAMILY T. 1018
FAMILY T. 1017
MECH. 1014
ELEC 1316
ELEV
HOT TUB 1016
STAIR E1
EX. OFFICE 1150
STOR 1315
SHOWER 1015
GIRLS TLT 1146
ELEC 1117
MEN 1114
VEST 1322
6" DN-1 3909 SF 10'-8" ABOVE GRADE
6" DN-1 7401 SF 10'-8" ABOVE GRADE
4" ST UP/DN 860 SF
6" DN-1 5975 SF 1'-6" ABOVE GRADE
6" ST UP/DN 3909 SF
6" ST UP/DN 4240 SF
4" ST UP/DN 3245 SF WITH OFFSET AROUND HYDRONIC, FIRE PROTECTION AND DOMESTIC WATER PIPING
4" ST DN 1210 SF
4" ST UP, 6" ST DN 3110 SF
4" ST UP, 6" ST DN 6415 SF
6" DN-1 4116 SF 1'-6" ABOVE GRADE
4" ST UP TO RD
6" ST UP TO RD
6" ORC UP TO ORD
4" ORC UP TO ORD
DROP ORC PIPING BELOW DUCTWORK, COORDINATE LOCATION WITH HYDRONIC PIPING MAINS
ROUTE DOMESTIC WATER PIPING BELOW DUCTWORK AND ABOVE ORC PIPING
IRRIGATION SYSTEM RPZ
CAPPED 1" NPCA FOR IRRIGATION SYSTEM, STUBBED 5' OUT OF BUILDING, COORDINATE WITH IRRIGATION
3/4" CW UP, TIGHT TO COLUMN AND WALL
(E)4" ST. (E)4" ORC
(E)3/4" CW UP
(E)3/4" CW
(E)1 1/2" CW
(E)2" V
(E)3" SAN
(E)3/4" HWR
(E)3/4" CWR
(E)FS
(E)SK
(E)FD
(E)4"VTR
(E)HB
(E)FD
(E)1 1/4" CW
(E)3/4" HW
(E)3/4" HWR
3/4" CW UP
1 1/4" HW
3/4" HWR
3/4" CW
2" HW UP
3/4" HWR UP
4" CW UP
1 1/2" HW UP
3" CW UP
3/4" HWR UP
1" CW
2 1/2" CW
3/4" HWR
1 1/4" HW
3/4" HWR
3/4" CW
2" V
3" SAN DN
3" SAN UP
4" SAN UP/DN
4" SAN UP
4" SAN DN
6" ORC
6" ORC UP
4" SAN DN
6" ST UP/DN
6" ORC UP
4" SAN DN
3" SAN DN
3" SAN UP
4" ORC UP
6" ORC
4" ORC UP
4" ST UP TO RD
6" ORC
6" ORC UP TO ORD
4" ST UP, 6" ST DN 3110 SF
IVCO AT BASE
6" ST UP TO RD
4" ST UP, 6" ST DN 6415 SF
IVCO AT BASE
6" ST UP TO RD
6" ORC UP TO ORD
4" ORC UP
6" ORC
4" ST UP TO RD
6" ORC
6" ORC
6" ORC



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1/8" = 1'-0"

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR PLUMBING PLAN - UNIT 1300B

SHEET NO.
P211.e

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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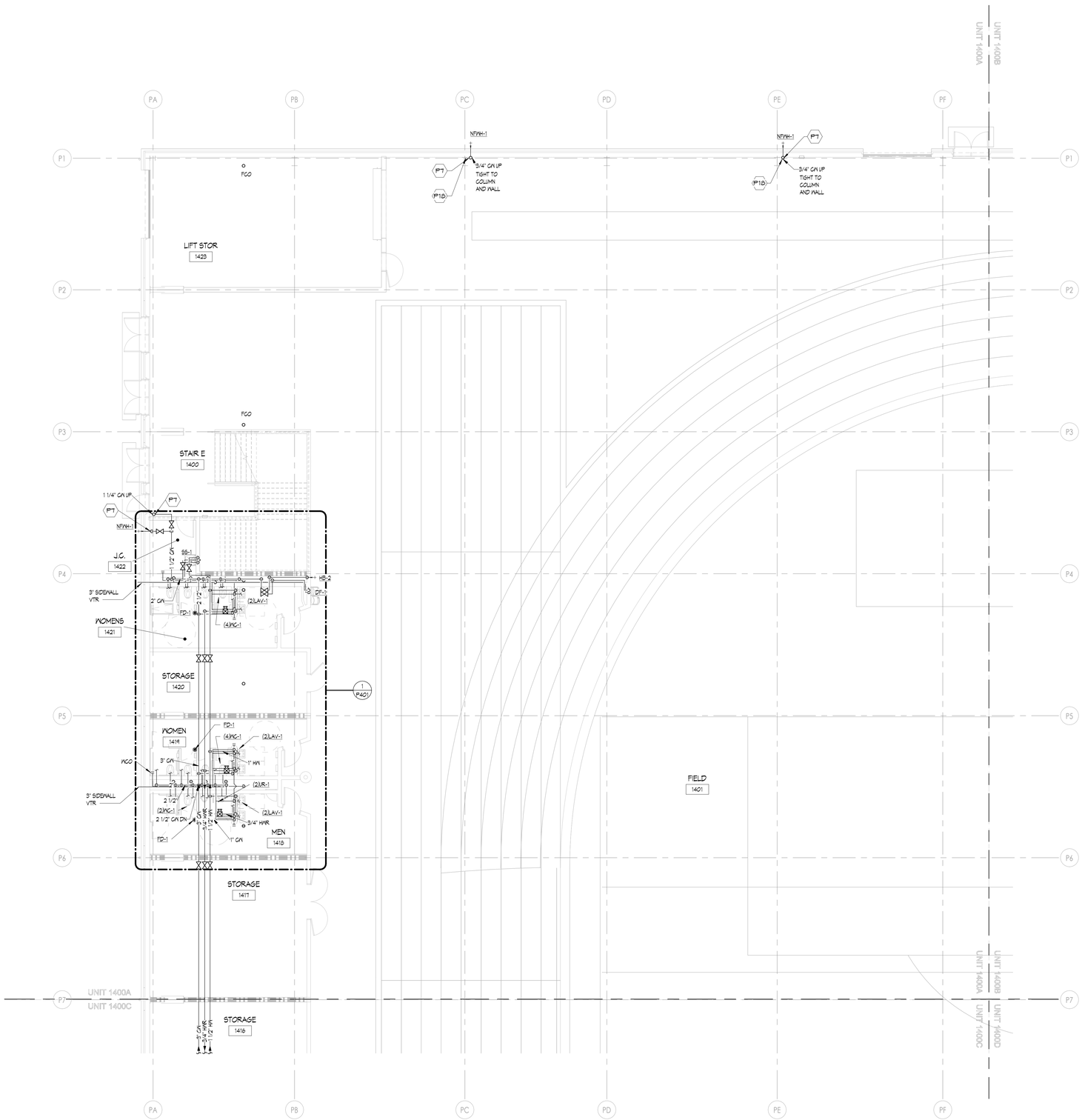
PA
PB
PC
PD
PE
PF
P1
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P3
P4
P5
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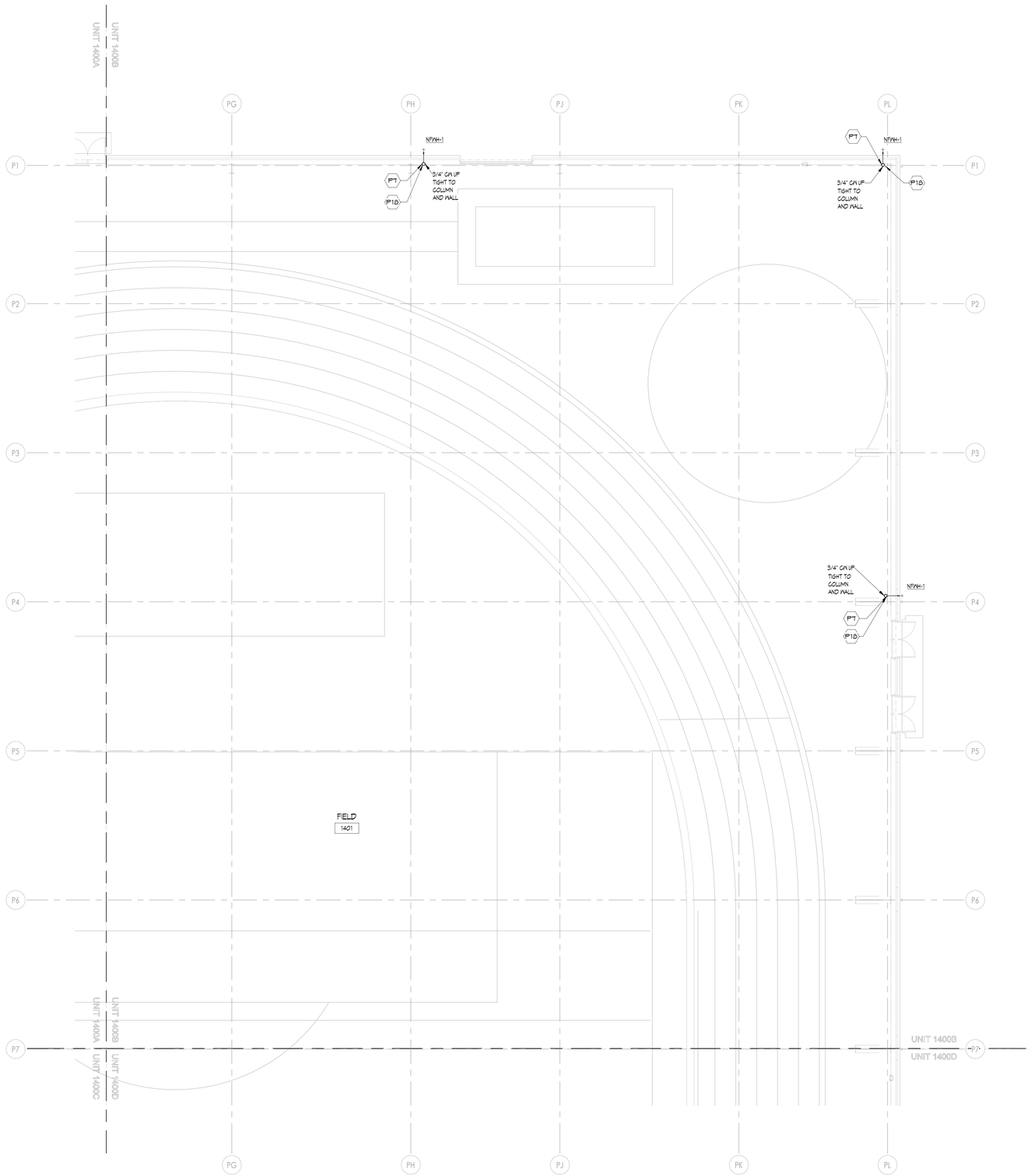
P7
UNIT 1400A
UNIT 1400B
UNIT 1400C
UNIT 1400D
LIFT STOR
1425
STAIR E
1400
J.C.
1422
WOMENS
1421
STORAGE
1420
WOMEN
1419
MEN
1418
STORAGE
1417
STORAGE
1416
FIELD
1401
FCO
NFWH-1
P7
P18
3/4" CW UP TIGHT TO COLUMN AND WALL
1 1/4" CW UP
SS-1
HB-2
DF-1
3" SIDEWALL VTR
2" CW
2 1/2" CW
FD-1
(2)LAV-1
(4)WC-1
WCO
1" HW
(2)UR-1
2 1/2" CW DN
3/4" HWR
1" CW
1 1/2" HW
1" CW
3/4" HWR
1 1/2" HW
1" CW
3/4" HWR
1 1/2" HW
1" CW
3/4" HWR



1 FIRST FLOOR PLUMBING PLAN - UNIT 1400B
1/8" = 1'-0"

PLUMBING GENERAL NOTES

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3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
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12. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
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14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
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16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
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18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

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3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND GM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
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P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 1 GPM.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR PLUMBING PLAN - UNIT 1400B

SHEET NO.
P211.g

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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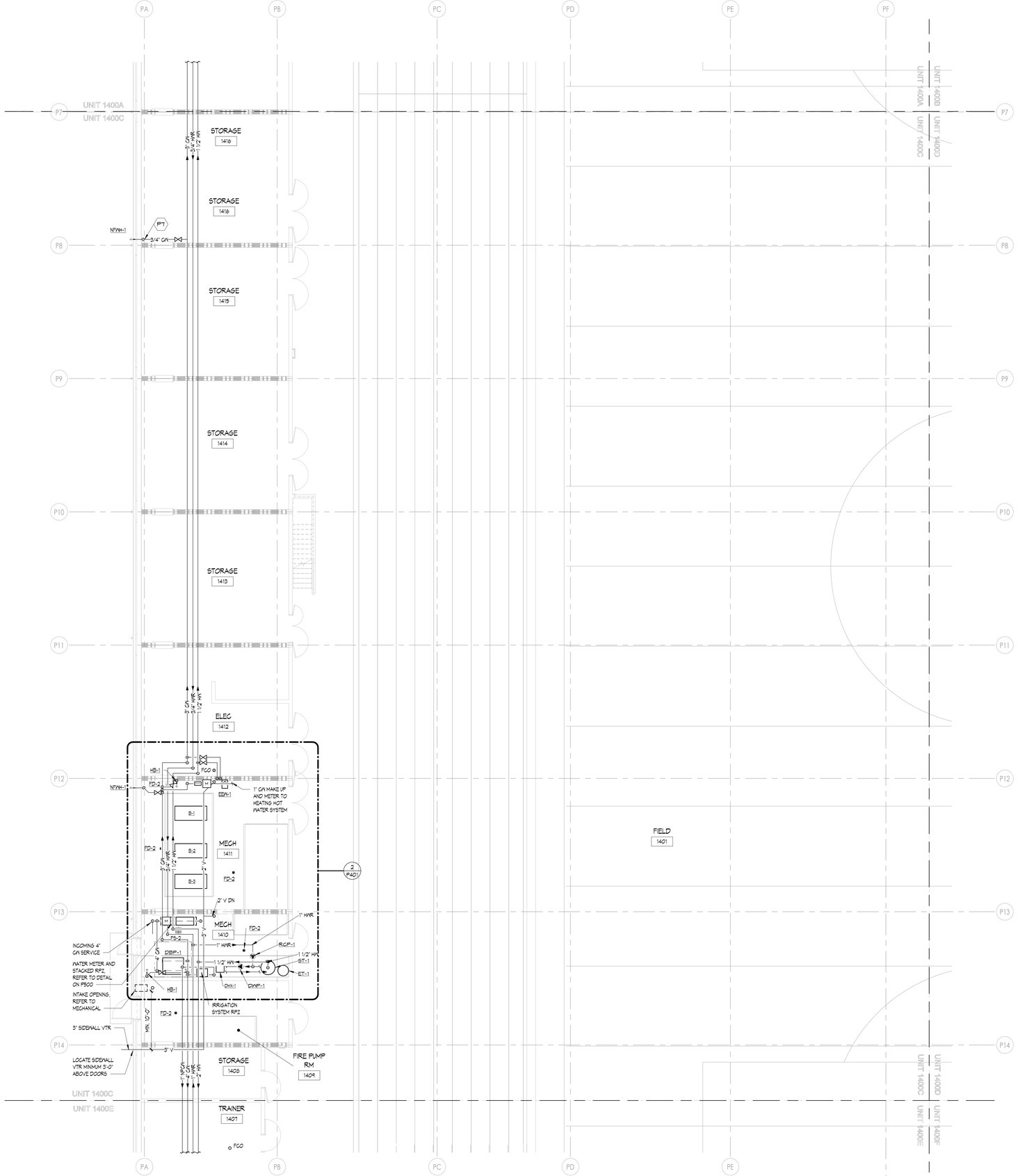

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MPFP PRECAST SYSTEM GENERAL NOTES

1. PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF PIPING, DUCTWORK, ETC. CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC.
2. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

PLUMBING KEYNOTE

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P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP. BALANCE TO 1 GPM.
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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE

FIRST FLOOR PLUMBING PLAN - UNIT 1400C

SHEET NO.

P211.h

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

KINGSCOTT ASSOCIATES INC. PORTAGE, MICHIGAN

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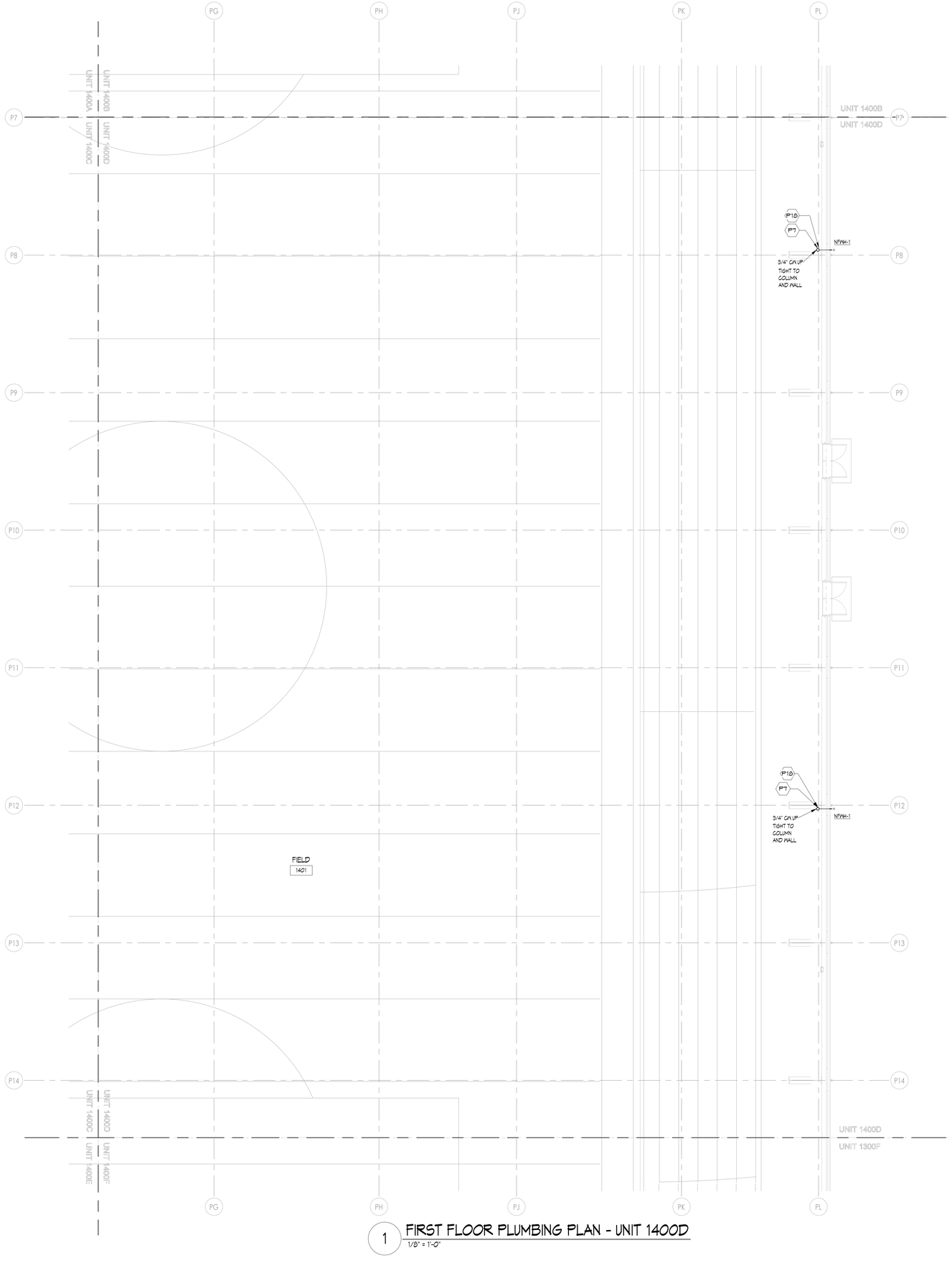

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P13 2" SAN UP TO FD-4.
P14 2" SAN UP TO FD-5.
P15 2" SAN UP TO SS-1.
P16 6" SAN UP TO FS-2.
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P18 PROVIDE ADDITIONAL ISOLATION VALVE ON PIPING IN VERTICAL AT 7'-0" AFF.
P19 RECONNECT NEW COLUMN SHOWER TO EXISTING HOT WATER, COLD WATER, SANITARY, AND VENT PIPING.

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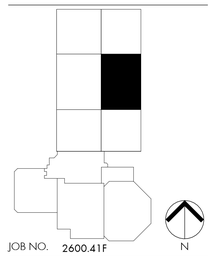
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE

FIRST FLOOR PLUMBING PLAN - UNIT 1400D

SHEET NO.

P211.j

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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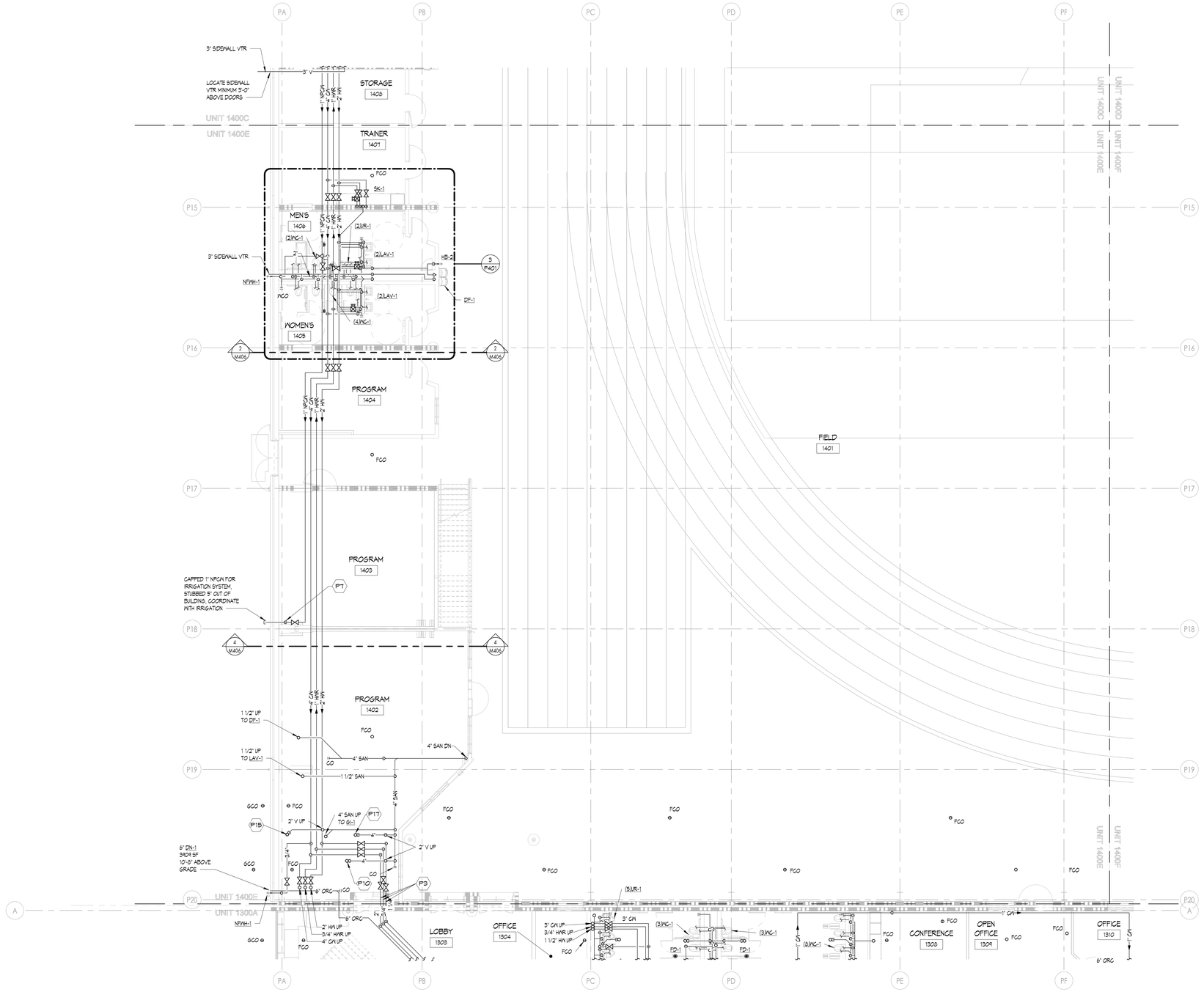

1 FIRST FLOOR PLUMBING PLAN - UNIT 1400E

1/8" = 1'-0"

PLUMBING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
12. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
13. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WITH REQUIRED SERVICE ACCESS
14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. KITCHEN GREASE WASTE SHALL BE RUN AT A 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND CM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

MPFP PRECAST SYSTEM GENERAL NOTES

1. PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF PIPING, DUCTWORK, ETC. CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC.
2. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

PLUMBING KEYNOTE

P1 PROVIDE ISOLATION VALVE AT BRANCH CONNECTION.
P2 PROVIDE NEW FLOOR DRAIN STRAINER. CONTRACTOR TO VERIFY SIZE AND TYPE IN FIELD PRIOR TO ORDER. COORDINATE WITH NEW FLOOR SURFACE.
P3 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR CW, HW, AND HWR.
P4 RECONNECT HOT WATER, COLD WATER, AND SANITARY PIPING TO EXISTING SERVICE SINK.
P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP. BALANCE TO 7 GPM.
P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCP-25). REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON P500. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
P10 4" SAN UP TO FD-1.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR PLUMBING PLAN - UNIT 1400E

SHEET NO.
P211.k

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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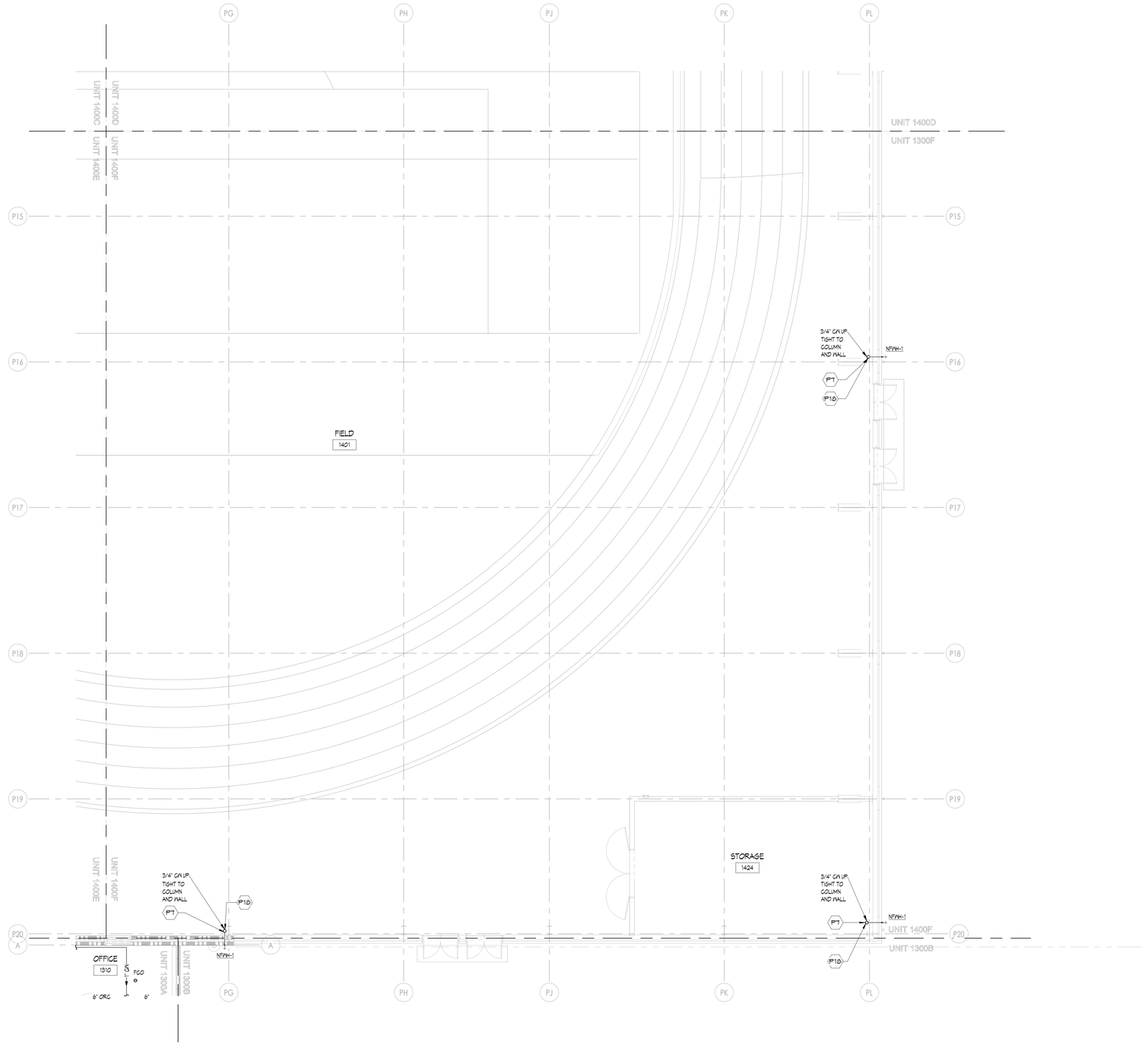

1 FIRST FLOOR PLUMBING PLAN - UNIT 1400F
1/8" = 1'-0"

PLUMBING GENERAL NOTES

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4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
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9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
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15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 10' CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. KITCHEN GREASE WASTE SHALL BE RUN AT A 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
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5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
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PLUMBING KEYNOTE

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P3 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR CW, HW, AND WWR.
P4 RECONNECT HOT WATER, COLD WATER, AND SANITARY PIPING TO EXISTING SERVICE SINK.
P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 1 GPM.
P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCP-2S). REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON P500. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
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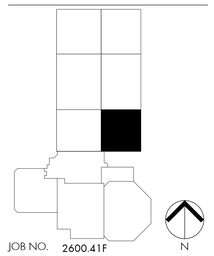
Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

N

SHEET TITLE
FIRST FLOOR PLUMBING PLAN - UNIT 1400F

SHEET NO.
P211.m

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201081679
PROFESSIONAL ENGINEER

07/30/2026

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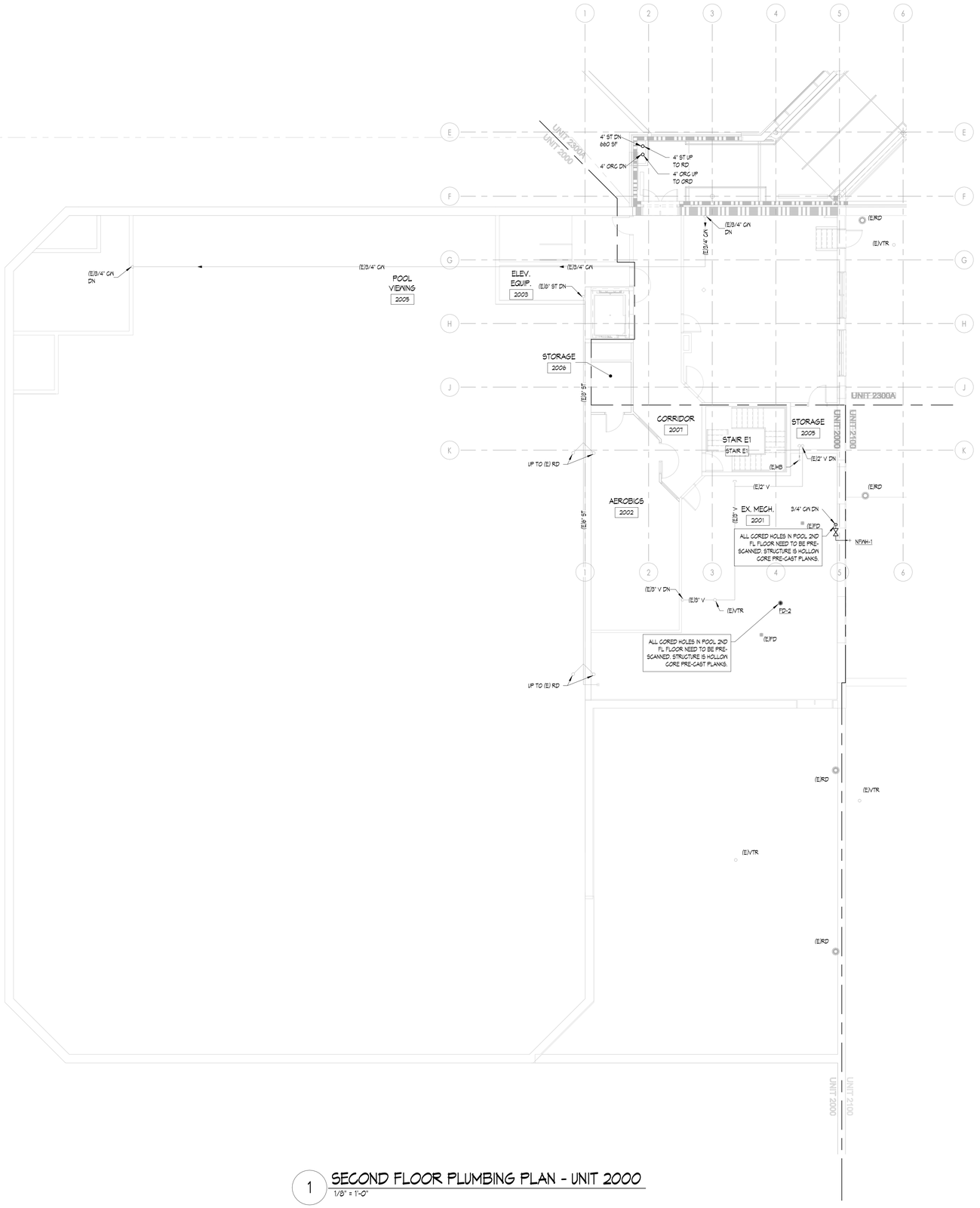

1 SECOND FLOOR PLUMBING PLAN - UNIT 2000
1/8" = 1'-0"

PLUMBING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
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4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
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14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 15" CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. KITCHEN GREASE WASTE SHALL BE RUN AT A 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

PLUMBING KEYNOTE

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P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCIP-2B). REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON P800. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
P10 4" SAN UP TO FD-1.
P11 4" SAN UP TO FD-2.
P12 3" SAN UP TO FD-3.
P13 2" SAN UP TO FD-4.
P14 2" SAN UP TO FD-5.
P15 2" SAN UP TO SS-1.
P16 6" SAN UP TO FS-2.
P17 4" SAN UP TO FS-1.
P18 PROVIDE ADDITIONAL ISOLATION VALVE ON PIPING IN VERTICAL AT 7'-0" AFF.
P19 RECONNECT NEW COLUMN SHOWER TO EXISTING HOT WATER, COLD WATER, SANITARY, AND VENT PIPING.

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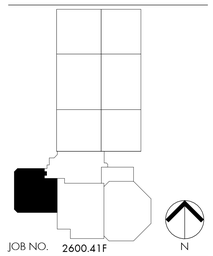
Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR PLUMBING PLAN - UNIT 2000

SHEET NO.
P212.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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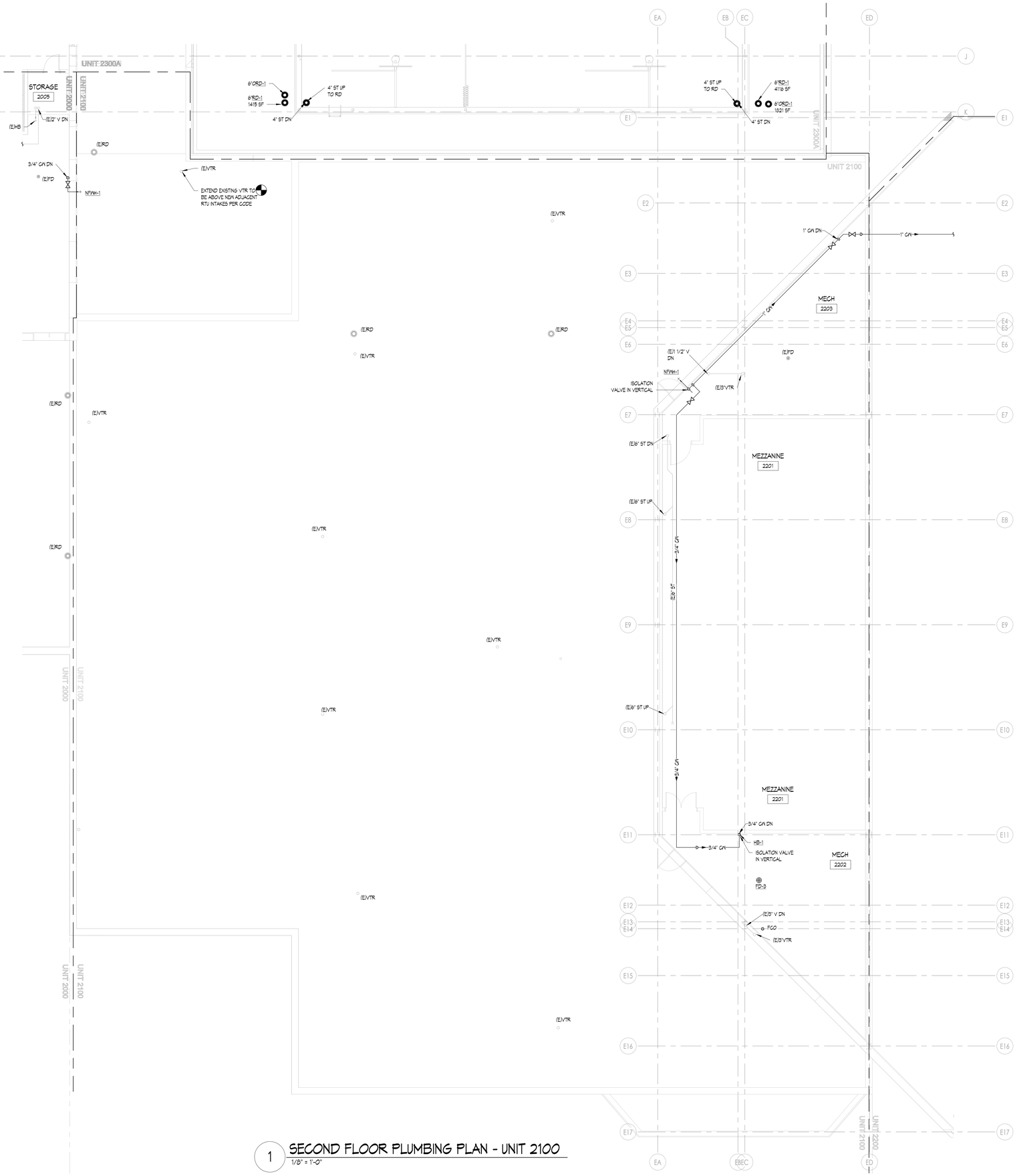

1 SECOND FLOOR PLUMBING PLAN - UNIT 2100
1/8" = 1'-0"

PLUMBING GENERAL NOTES

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2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
12. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
13. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WITH REQUIRED SERVICE ACCESS.
14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 10" CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. KITCHEN GREASE WASTE SHALL BE RUN AT A 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

PLUMBING KEYNOTE

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P4 RECONNECT HOT WATER, COLD WATER, AND SANITARY PIPING TO EXISTING SERVICE SINK.
P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 7 GPM.
P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
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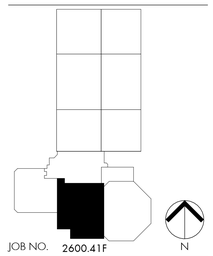

JOB NO. 2600.41F

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SHEET TITLE
SECOND FLOOR PLUMBING PLAN - UNIT 2100

SHEET NO.
P212.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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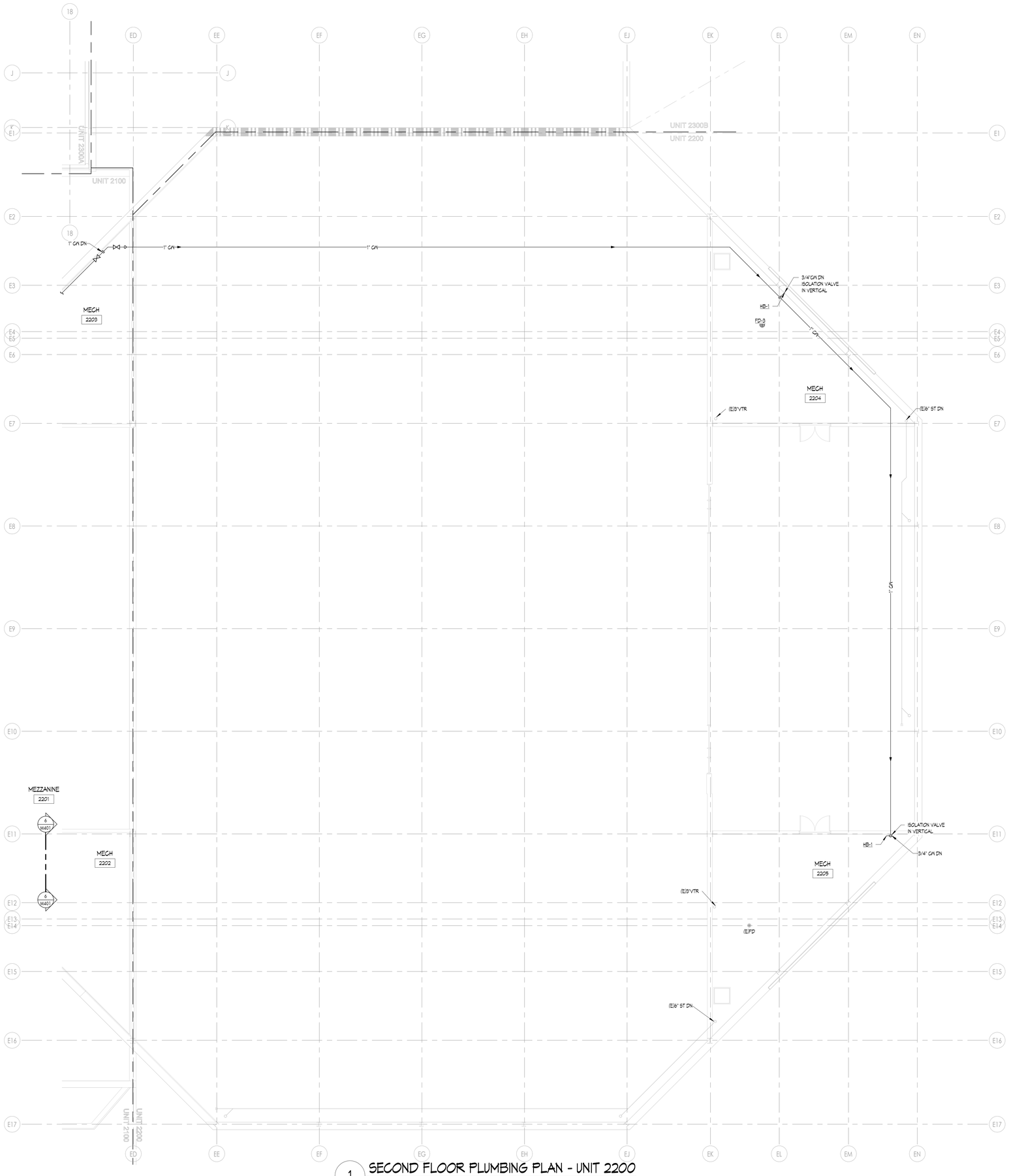

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8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
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16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
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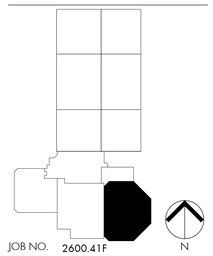

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR PLUMBING PLAN - UNIT 2200

SHEET NO.
P212.c

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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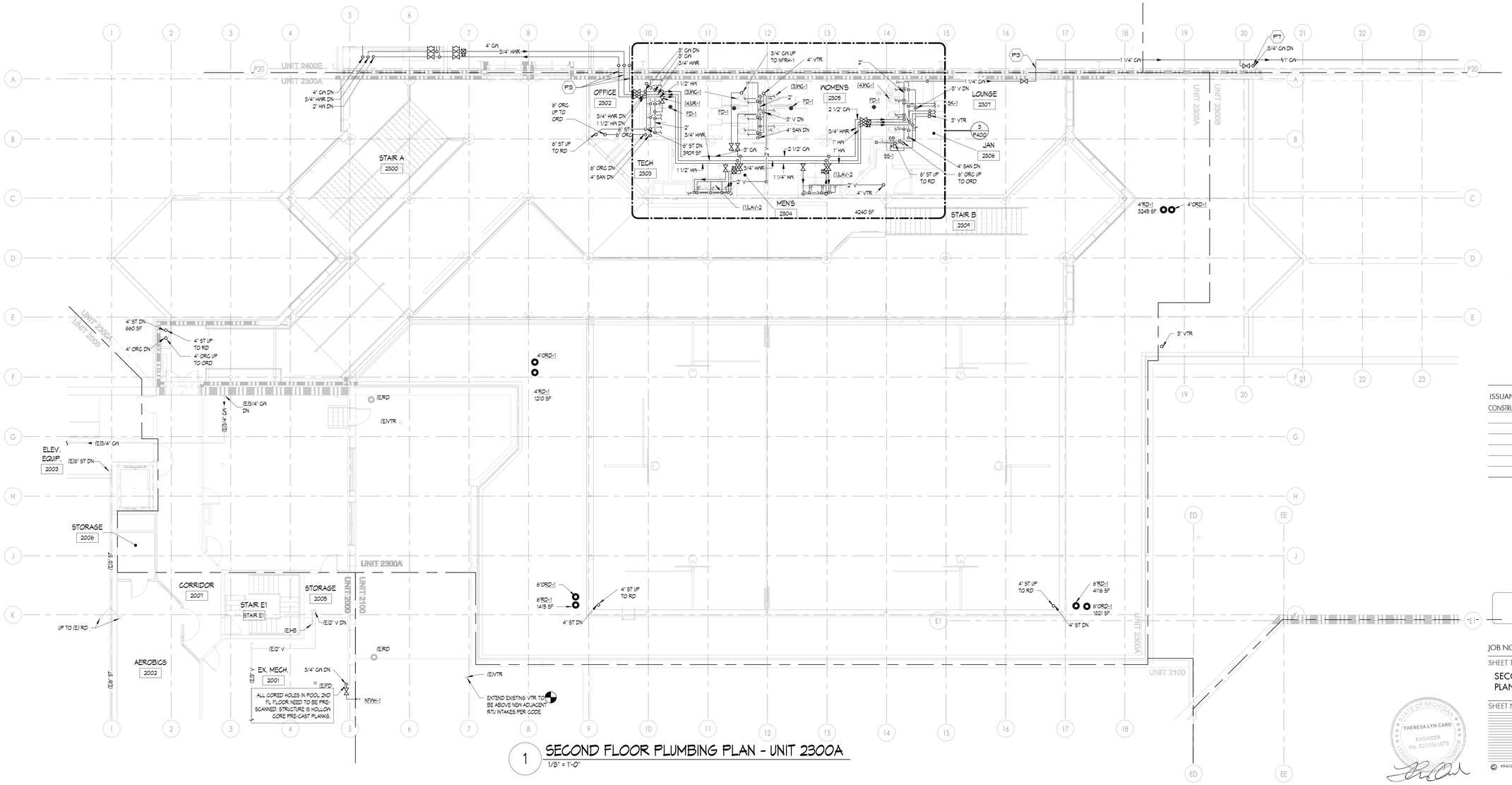

1 SECOND FLOOR PLUMBING PLAN - UNIT 2300A
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Howell Community Center

Howell Public Schools
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HOWELL PUBLIC SCHOOLS

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SHEET TITLE
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SHEET NO.
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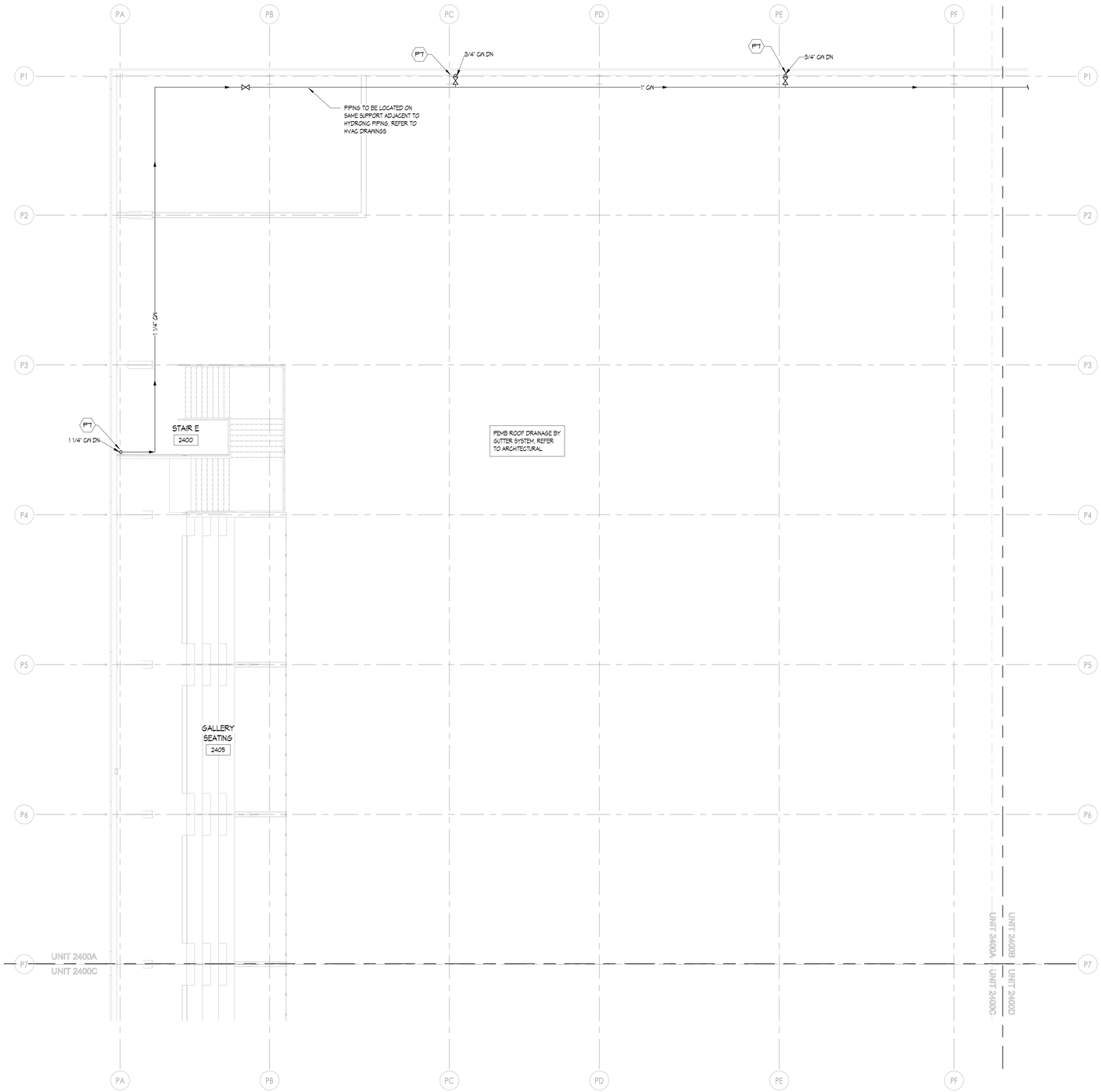

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3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
12. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
13. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WITH REQUIRED SERVICE ACCESS
14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. KITCHEN GREASE WASTE SHALL BE RUN AT A 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND CM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

PLUMBING KEYNOTE

P1 PROVIDE ISOLATION VALVE AT BRANCH CONNECTION.
P2 PROVIDE NEW FLOOR DRAIN STRAINER. CONTRACTOR TO VERIFY SIZE AND TYPE IN FIELD PRIOR TO ORDER. COORDINATE WITH NEW FLOOR SURFACE.
P3 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR CW, HW, AND HWR.
P4 RECONNECT HOT WATER, COLD WATER, AND SANITARY PIPING TO EXISTING SERVICE SINK.
P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 7 GPM.
P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCP-25), REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON PS00. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
P10 4" SAN UP TO FD-1.
P11 4" SAN UP TO FD-2.
P12 3" SAN UP TO FD-3.
P13 2" SAN UP TO FD-4.
P14 2" SAN UP TO FD-5.
P15 2" SAN UP TO SS-1.
P16 6" SAN UP TO FS-2.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR PLUMBING PLAN - UNIT 2400A

SHEET NO.
P212.f

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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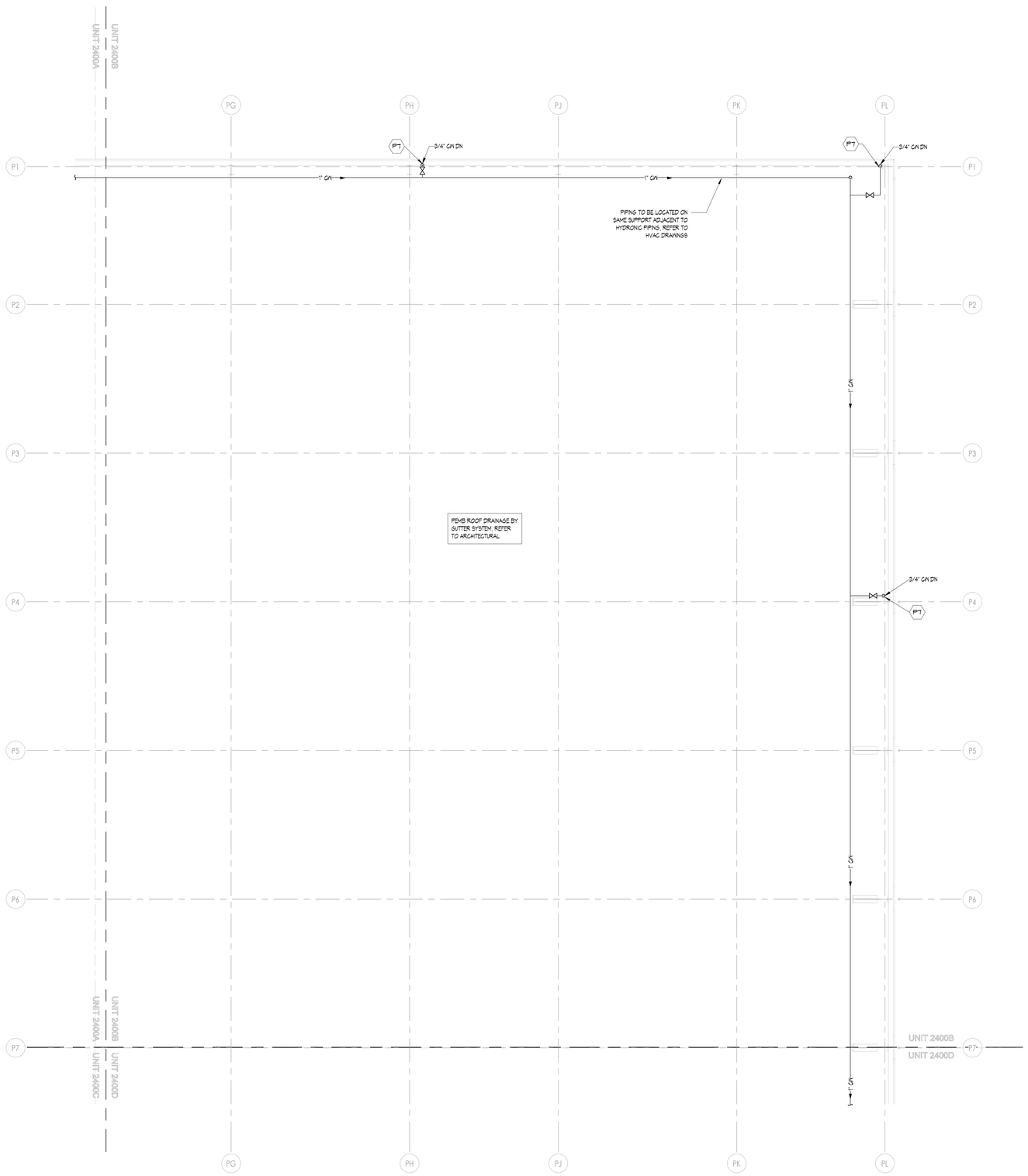

1 SECOND FLOOR PLUMBING PLAN - UNIT 2400B
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4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

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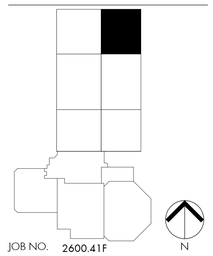

JOB NO. 2600.41F

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SHEET TITLE
SECOND FLOOR PLUMBING PLAN - UNIT 2400B

SHEET NO.
P212.g

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
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07/30/2026

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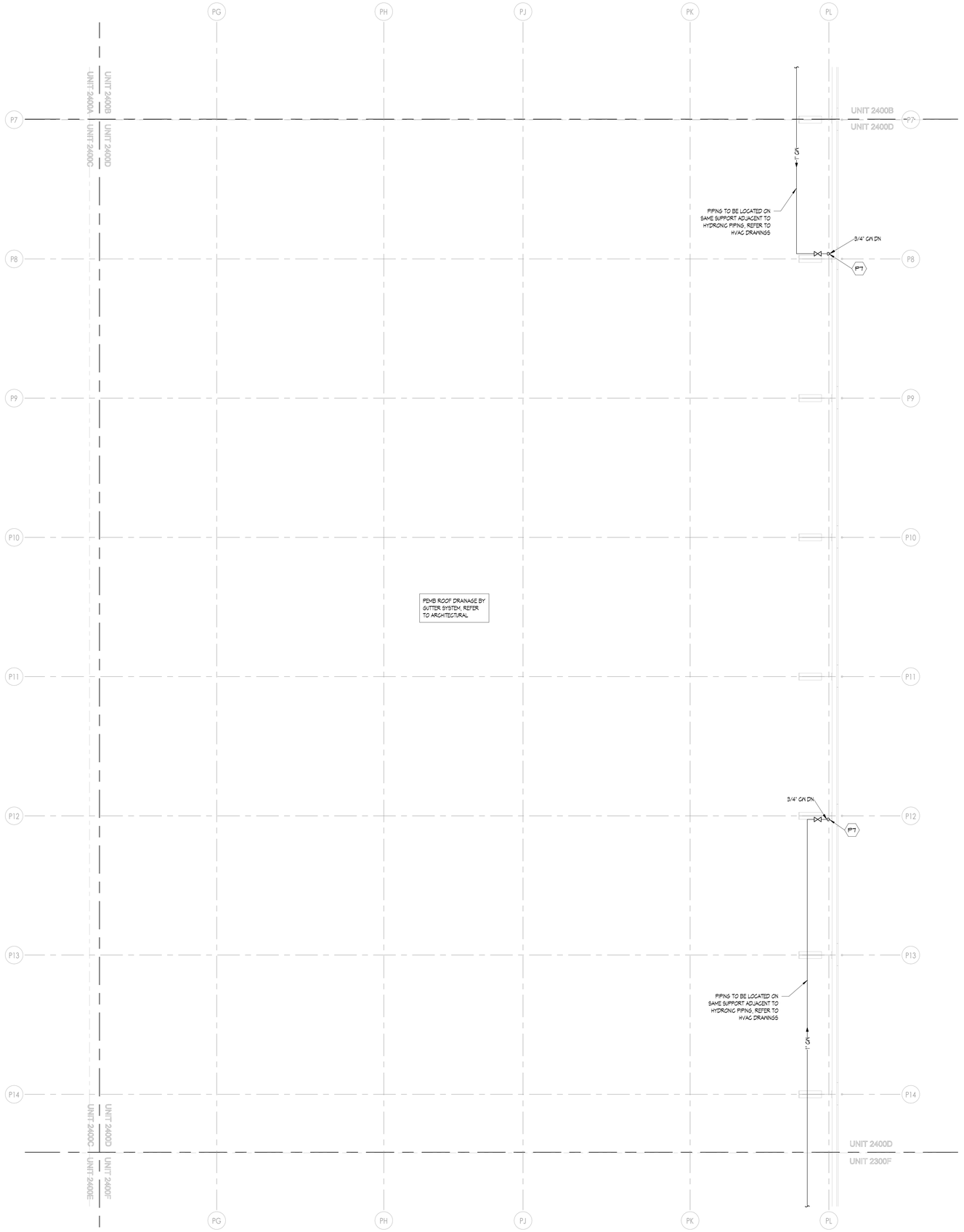

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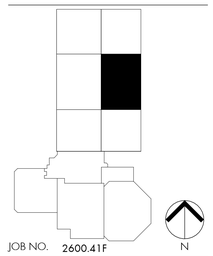

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SHEET NO.
P212.j

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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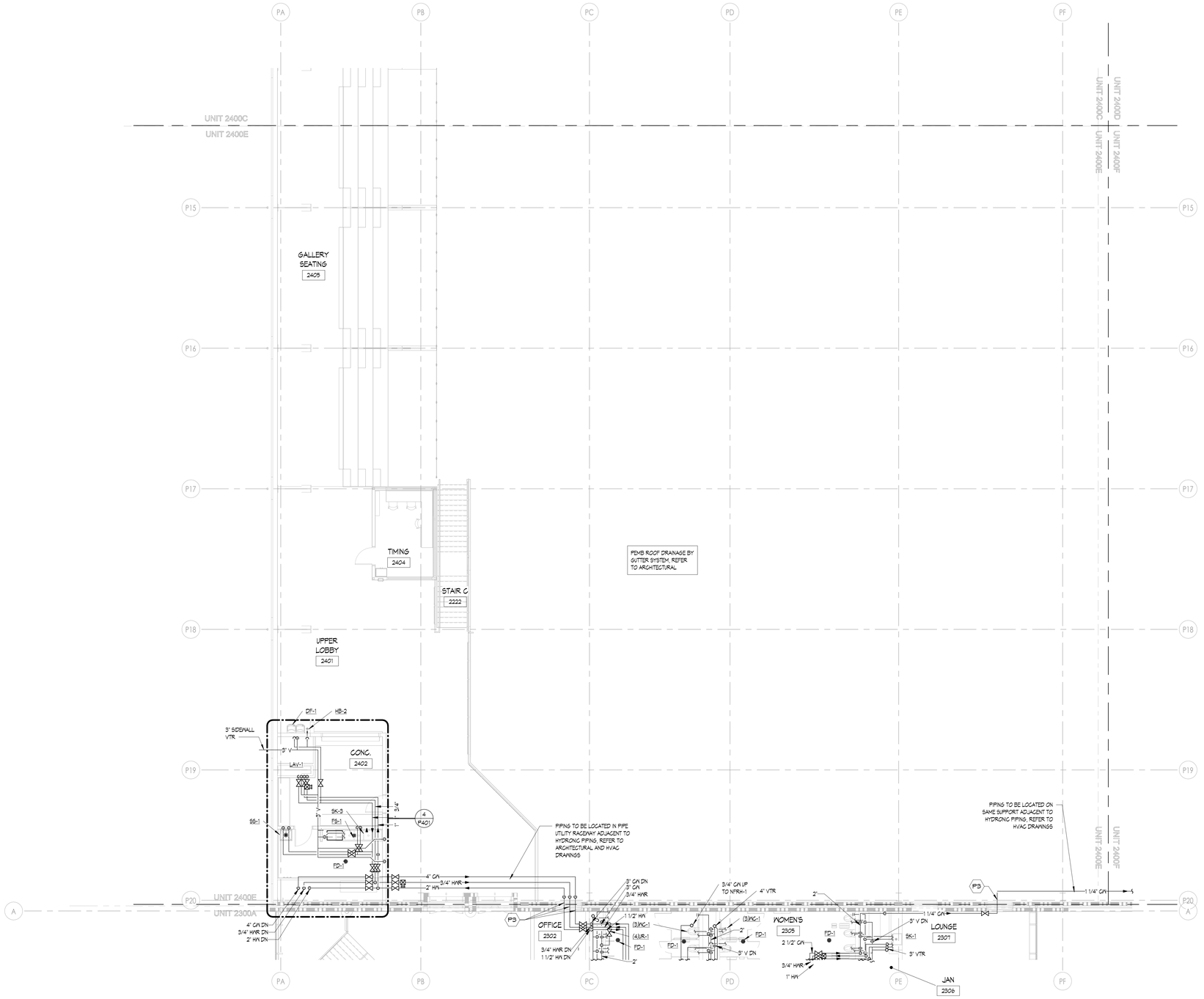

1 SECOND FLOOR PLUMBING PLAN - UNIT 2400E
1/8" = 1'-0"

PLUMBING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
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3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
12. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
13. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WITH REQUIRED SERVICE ACCESS.
14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 10' CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. KITCHEN GREASE WASTE SHALL BE RUN AT A 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND CM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING IN PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

PLUMBING KEYNOTE

P1 PROVIDE ISOLATION VALVE AT BRANCH CONNECTION.
P2 PROVIDE NEW FLOOR DRAIN STRAINER. CONTRACTOR TO VERIFY SIZE AND TYPE IN FIELD PRIOR TO ORDER. COORDINATE WITH NEW FLOOR SURFACE.
P3 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR CW, HW, AND HWR.
P4 RECONNECT HOT WATER, COLD WATER, AND SANITARY PIPING TO EXISTING SERVICE SINK.
P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP, BALANCE TO 1 GPM.
P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCIP-2B). REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON PS0G. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR PLUMBING PLAN - UNIT 2400E

SHEET NO.
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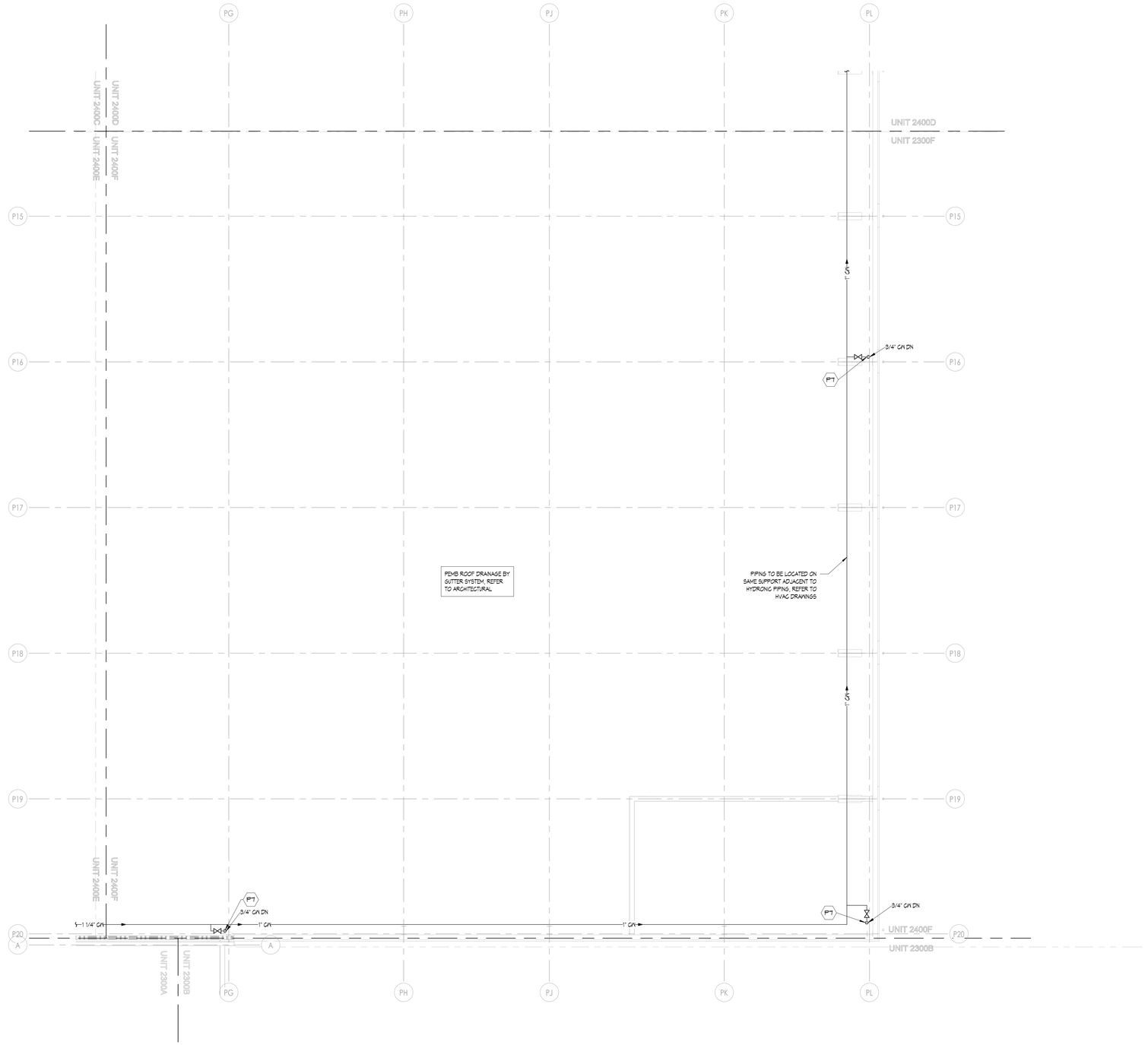

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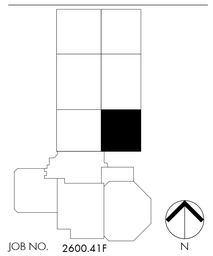

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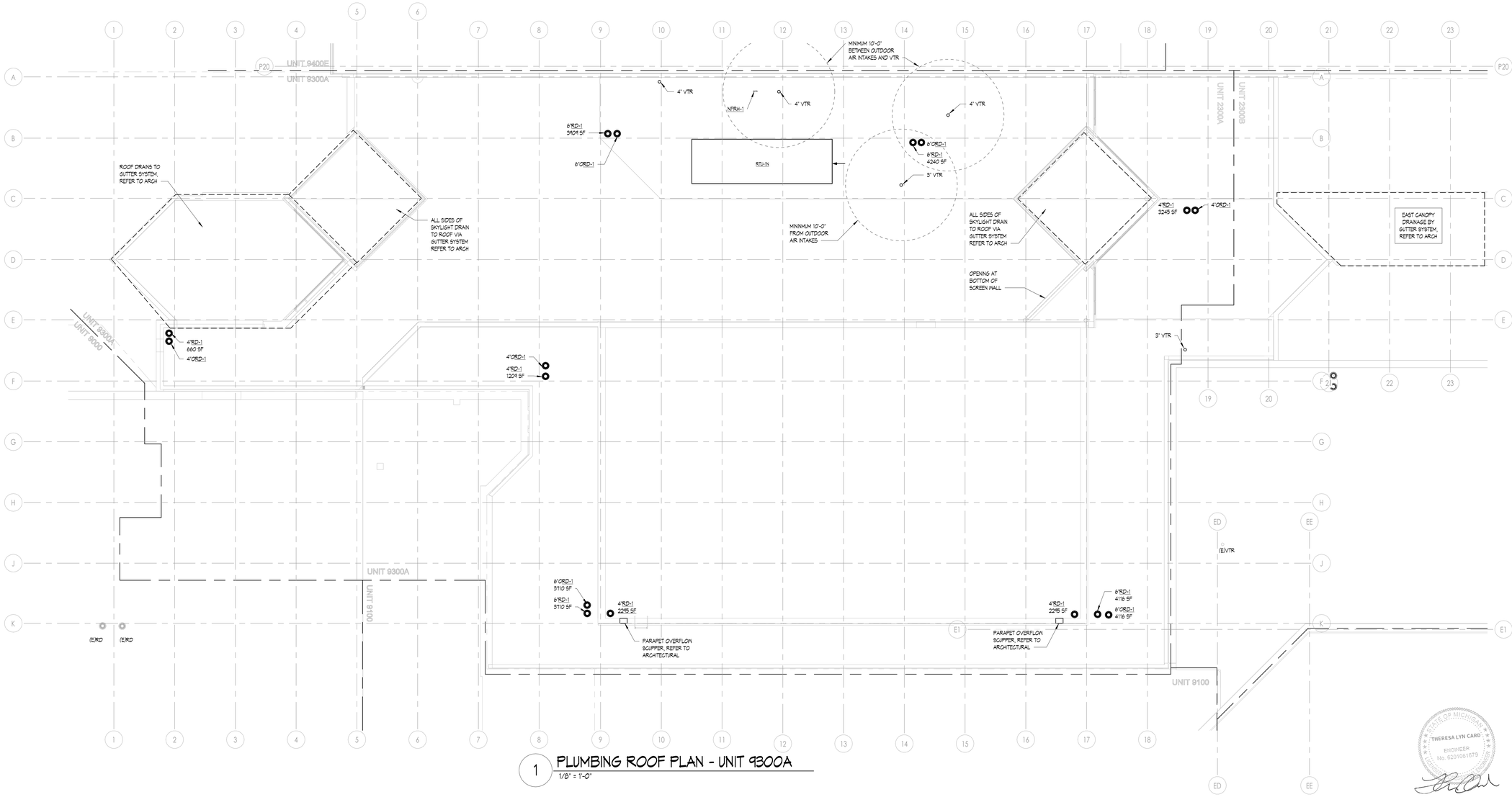

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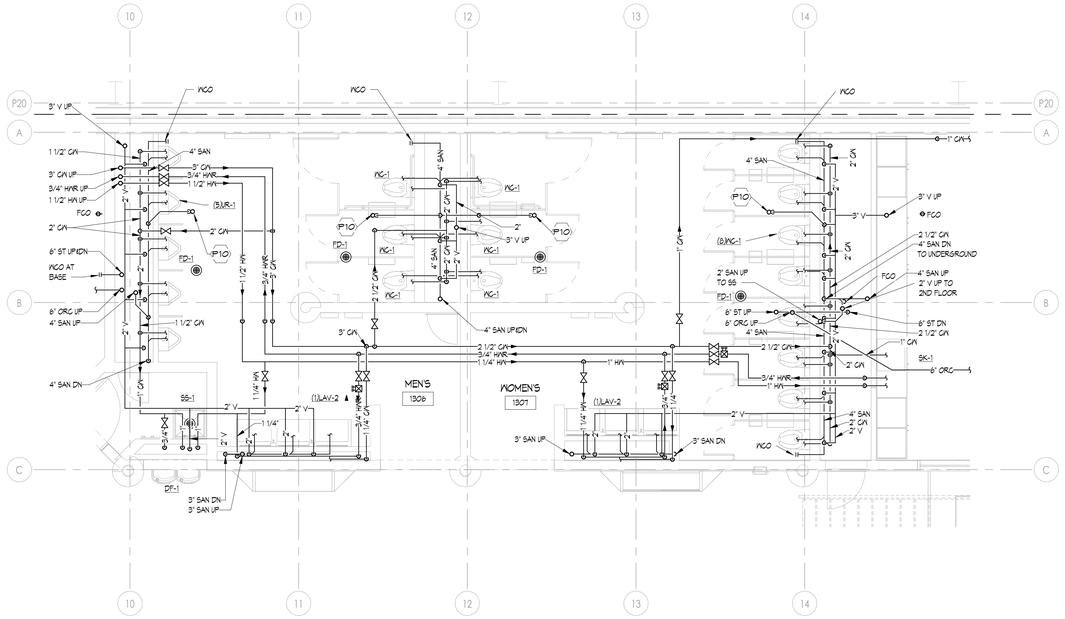
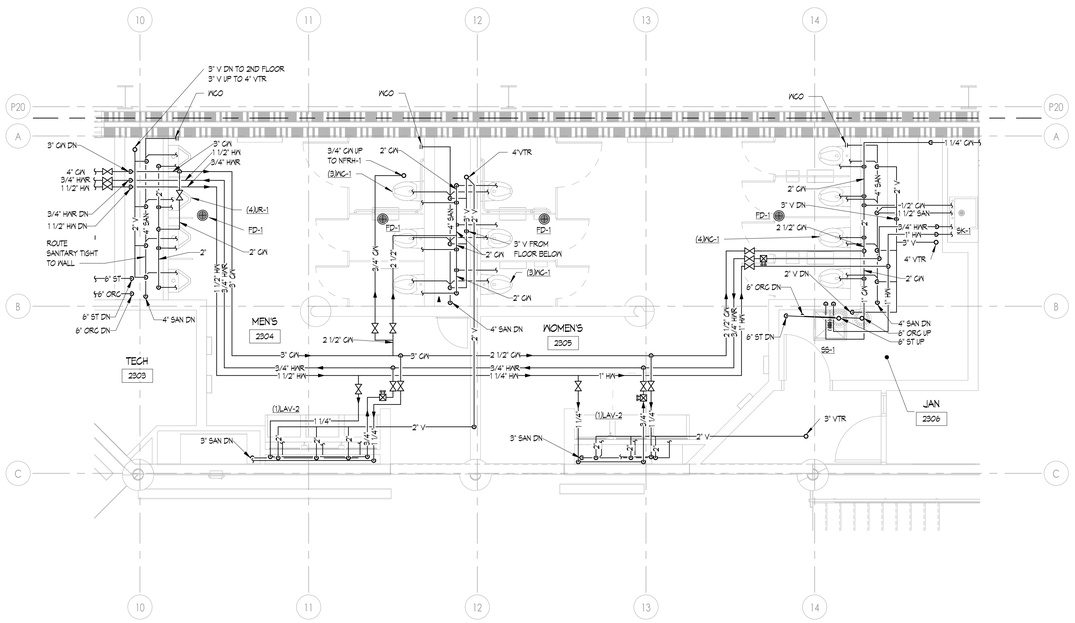


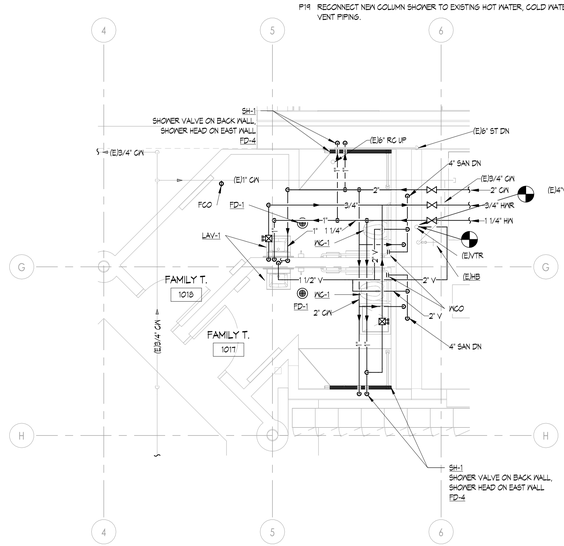
1 ENLARGED PLUMBING PLAN - UNIT 1300A

1/4" = 1'-0"



3 ENLARGED PLUMBING PLAN - UNIT 2300A

1/4" = 1'-0"



2 ENLARGED PLUMBING PLAN - UNIT 1300A - FAMILY RESTROOMS

1/4" = 1'-0"

PLUMBING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
12. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
13. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING AND PIPING WORK WITH EXISTING SITE CONDITIONS, AND EQUIPMENT MANUFACTURER RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY NEW WORK. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WITH REQUIRED SERVICE ACCESS.
14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 15' CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. KITCHEN GREASE WASTE SHALL BE RUN AT A 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

PLUMBING KEYNOTE

P1 PROVIDE ISOLATION VALVE AT BRANCH CONNECTION.
P2 PROVIDE NEW FLOOR DRAIN STRAINER. CONTRACTOR TO VERIFY SIZE AND TYPE IN FIELD PRIOR TO ORDER. COORDINATE WITH NEW FLOOR SURFACE.
P3 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR CW, HW, AND HWR.
P4 RECONNECT HOT WATER, COLD WATER, AND SANITARY PIPING TO EXISTING SERVICE SINK.
P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 1 GPM.
P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCIP-2B). REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON P800. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
P10 4" SAN UP TO FD-1.
P11 4" SAN UP TO FD-2.
P12 3" SAN UP TO FD-3.
P13 2" SAN UP TO FD-4.
P14 2" SAN UP TO FD-5.
P15 2" SAN UP TO SS-1.
P16 6" SAN UP TO FS-2.
P17 4" SAN UP TO FS-1.
P18 PROVIDE ADDITIONAL ISOLATION VALVE ON PIPING IN VERTICAL AT T-O"AFF.
P19 RECONNECT NEW GOLUMN SHOWER TO EXISTING HOT WATER, COLD WATER, SANITARY, AND VENT PIPING.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE

PLUMBING ENLARGED PLANS

SHEET NO.

P400

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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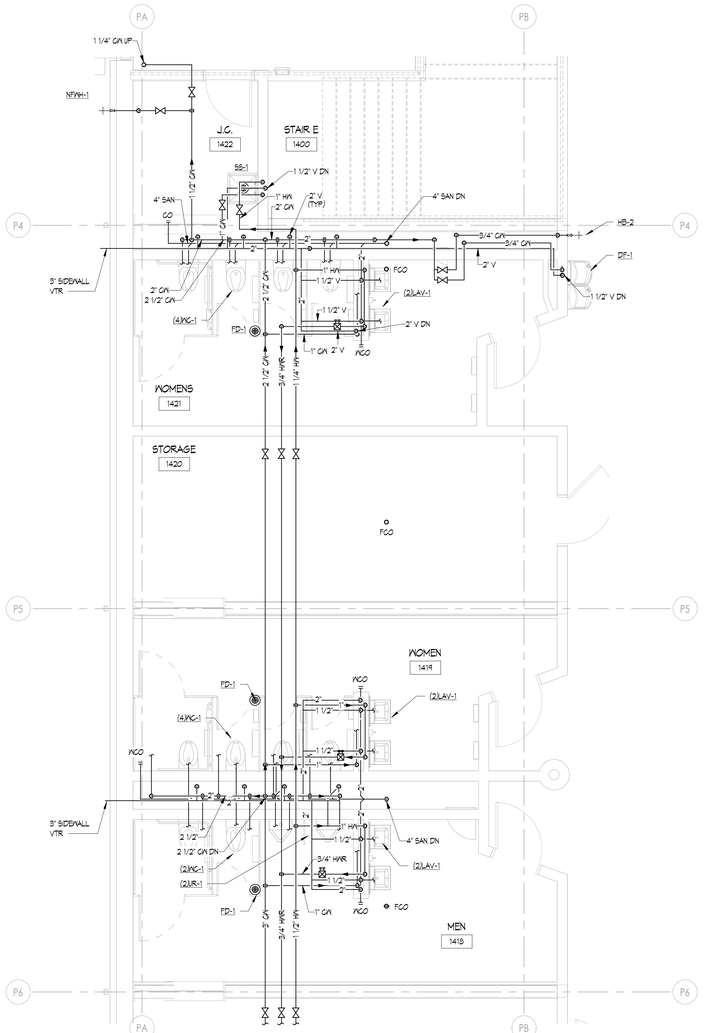
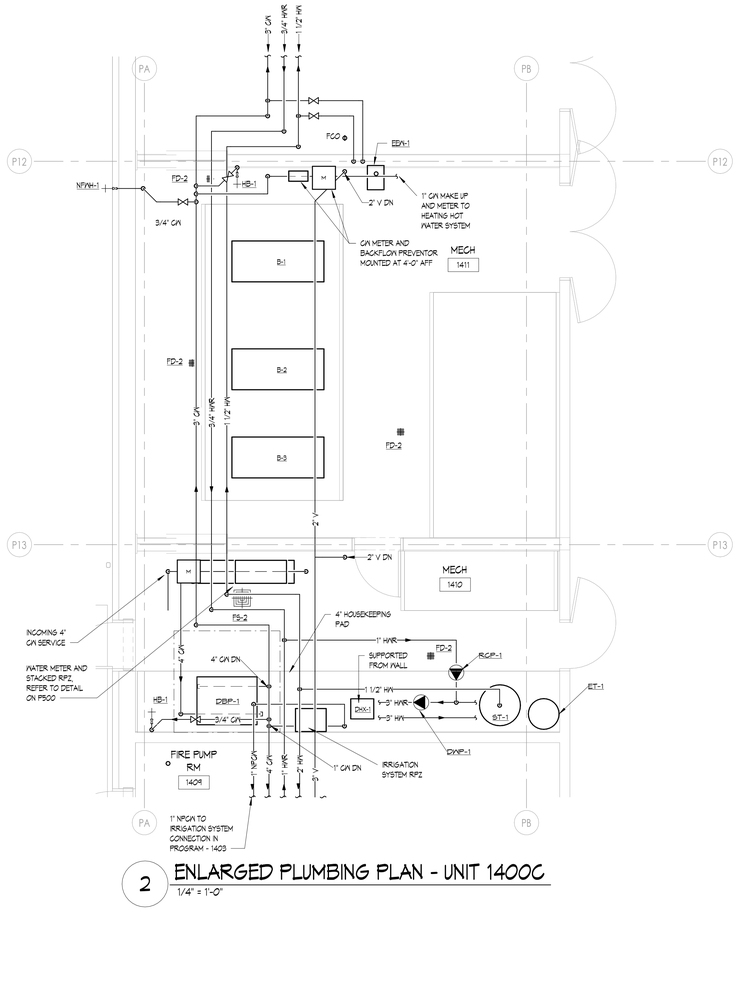


1 ENLARGED PLUMBING PLAN - UNIT 1400A
1/4" = 1'-0"



2 ENLARGED PLUMBING PLAN - UNIT 1400C
1/4" = 1'-0"

PLUMBING GENERAL NOTES

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4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF, AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
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15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 10" CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. KITCHEN GREASE WASTE SHALL BE RUN AT A 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

PLUMBING KEYNOTE

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P2 PROVIDE NEW FLOOR DRAIN STRAINER. CONTRACTOR TO VERIFY SIZE AND TYPE IN FIELD PRIOR TO ORDER. COORDINATE WITH NEW FLOOR SURFACE.
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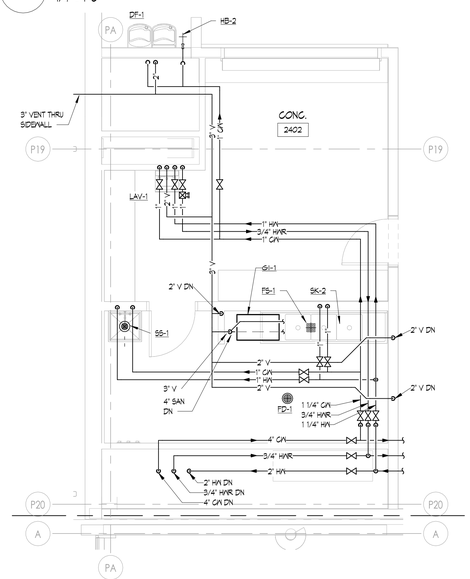
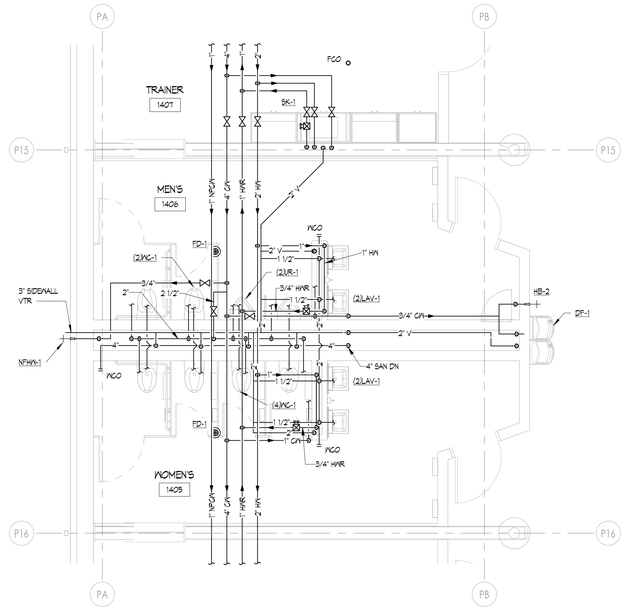
P4 RECONNECT HOT WATER, COLD WATER, AND SANITARY PIPING TO EXISTING SERVICE SINK.
P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 7 GPM.
P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
P9 RECONNECT EXISTING PIPING TO NEW PUMP (RCIP-25). REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON P500. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS, COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
P10 4" SAN UP TO FD-1.
P11 4" SAN UP TO FD-2.
P12 3" SAN UP TO FD-3.
P13 2" SAN UP TO FD-4.
P14 2" SAN UP TO FD-5.
P15 2" SAN UP TO SS-1.
P16 6" SAN UP TO FS-2.
P17 4" SAN UP TO FS-1.
P18 PROVIDE ADDITIONAL ISOLATION VALVE ON PIPING IN VERTICAL AT 7'-0" AFF.
P19 RECONNECT NEW GOLUMN SHOWER TO EXISTING HOT WATER, COLD WATER, SANITARY, AND VENT PIPING.



4 ENLARGED PLUMBING PLAN - UNIT 2400E
1/4" = 1'-0"



3 ENLARGED PLUMBING PLAN - UNIT 1400E
1/4" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
PLUMBING ENLARGED PLANS

SHEET NO.
P401

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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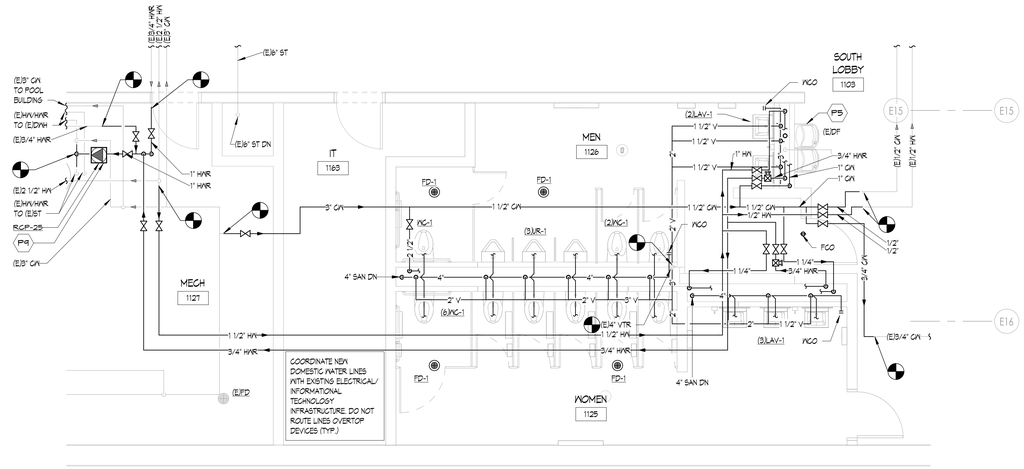
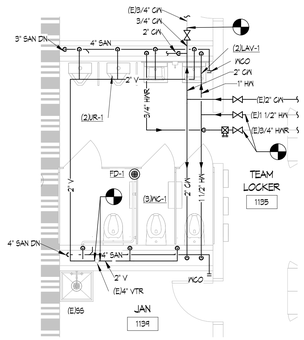


4 ENLARGED PLUMBING PLAN - UNIT 1100 - SOUTH LOBBY RESTROOMS

1/4" = 1'-0"



1 ENLARGED PLUMBING PLAN - UNIT 1100 - TEAM LOCKER - 1135

1/4" = 1'-0"

PLUMBING GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. THEY ARE NOT TO BE CONSIDERED FABRICATION, COORDINATION, OR SHOP DRAWINGS.
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4. SEE THE PLUMBING FIXTURE CONNECTION SCHEDULE FOR MINIMUM CONNECTION SIZES.
5. UNLESS OTHERWISE NOTED, ALL SANITARY AND VENT PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF THE STRUCTURE.
6. UNLESS OTHERWISE NOTED, ALL DOMESTIC WATER PIPING (HOT WATER, COLD WATER AND HOT WATER RETURN) PIPING IS OVERHEAD, TIGHT TO UNDERSIDE OF STRUCTURE. DOMESTIC WATER PIPING SHALL BE RACKED WITH MECHANICAL PIPING WHERE POSSIBLE.
7. CONTRACTOR SHALL NOT LOCATE PIPING ABOVE ELECTRICAL EQUIPMENT OR PANELS. PROVIDE CLEARANCES REQUIRED BY CODE ABOVE AND IN FRONT OF ELECTRICAL EQUIPMENT. PIPING SHALL NOT INTERFERENCE WITH ELECTRICAL EQUIPMENT CLEARANCE.
8. FURNISH AND INSTALL ISOLATION VALVES AT EACH TAKEOFF. AT ALL EQUIPMENT, AND/OR WHERE INDICATED. PROVIDE ALL VALVES NECESSARY TO PERFORM THE BALANCING WORK OF THE SYSTEM.
9. PROVIDE PLUMBING SYSTEMS COMPLETE AND PER APPLICABLE CODES.
10. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL PLUMBING FIXTURES, BOTH STANDARD AND BARRIER FREE. REFER TO PLUMBING FIXTURE SCHEDULE FOR FIXTURE TYPES, BRANCH CONNECTION SIZES AND ADDITIONAL REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE STATE AND LOCAL COUNTY DEPARTMENT OF HEALTH CROSS CONTAMINATION CODE REQUIREMENTS.
12. VERIFY DEPTH, SIZE, LOCATION AND CONDITION OF ALL UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK. NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES OR DISCREPANCIES.
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14. CONTRACTOR SHALL PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL PLUMBING SYSTEMS.
15. PLUMBING VENT PIPING THRU THE ROOF SHALL BE LOCATED 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 10' CLEAR FROM THE INSIDE FACE OF PARAPET.
16. PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR VALVES/CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. PROVIDE CLEANOUTS AT THE BASE OF ALL STACKS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
17. RUN ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. KITCHEN GREASE WASTE SHALL BE RUN AT A 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
18. THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT, WIRING, ETC. SHALL BE USED. ALL MATERIAL IN THE CEILING SPACE IS TO BE PLENUM RATED.

PLUMBING KEYNOTE

- P1 PROVIDE ISOLATION VALVE AT BRANCH CONNECTION.
- P2 PROVIDE NEW FLOOR DRAIN STRAINER. CONTRACTOR TO VERIFY SIZE AND TYPE IN FIELD PRIOR TO ORDER. COORDINATE WITH NEW FLOOR SURFACE.
- P3 PROVIDE FLEXIBLE PIPE CONNECTORS ON EACH SIDE OF SEPARATION WALL. TYPICAL FOR GW, HW, AND HWR.
- P4 RECONNECT HOT WATER, COLD WATER, AND SANITARY PIPING TO EXISTING SERVICE SINK.
- P5 RECONNECT COLD WATER, VENT, AND SANITARY PIPING TO EXISTING WATER COOLER.
- P6 PROVIDE NEW BALANCE VALVE ON OUTLET OF EXISTING DOMESTIC WATER RECIRCULATION PUMP; BALANCE TO 1 GPM.
- P7 PROVIDE ALL EXPOSED PIPING DOWN WALL WITH INSULATION AND PVC JACKETING.
- P8 RECONNECT COLD WATER, SANITARY AND VENT TO RELOCATED DRINKING FOUNTAIN.
- P9 RECONNECT EXISTING PIPING TO NEW PUMP (RGP-25); REFER TO EXISTING DOMESTIC RECIRCULATION PUMP DETAIL ON P500. INSTALL NEW TEMPERATURE SENSORS FOR NEW PUMP CONTROLS; COORDINATE WITH TEMPERATURE CONTROLS CONTRACTOR.
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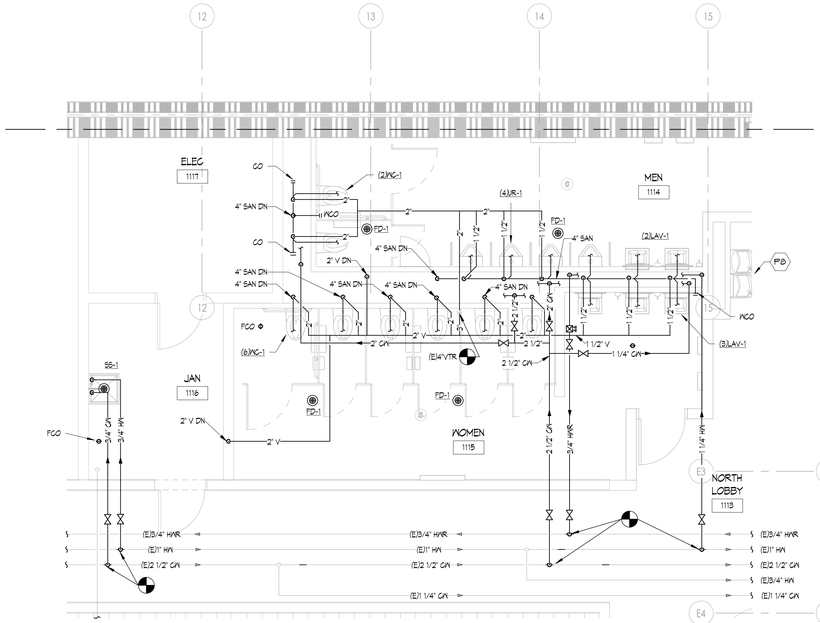
- P15 2" SAN UP TO SS-1.
- P16 6" SAN UP TO FS-2.
- P17 4" SAN UP TO FS-1.
- P18 PROVIDE ADDITIONAL ISOLATION VALVE ON PIPING IN VERTICAL AT 7'-0"AFF.
- P19 REGONNECT NEW GOLUMN SHOWER TO EXISTING HOT WATER, COLD WATER, SANITARY, AND VENT PIPING.



5 ENLARGED PLUMBING PLAN - UNIT 1100 - NORTH LOBBY RESTROOMS

1/4" = 1'-0"

2 ENLARGED PLUMBING PLAN - UNIT 1100 - TEAM LOCKER - 1142

1/4" = 1'-0"

3 ENLARGED PLUMBING PLAN - UNIT 1100 - PUBLIC LOCKER ROOM

1/4" = 1'-0"

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Howell Community Center

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1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

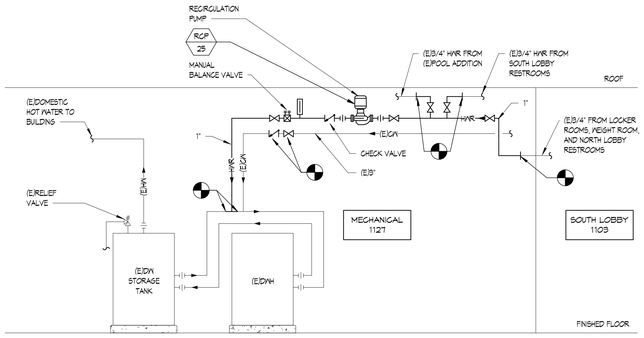
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

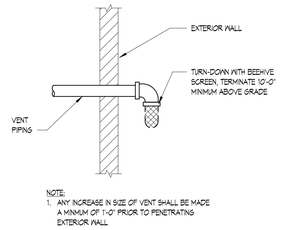
SHEET TITLE
PLUMBING ENLARGED PLANS

SHEET NO.
P402

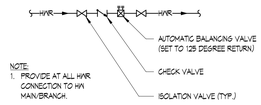
STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026



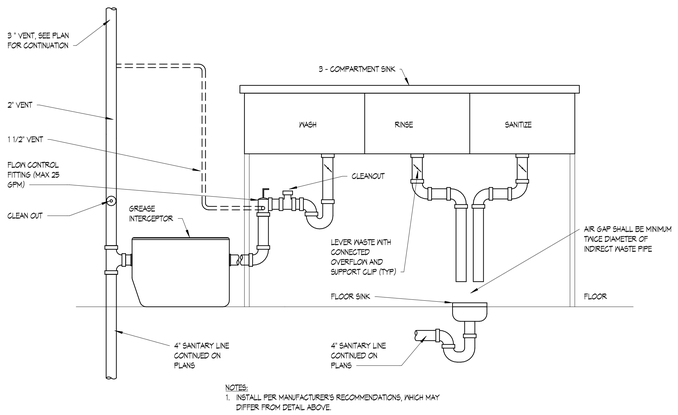
EXISTING DOMESTIC RECIRCULATION PUMP PIPING DIAGRAM
NOT TO SCALE



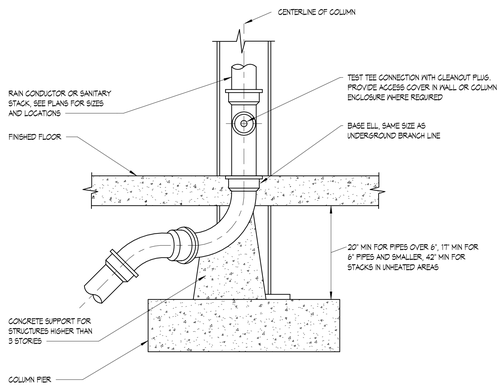
SIDEWALL VENT TERMINATION DETAIL
NOT TO SCALE



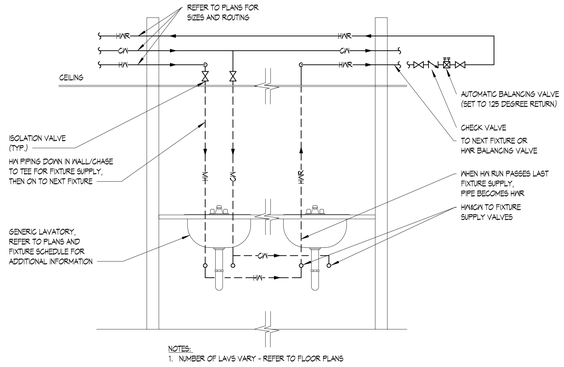
BALANCING VALVE ASSEMBLY DETAIL
NOT TO SCALE



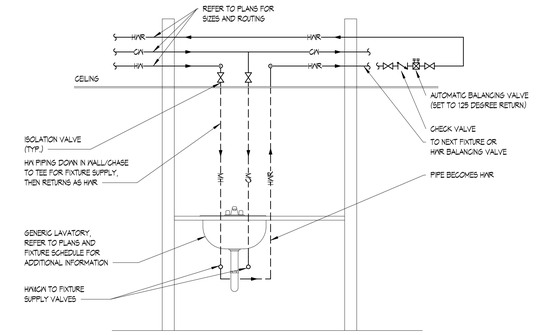
THREE COMPARTMENT SINK DETAIL
NOT TO SCALE



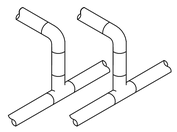
SANITARY AND STORM STACK BASE CONNECTION DETAIL
NOT TO SCALE



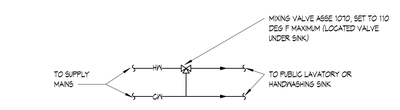
TYPICAL LAVATORY HW/HWR PIPING DIAGRAM - MULTIPLE
NOT TO SCALE



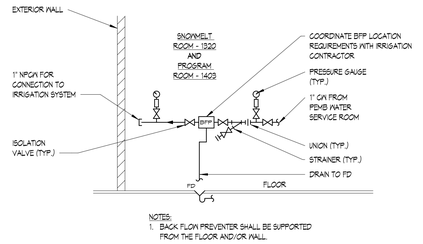
TYPICAL LAVATORY HW/HWR PIPING DIAGRAM - SINGLE
NOT TO SCALE



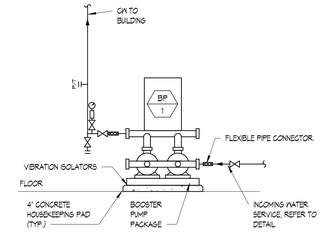
TYPICAL PLUMBING PIPING BRANCH CONNECTION PIPING DETAIL
NOT TO SCALE



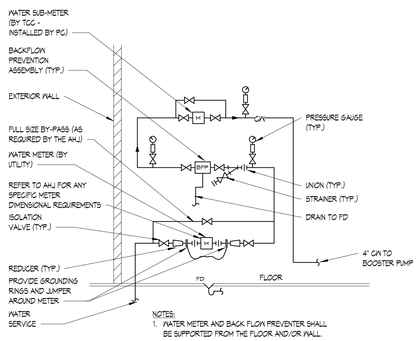
POINT OF USE THERMOSTATIC MIXING VALVE DETAIL
NOT TO SCALE



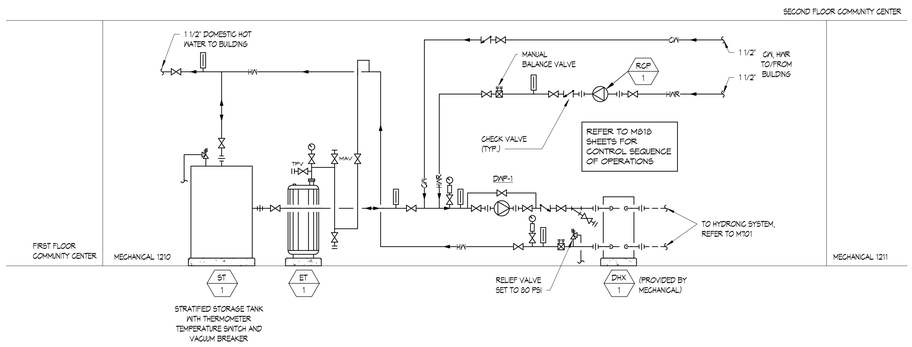
IRRIGATION SYSTEM RPZ DETAIL
NOT TO SCALE



BOOSTER PUMP PIPING DIAGRAM
NOT TO SCALE



WATER METER WITH STACKED RPZ DETAIL
NOT TO SCALE



DOMESTIC STORAGE TANK PIPING DIAGRAM
NOT TO SCALE

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KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
PLUMBING DETAILS

SHEET NO.
P500

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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PLUMBING FIXTURE/SPECIALTIES SCHEDULE

UNIT IDENTIFICATION TAG	UNIT IDENTIFICATION TAG #	BARRIER FREE	ITEM	PIPE CONNECTION SIZE WASTE	VENT	CW	HW	MANUFACTURER	MODEL NO.	ACCESSORIES
BFP	1	-	BACKFLOW PREVENTER - SERVICE ENTRANCE	6"	0"	4"	0"	BEECO/MIFAB	FRP	PROVIDE WITH 6" DRAIN FROM RELIEF VALVE DISCHARGE TO FLOOR SINK. MAINTAIN AIR GAP. PLACE RELIEF VALVE DISCHARGE ACCORDING TO MANUFACTURER INSTRUCTIONS. BFP SHALL HAVE A PUBLISHED RELIEF VALVE MAX DISCHARGE RATED AT 200 GPM AT 40 PSI.
DF	1	Y	DRINKING FOUNTAIN - CUSTOM BI-LEVEL WITH (2) BOTTLE FILLER	1 1/2"	1 1/2"	1/2"	0"	ELKAY	LZSTLDDW9CX WITH LZWER AND LZWERK	CUSTOM (2) TOWER UNIT WITH HI-LO AND (2) BOTTLE FILLERS; 120V/1PH, 5 FLA, 310 WATTS, SHUT OFF VALVE AND P-TRAP, NON-REFRIGERATED, FILTERED, PROVIDE WITH NSF 42 & 53 & PFOA/PFOS FILTER AND REPLACEMENT FILTER 3 PACK.
DN	1	-	DOWNSPOUT NOZZLE	0"	0"	0"	0"	ZURN	ZF199	MEDIUM BRONZE FINISH WITH HINGED PERFORATED COVER.
EEN	1	-	EMERGENCY EYE/FACE WASH - PEDESTAL	0"	0"	1/2"	1/2"	BRADLEY	S19214PDCFW	PLASTIC BOWL WITH DUST COVER, FREESTANDING, IN-LINE STRAINER, PUSH HANDLE ACTIVATOR, UNIVERSAL EMERGENCY SIGN. PROVIDE WITH TEST TAG AND ASSE 1071 MIXING VALVE.
FD	1	-	FLOOR DRAIN - GENERAL	4"	0"	0"	0"	ZURN	EZ1	6"X6" SQUARE TOP WITH ADJUSTABLE STAINLESS STEEL STRAINER.
FD	2	-	FLOOR DRAIN - MECHANICAL ROOM	4"	0"	0"	0"	ZURN	Z541	12" ROUND TOP WITH SEDIMENT BUCKET AND CAST IRON ADA GRATE.
FD	3	-	FLOOR DRAIN - MECHANICAL ROOM	3"	0"	0"	0"	ZURN	Z541	12" ROUND TOP WITH SEDIMENT BUCKET AND CAST IRON ADA GRATE.
FD	4	Y	FLOOR DRAIN - LINEAR SHOWER DRAIN	2"	0"	0"	0"	ZURN	Z5880	48" LONG, TYPE 304 FABRICATED STAINLESS STEEL LINEAR SHOWER DRAIN. NO-HUB CENTER OUTLET.
FD	5	Y	FLOOR DRAIN - SQUARE SHOWER DRAIN	2"	0"	0"	0"	ZURN	EZ1	5"X5" SQUARE SHOWER DRAIN WITH 2" OUTLET. STAINLESS STEEL STRAINER.
FS	1	-	4" FLOOR SINK	4"	0"	0"	0"	ZURN	Z1900	12" SQUARE BODY, 6" DEEP, WITH PORCELAIN ENAMEL, ACID RESISTANT COATED CAST IRON BODY AND GRATE WITH ANTI-SPLASH DOME STRAINER AND 1/2 GRATE. IN FOOD SERVICE APPLICATIONS - COORDINATE RIM ELEVATION AFF WITH AHJ.
FS	2	-	6" FLOOR SINK	6"	0"	0"	0"	ZURN	1920	18" SQUARE BODY, 7" DEEP, ACID RESISTANT COATED CAST IRON BODY AND NO GRATE WITH ANTI-SPLASH DOME STRAINER.
HB	1	-	HOSE BIBB - INTERIOR MECHANICAL AREAS	0"	0"	3/4"	0"	PRIER	P156	EXPOSED PIPE ANGLE SILL FAUCET WITH 3/4" OUTLET AND DUAL 3/4" INLET CONNECTIONS. PROVIDE WITH PLUG AND WALL MOUNTING FLANGE. PROVIDE WITH VACUUM BREAKER ASSE 1011.
HB	2	-	HOSE BIBB - INTERIOR FEMB	0"	0"	3/4"	0"	ZURN	Z1333XL	EXPOSED, LEAD-FREE, ANTI-SIPHON, MODERATE CLIMATE WALL HYDRANT
LAV	1	Y	LAVATORY - WALL MOUNTED	1 1/2"	1 1/2"	1/2"	1/2"	AMERICAN STANDARD /V/ ZURN	LUCERNE 0356.015 /V/ Z5615	18.5"X17" MAX DIMENSION, VITREOUS CHINA WALL HUNG WITH FRONT OVERFLOW; FAUCET SHALL BE 4" CENTERSET, HARD WIRED, SENSOR WITH 0.5 GPM LAMINAR, VANDAL RESISTANT MAX FLOW RATE BELOW DECK TMV-1.
LAV	2	Y	LAVATORY - MULTI-STATION WALL MOUNTED	1 1/2"	1 1/2"	1/2"	1/2"	ZURN	Z5004.03 /V/ Z5615	THREE-STATION BASIN LAVATORY SYSTEM. 0.5 GPM LAMINAR, VANDAL RESISTANT SENSOR FAUCET - HARDWIRED. EACH STATION HAS ITS OWN ROUGH IN CONNECTIONS. PROVIDE WITH INDIVIDUAL MIXING VALVES UNDER COUNTER FOR EACH STATION. PROVIDE WITH LAVATORY CARRIER AND HARDWIRED POWER CONVERTER TO POWER UP TO 8 FAUCETS. FINISH FOR UNIT SHALL BE "ENOX.02"
NFRH	1	-	NON-FREEZE ROOF HYDRANT	0"	0"	1"	0"	PRIER	P-RH4	1" HOSE CONNECTION; PROVIDE WITH VACUUM BREAKER ASSE 1081. HYDRANT MUST BE MULT-PISTON DESIGN AND COMPLETELY EVACUATE DRAIN CANISTER. UNIT SHALL NOT REQUIRE WINTERIZATION OR A DRAIN LINE. COORDINATE INSTALLATION WITH ROOFING CONTRACTOR PRIOR TO COMPLETION OF ROOF WORK.
NFWH	1	-	NON-FREEZE WALL HYDRANT	0"	0"	3/4"	0"	ZURN	Z1320XL	SELF DRAINING NON-FREEZE HYDRANT WITH INTEGRAL BACKFLOW PREVENTOR, OPERATING KEY AND STAINLESS STEEL LOCKING BOX WITH "WATER" ON COVER.
ORS	1	-	4" OVERFLOW ROOF SUMP	4"	0"	0"	0"	ZURN	Z100F	2" OVERFLOW DAM, UNDERDECK CLAMP AND VANDAL PROOF SECURE TOP.
ORS	2	-	6" OVERFLOW ROOF SUMP	6"	0"	0"	0"	ZURN	Z100F	2" OVERFLOW DAM, UNDERDECK CLAMP AND VANDAL PROOF SECURE TOP.
RS	1	-	4" ROOF SUMP	4"	0"	0"	0"	ZURN	Z100F	UNDERDECK CLAMP AND VANDAL PROOF SECURE TOP.
RS	2	-	6" ROOF SUMP	6"	0"	0"	0"	ZURN	Z100F	UNDERDECK CLAMP AND VANDAL PROOF SECURE TOP.
SH	1	Y	SHOWER - BARRIER FREE SHOWER WALL	2"	1 1/2"	1/2"	1/2"	BRADLEY	WS-1X-HN	WALL MOUNTED 8'-0" SHOWER HEAD AND HAND SHOWER WITH 24" HOSE WITH SLIDE BAR. 1.5 GPM. PROVIDE THERMOSTATIC MIXING VALVE, DIVERTER VALVE, AND AXIS SHOWERHEAD WITH LOCKABLE BALL JOINT. PROVIDE STAINLESS STEEL PANEL WITH SLOPE TOP, STOPS IN SUPPLIES FOR VALVES, STANDARD SOAP DISH, AND VANDAL RESISTANT SCREWS.
SH	2	-	SHOWER - COLUMN STYLE					BRADLEY	COL-SC-B-6-EF-S15-LD-WS-SH	5 PERSON COLUMN SHOWER, CENTRAL VENT, SUPPLIES FROM ABAOVE, PRESSURE-BALANCE VALVE, 1.5 GPM SHOWERHEAD, WITH COLUMN DRAIN SLOTS, SHROUD
SH	3	-	SHOWER - COLUMN STYLE W/DOME GRATE					BRADLEY	COL-SC-B-6-EF-S15-DG-WS-SH	5 PERSON COLUMN SHOWER, CENTRAL VENT, SUPPLIES FROM ABAOVE, PRESSURE-BALANCE VALVE, 1.5 GPM SHOWERHEAD, WITH COLUMN DRAIN SLOTS, SHROUD, DOME GRATE (BRADLEY 111-038 AND 160-038 SCREWS)
SH	4	-	SHOWER - COLUMN STYLE W/ DOME GRATE AND PARTITIONS					BRADLEY	COL-SC-B-6-EF-S15-DG-WS-SH-MS	5 PERSON COLUMN SHOWER, CENTRAL VENT, SUPPLIES FROM ABAOVE, PRESSURE-BALANCE VALVE, 1.5 GPM SHOWERHEAD, WITH COLUMN DRAIN SLOTS, SHROUD, DOME GRATE (BRADLEY 111-038 AND 160-038 SCREWS) AND PARTITION
SK	1	Y	SINK - STAINLESS STEEL DROP IN	1 1/2"	1 1/2"	1/2"	1/2"	ELKAY	LRAD1722060 /V/ LK01GLN03ST4	17" X 20" X 6" SINGLE BOWL DROP IN STAINLESS STEEL SINK WITH GRID DRAIN. FAUCET SHALL BE 8" GOOSENECK WITH WRIST BLADE HANDLES, 1.5 GPM LAMINAR FLOW OUTLET. PROVIDE WITH TMV-1 FOR ADA UNITS. SINK SHALL BE PROVIDED WITH POINT OF USE FILTER SYSTEM UNDER COUNTER WHERE NOTED IN "FILTERED PLUMBING FIXTURES SCHEDULE" - SEE THIS SHEET.
SK	2	-	THREE COMPARTMENT SINK	1 1/2"	1 1/2"	3/4"	3/4"	AERO	SFS-2116-16LR /V/ S-16 SERIES FAUCET	THREE COMPARTMENT SINK, STAINLESS STEEL, EACH BOWL 21"W X 16"L X 14" DEEP. 18" LEFT AND RIGHT DRAINBOARDS. EACH BOWL TO HAVE 1 1/2" DRAIN OUTLET. FIRST BASIN (WASH) SHALL BE DRAINED THROUGH GREASE INTERCEPTOR. PROVIDE WITH 18" SWING SPOUT, 8" ON CENTER WITH WRISTBLADE HANDLES.
SS	1	-	SERVICE SINK	2"	1 1/2"	1 1/4"	0"	FIAT /V/ SPEAKMAN	MSBD2424 /V/ SEF-9000-TW	24"X24"X12" MOLDED STONE MOP SERVICE BASIN WITH VINYL BUMPER GUARD AND SS WALL GUARDS. HOSE & HOSE BRACKET, MOP HANGER. FAUCET SHALL BE WALL MOUNTED WITH VACUUM BREAKER, INTEGRAL STOPS, PAIL HOOK AND INTEGRATED EYEWASH/DRENCH HOSE # ASSE-1071 MIXING VALVE, ANSI Z358.1 AND ASSE 1001, 4 GPM.
UR	1	Y	URINAL - WALL MOUNTED - CONCEALED FLUSHVALVE	2"	1 1/2"	1"	0"	AMERICAN STANDARD /V/ ZURN	6515.001 /V/ZEMS6198AV-EVS AND P6000-HW8 AND ZEMS6198-BX1T-U	ADA HEIGHT WHERE NOTED ON ARCH PLANS, VITREOUS CHINA, WALL MOUNTED, BACK SPUD; HARD-WIRED, CONCEALED SENSOR FLUSH VALVE WITH FULL ACCESS PANEL, 0.5 GPF
WC	1	Y	WATER CLOSET -WALL MOUNTED - CONCEALED FLUSHVALVE	4"	2"	1 1/4"	0"	AMERICAN STANDARD /V/ ZURN	3353.101 /V/ ZEMS6152AV AND P6000-HW8 AND ZEMS6198-BX1T-G	ADA HEIGHT WHERE NOTED ON ARCH PLANS, VITREOUS WALL MOUNTED, 750LB CARRIER, ELONGATED BOWL, BACK SPUD, ANTIMICROBIAL FINISH. PROVIDE WITH OPEN FRONT SEAT; HARD-WIRED, SENSOR FLUSH VALVE WITH FULL ACCESS PANEL, 1.6 GPF; WITH 750 LB MIN RATED BARIATRIC CARRIER

NOTES:
1. PROVIDE ALL SLEEVES, TEMPLATES, HARDWARE, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE AND OPERABLE INSTALLATION. VERIFY ALL COLORS AND FINISHES WITH ARCHITECT AND REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT OF ALL FIXTURES.
2. PROVIDE CARRIERS FOR ALL APPLICABLE FIXTURES PER MANUFACTURER'S RECOMMENDATIONS. CONCEALED ARM CARRIERS REQUIRED FOR SINGLE STATION LAVATORIES. PROVIDE ALL CARRIERS WITH FOOT SUPPORTS. ALL WATER CLOSET CARRIERS SHALL BE 750 LB BARIATRIC RATED.
3. WHERE REQUIRED AND/OR DESIGNATED, FIXTURES SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S BARRIER FREE DESIGN REQUIREMENTS & ICC/ANSI A117.1. ALL EXPOSED LAVATORY AND SINK TRIM ON WHEELCHAIR ACCESSIBLE FIXTURES SHALL BE COVERED WITH A SEAMLESS ANTIMICROBIAL VINYL INSULATING OUTER SHELL.
4. PROVIDE ASSE 1072 BARRIER-TYPE INLINE TRAP SEAL DEVICES FOR EACH FLOOR DRAIN AND FLOOR SINK.
5. PROVIDE COMMERCIAL GRADE SUPPLIES TO SINKS AND LAVATORIES WITH CHROME PLATED BRASS LOOSE KEY ANGLE STOPS WITH BRASS STEMS (NO PLASTIC STEMS), WHERE APPLICABLE PROVIDE ESCUTCHEON PLATE.
6. PROVIDE POINT OF USE THERMOSTATIC MIXING VALVE TMV-1, ASSE 1070, FOR ALL ADA SINKS, LAVATORIES AND HANDWASHING SINKS.
7. ONLY THE SERVICE ENTRANCE BACKFLOW PREVENTER (BFP-1) IS SCHEDULED ABOVE. ALL OTHER BACKFLOW PREVENTERS ARE SHOWN ON PLANS, CALLED OUT IN NOTES OR ARE IN SPECIFICATIONS. NOT ALL BACKFLOW PREVENTERS ARE SCHEDULED. RELIEF VALVE MAX DISCHARGE FLOW RATE DATA SHALL BE PROVIDED WITH SUBMITTALS.
8. ROOF DRAINS AND OVERFLOW DRAINS SHALL BE RATED FOR FLOW RATE ON PLANS WITH 2" WATER PONDING. FLOW RATE DATA SHALL BE PROVIDED WITH SUBMITTALS.

BOOSTER PUMP SCHEDULE

UNIT IDENTIFICATION TAG	UNIT IDENTIFICATION TAG #	SYSTEM SERVED	TYPE	QUANTITY	FLOW RATE EACH	PUMP INLET PRESSURE	PUMP OUTLET PRESSURE	MOTOR EACH PUMP SPEED	MOTOR EACH HP	ELECTRICAL CONTROL TYPE	ELECTRICAL VOLTAGE	ELECTRICAL PHASE	STARTER SCCR	STARTER FURNISHED BY	STARTER INSTALLED BY	DISCONNECT FURNISHED BY	DISCONNECT INSTALLED BY	MAXIMUM DIMENSIONS/WEIGHT LENGTH	WIDTH	HEIGHT	UNIT WEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
DBP	1	DOMESTIC WATER	END SUCTION	2	110 GPM	22.0 psi	55.4 psi	3450 RPM	5.0 hp	VFD	460 V	3	100000 A	MANU.	MANU.	MANU.	MANU.	47"	37 1/2"	80"	505 lb	QUANTUMFLO	PRODIGY QES_321-5-5.93	

GENERAL NOTES:
1. PUMPS SHALL BE NON-OVERLOADING.
2. PUMP FLOW RATE IS PER PUMP; PUMPS ARE INTENDED TO BE DUPLEX WITH (1) PUMP REDUNDANT.
3. RPM AT DUTY POINT SHALL NOT BE LESS THAN 15% OF MAX RPM.
4. PUMPS SHALL BE INSTALLED IN ORIENTATION RECOMMENDED BY MANUFACTURER.
5. PROVIDE VARIABLE SPEED PUMP CONTROLLER.
6. PROVIDE BACNET INTERFACE.
7. PROVIDE 4" HOUSEKEEPING PAD.
8. PROVIDE VIBRATION ISOLATORS BETWEEN PUMP AND 4" HOUSEKEEPING PAD.
9. PROVIDE 316SS NSF61 FLEX CONNECTOR AT INLET AND OUTLET. PROVIDE FLANGED CONNECTION ON SUCTION SIDE AND GROOVED CONNECTION ON DISCHARGE SIDE.
10. PROVIDE GENERAL ALARM DRY CONTRACT RELAY, PIPE BREAK DRY CONTACT RELAY, PUMP RUN DRY CONTACT RELAY, PERMISSIVE RUN INPUT, AND LOAD SHEDDING INPUT.
11. BASIS OF DESIGN DOES NOT REQUIRE HYDROPNEUMATIC TANK; SHOULD ALTERNATE MFR BE USED AND THEY RECOMMEND A HYDROPNEUMATIC TANK - ONE SHALL BE SIZED AND PROVIDE BY CONTRACTOR AS PART OF BOOSTER PUMP PACKAGE.

THERMOSTATIC MIXING VALVE SCHEDULE

UNIT IDENTIFICATION TAG	UNIT IDENTIFICATION TAG #	SYSTEMS SERVED	MIN FLOW	MAX FLOW	PRESS. DROP AT MAX FLOW	REQ. FLOW	MANUFACTURER	MODEL	KEYED NOTES
TMV	1	POINT OF USE	0.5 GPM	2.0 GPM	5 psig	2.0 GPM	ACORN	ST10	1

GENERAL NOTES:
1. MIXING VALVE SHALL MEET ASSE 1070.
2. PIPE PER MANUFACTURER INSTRUCTIONS.
3. LEAD FREE DESIGN WITH CHECK VALVES ON SUPPLY INLETS.
4. ADJUSTABLE SETPOINT.

KEYED NOTES:
1. SET TO 105°F.

DOMESTIC CIRCULATION PUMP SCHEDULE

UNIT IDENTIFICATION TAG	UNIT IDENTIFICATION TAG #	SYSTEM SERVED	TYPE	FLOW RATE	PUMP PRESSURE DROP	MOTOR SPEED	MIN % EFFICIENCY	ELECTRICAL BHP	ELECTRICAL HP	ELECTRICAL VOLTAGE	ELECTRICAL PHASE	STARTER TYPE	STARTER FUNISHED BY	STARTER INSTALLED BY	DISCONNECT FURNISHED BY	DISCONNECT INSTALLED BY	MANUFACTURER	MODEL NO.	KEYED NOTES
DWP	1	DT-1	INLINE	35 GPM	25 Feet	2252 RPM	48.3	0.5 hp	1.00 hp	208 V	1	ECM	MFR	MFR	EC	EC	BELL & GOSSETT	ECOCIRC XL 65-130	
RCP	1	DOM RECIRC	INLINE	1 GPM	18 Feet	2692 RPM	30.9	0.1 hp	0.50 hp	208 V	1	ECM	MFR	MFR	EC	EC	BELL & GOSSETT	ECOCIRC XL 55-45	
RCP	2S	EXISTING DOM RECIRC	INLINE	7 GPM	16 Feet	2931 RPM	30.8	0.1 hp	0.50 hp	208 V	1	ECM	MFR	MFR	EC	EC	BELL & GOSSETT	ECOCIRC XL 55-45	

GENERAL NOTES:
1. PERFORMANCE IS BASED ON WATER.
2. PUMPS SHALL BE NON-OVERLOADING.
3. SELECT MOTOR SPEED AT 1800 RPM. RPM AT DUTY POINT SHALL NOT BE LESS THAN 15% OF MAX RPM.
4. PUMPS SHALL BE INSTALLED IN ORIENTATION RECOMMENDED BY MANUFACTURER.
5. PUMPS SHALL BE CONTROLLED VIA RETURN WATER TEMPERATURE SENSOR TO BMS. BMS SHALL SEND DIRECT SIGNAL TO ELECTRICAL RELAY (BY TCC) FOR START/STOP OPERATION.
6. PROVIDE LEAD-FREE STAINLESS STEEL BODY CONSTRUCTION.

DOMESTIC EXPANSION TANK SCHEDULE

UNIT IDENTIFICATION TAG	UNIT IDENTIFICATION TAG #	SYSTEM SERVED	TYPE	SYSTEM VOLUME	OPERATING PRESSURES AT EXPANSION TANK PRE-CHARGE	OPERATING PRESSURES AT EXPANSION TANK INITIAL PRESSURE	OPERATING PRESSURES AT EXPANSION TANK MAX PRESSURE	SYSTEM OPERATING TEMPERATURES MIN TEMPERATURE	SYSTEM OPERATING TEMPERATURES MAX TEMPERATURE	ACCEPTANCE VOLUME	ACCEPTANCE FACTOR	MINIMUM TANK VOLUME	DIAMETER	HEIGHT	UNIT WEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
ET	1	DOMESTIC WATER	DIAPHRAGM	340 gal	12 Feet	61 lf-ug	80 lf-ug	40 °F	140 °F	5.8 gal	0.128	45 gal	24"	37"	225 lb	AMTROL	ST-80VC	

GENERAL NOTES:
1. PERFORMANCE IS BASED ON WATER.
2. UNIT SHALL BE ASME RATED.
3. MOUNT ON 4" HOUSEKEEPING PAD.
4. PROVIDE WITH OPTION SIGHT GLASS.

GREASE INTERCEPTOR SCHEDULE

UNIT IDENTIFICATION TAG	UNIT IDENTIFICATION TAG #	FLOW RATE	STORAGE CAPACITY	MOUNTING TYPE	UNIT DIMENSIONS LENGTH	UNIT DIMENSIONS DEPTH	UNIT DIMENSIONS HEIGHT	MANUFACTURER	MODEL NO.	KEYED NOTES
GI	1	25.0 GPM	50 LBS	FLOOR	2' - 9"	1' - 8"	1' - 5"	ZURN	GT21102-25	

GENERAL NOTES:
1. SERVES WASH BASIN OF TRIPLE COMPARTMENT SINK. REFER TO PLUMBING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.
2. CONTRACTOR TO VERIFY ALL INSTALLATION REQUIREMENTS WITH MANUFACTURER AND VERIFY FIELD CONDITIONS PRIOR TO ORDERING.
3. PROVIDE WITH 3" INLET/OUTLET CONNECTIONS.
4. UNIT SHALL BE POLYETHYLENE, RATED FOR CONTINUOS TEMPERATURES OF 212 DEGREES. INTERCEPTOR SHALL BE FURNISHED WITH NPT CONNECTIONS, REMOVABLE FLOW DIFFUSING BAFFLES AND EXTERNAL VENTED FLOW CONTROL DEVICE.
5. UNIT SHALL BE PDI APPROVED.

FILTERED PLUMBING FIXTURES SCHEDULE

FIXTURE TAG	FIXTURE LOCATION	FIXTURE FLOW RATE	FURNISHED BY / INSTALLED BY
EWC-1	VARIOUS	1.1 GPM	MANUFACTURER / MANUFACTURER
SK-1	CONFERENCE-1909, LOUNGE-2107, TRAINER 1407	1.5 GPM	DIVISION 22 / DIVISION 22

GENERAL NOTES:
1. ALL PLUMBING FIXTURES NOT INCLUDED IN LIST ABOVE WILL NOT BE FILTERED AND WILL BE PROVIDED WITH SIGNAGE BY DISTRICT TO MEET MICHIGAN FILTER FIRST LEGISLATION REQUIREMENTS. THIS INCLUDES LAVATORIES.
2. ALL FILTERS SHALL BE LABELED NSF/ANSI 53 FOR LEAD REDUCTION AND NSF/ANSI 42 FOR CLASS 1 PARTICULATE REDUCTION.
3. FILTERS ON ELECTRIC DRINKING FOUNTAINS AND IN-LINE FILTERS FOR SINKS SHALL ALSO FILTER PFOA/PFOS.
4. FILTER PROVIDED FOR SINKS SHALL BE EQUAL TO ELKAY FILTER EF1500VRBMC - 1.5 GPM, NSF LISTED, VANDAL RESISTANT FILTRATION KIT WITH FILTER STATUS MONITOR, LOCATED UNDER COUNTER.
5. CONTRACTOR SHALL PROVIDE EACH LOCATION WITH 3-PACK OF EXTRA FILTERS.

DOMESTIC STORAGE TANK SCHEDULE

TAG	TAG #	SYSTEM SERVED	TANK VOLUME	ASSOCIATED EQUIPMENT	DIAMETER	HEIGHT	WEIGHT	MANUFACTURER	MODEL NUMBER	KEYED NOTES
ST	1	DWH	200	HX-4	2' - 8"	8' - 5 1/4"	1700 lb	LOCHINVAR	RLA200	

GENERAL NOTES:
1. STRATIFIED STORAGE TANK WITH THERMOMETER TEMPERATURE SWITCH AND VACUUM BREAKER.
2. PROVIDE 4" HOUSEKEEPING PAD.
3. TANK SHALL BE ASME RATED AND SHALL COME WITH 2.5" CIRCULATING CONNECTIONS, 2" HOT WATER OUTLET, RELIEF VALVE CONNECTION, AQUASTAT OPENING AND DRAIN CONNECTION.
4. TANK HEIGHT TO DIAMETER RATIO SHALL BE 3:1 PREFERRED, MINIMUM 2:1.
5. TANK SHALL BE PROVIDED WITH 125 PSI T&P RELIEF VALVE.
6. PROVIDE 2" POLYURETHANE INSULATION AND GALVANIZED STEEL JACKET.
7. PROVIDE GLASS LINED LINING.

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
PLUMBING SCHEDULES

SHEET NO.
P600

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STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201081679
07/30/2026

BUILDING CODE INFORMATION

BUILDING CODE:	MICHIGAN BUILDING CODE 2021
PLUMBING CODE:	MICHIGAN PLUMBING CODE 2021
MECHANICAL CODE:	MICHIGAN MECHANICAL CODE 2021
ENERGY CODE:	MICHIGAN UNIFORM ENERGY CODE 2021
FIRE CODE:	INTERNATIONAL FIRE CODE 2021
FUEL GAS CODE:	INTERNATIONAL FUEL GAS CODE 2021
ELECTRICAL CODE:	MICHIGAN ELECTRICAL CODE 2023
NFPA STANDARDS:	NFPA 13 & 20 2019 NFPA 101 WITH BFS AMENDMENTS 2012
ICC/ANSI STANDARDS:	ICC/ANSI A117.1 ACCESSIBLE AND USABLE BUILDING AND FACILITIES 2017
ADA STANDARDS:	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA-AG)

GENERAL SYMBOLS

- EXISTING CONSTRUCTION
- DEMOLITION
- NEW CONSTRUCTION
- NEW KEYNOTE TAG
- DEMOLITION KEYNOTE TAG
- EQUIPMENT TAG
- TYPE-NO.
  NECK'D
  CFM-NO.
- DIFFUSER TAG
- ELEVATION
- WALL SECTION (A101)
- BUILDING SECTION (DTL # SHEET #, A101)
- PLAN/SECTION DETAIL
- NEW CONNECTION

FIRE PROTECTION SHEET INDEX

NO.	NAME
FIRE PROTECTION	
F001	FIRE PROTECTION DATA SHEET
F211.a	FIRST FLOOR FP PLAN - UNIT 1000
F211.b	FIRST FLOOR FP PLAN - UNIT 1100
F211.c	FIRST FLOOR FP PLAN - UNIT 1300A
F211.e	FIRST FLOOR FP PLAN - UNIT 1300B
F211.f	FIRST FLOOR FP PLAN - UNIT 1400A
F211.h	FIRST FLOOR FP PLAN - UNIT 1400C
F211.k	FIRST FLOOR FP PLAN - UNIT 1400E
F211.m	FIRST FLOOR FP PLAN - UNIT 1400F
F212.a	SECOND FLOOR FP PLAN - UNIT 2000
F212.d	SECOND FLOOR FP PLAN - UNIT 2300A
F212.f	SECOND FLOOR FP PLAN - UNIT 2400A
F212.g	SECOND FLOOR FP PLAN - UNIT 2400B
F212.h	SECOND FLOOR FP PLAN - UNIT 2400C
F212.j	SECOND FLOOR FP PLAN - UNIT 2400D
F212.k	SECOND FLOOR FP PLAN - UNIT 2400E
F212.m	SECOND FLOOR FP PLAN - UNIT 2400F
F501	FIRE PROTECTION DETAILS & SCHEDULES

PIPING, VALVES, AND SPECIALTIES SYMBOLS

- ANGLE VALVE
- AUTOMATIC AIR VALVE (AAV)
- BACK FLOW PREVENTER (BFP)
- BALANCING VALVE
- BLOWDOWN VALVE
- CHECK VALVE
- CLEANOUT (FLOOR) (CO)
- CLEANOUT (INLINE) (CO)
- CLEANOUT (WALL) (CO)
- COMBINATION FLOW MEASURING AND BALANCING VALVE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- ELBOW DOWN
- ELBOW UP
- FLANGE
- FLEXIBLE CONNECTION
- FLOOR DRAIN (FD)
- FLOOR DRAIN (SECTION) (FD)
- FLOOR DRAIN W/ FUNNEL (SECTION) (FD)
- FLOW ARROW
- HOSE BIBB
- HOSE END DRAIN VALVE
- ISOLATION VALVE
- MANUAL AIR VALVE (MAV)
- METER (M)
- NEEDLE VALVE
- OUTSIDE SCREW AND YOKE VALVE (OSBY)
- P-TRAP (PLAN)
- P-TRAP (SECTION)
- PIPE CAP
- PIPE BREAK / CONTINUTATION
- PLUG VALVE
- PRESSURE GAUGE
- PRESSURE REGULATING VALVE
- P/T PORT (P/T)
- RELIEF VALVE
- SIAMESE CONNECTION
- STRAINER
- THERMOMETER
- TRIPLE DUTY VALVE
- UNION
- WATER METER ASSEMBLY (M)
- CONCEALED/SEMI-RECESSED SPRINKLER HEAD
- PENDENT SPRINKLER HEAD
- UPRIGHT SPRINKLER HEAD

EQUIPMENT SYMBOLS

- AIR AND DIRT SEPARATOR
- EXPANSION TANK (VERTICAL)
- PUMP (CIRCULATION)
- PUMP (END SUCTION)
- PUMP (INLINE)
- PUMP (SUMP)
- SIDE STREAM FILTER

WATER FLOW TEST DATA

DATE PERFORMED	REPORTED PRESSURES	
	STATIC	RESIDUAL
03-25-2025	40 PSI @ 0 GPM	36 PSI @ 1150 GPM

HYDRAULIC CALCULATION BASIS FOR DESIGN

OCCUPANCY	HAZARD LEVEL	DENSITY
CLASSROOM, CORRIDORS, LOBBIES, LOUNGES, MEETING ROOMS, OFFICES, PUBLIC SPACES, & CAFETERIAS; CEILING SPACES WITH COMBUSTIBLE MATERIALS	LIGHT HAZARD	0.10 GPM/SF
ELECTRICAL ROOMS, ELEVATOR PITS, EQUIPMENT ROOMS, FOOD SERVICE AREAS, LAUNDRY, MAINTENANCE ROOMS, MECHANICAL ROOMS, & STORAGE ROOMS	ORDINARY HAZARD GROUP 1	0.15 GPM/SF
FIRE PUMP ROOM	ORDINARY HAZARD GROUP 1	0.15 GPM/SF

NOTES:
1. DESIGN AND DESIGN CRITERIA SHALL BE PER NFPA.
2. MAXIMUM AREA PER HEAD CAN BE 400 SF, WHERE EXTENDED COVERAGE HEADS ARE ALLOWED AND UTILIZED.
3. USE QUICK RESPONSE SPRINKLERS
4. REMOTE AREA (SQUARE FEET): 1500 SF (OR 5 HEADS MINIMUM)

ABBREVIATIONS

(E)	EXISTING
°F	DEGREES FAHRENHEIT
2D	TWO-DIMENSIONAL
3D	THREE-DIMENSIONAL
AAC	ADVANCED APPLICATION CONTROLLER
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
ABV	ABOVE
AC	AIR CONDITIONING
ACB	ACTIVE CHILLED BEAM
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
ACFM	ABSOLUTE CUBIC FEET PER MINUTE
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AFM	AIRFLOW MEASURING DEVICE
AFMS	AIRFLOW MEASURING STATION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
ALT	ALTERNATOR
AO	ANALOG OUTPUT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
APPROX	APPROXIMATE
AS	AIR SEPARATOR
ASC	APPLICATION SPECIFIC CONTROLLER
ASR	AUTOMATIC SPRINKLER RISER
AX	AUXILIARY CONTACT
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BC	BUILDING CONTROLLER
BD	BACKDRAFT DAMPER
BDD	BACKDRAFT DAMPER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
CA	COMBUSTION AIR
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CB	CHILLED BEAM
CBCHW	CHILLED BEAM CHILLED WATER
CBHW	CHILLED BEAM HOT WATER
CC	COOLING COIL
CCDT	COOLING COIL DISCHARGE TEMPERATURE
CDSR	CONDENSER
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHW	CHILLED WATER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CI	CURRENT INPUT
CIRC	CIRCULATING
CLG	COOLING
CM	CONTROL MODULE
CO	CLEAN OUT
CO2	CARBON DIOXIDE
COMP	COMPRESSOR
CONC	CONCRETE
COND	CONDENSATE
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CP	CONDENSATE PUMP
CR	CONTROL RELAY
CS	CLEAN STEAM
CSFD	COMBINATION SMOKE/FIRE DAMPER
CSR	CURRENT SWITCH OR CURRENT SENSING RELAY
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
D	DAMPER
D&T	DRIP & TRAP
DB	DRY BULB TEMPERATURE
DBA	DECIBELS (A-WEIGHTED SCALE)
DBT	DRY BULB TEMPERATURE °F
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREES
DF	DIESEL FUEL
DI	DIGITAL INPUT
DIA	DIAMETER
DN	DOWN
DO	DIGITAL OUTPUT
DP	DIFFERENTIAL PRESSURE
DPS	DIFFERENTIAL PRESSURE SENSOR
DPT	DEW POINT TEMPERATURE °F
DTC	DRAIN TILE CONNECTION
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
DX	DIRECT EXPANSION
EA	EACH
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECM	ELECTRONICALLY COMMUTATED MOTOR
ED	ENABLE / DISABLE
EDB	ENTERING DRY BULB TEMPERATURE
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
EFF	EFFICIENCY
EG	ETHYLENE GLYCOL WATER SOLUTION
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
EN	ENABLE / DISABLE
ENT	ENTERING
EP	ELECTRIC TO PNEUMATIC RELAY
EQ	EQUIVALENT
ERU	ENERGY RECOVERY UNIT
ES	END SWITCH
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EV	EXHAUST VALVE
EWB	ENTERING WET BULB TEMPERATURE
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERAL
F	FAHRENHEIT
F	FIRE PROTECTION SYSTEM - WET
F-DRY	FIRE PROTECTION SYSTEM - DRY
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAH	FAHRENHEIT
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FD/SD	COMBINATION FIRE AND SMOKE DAMPER
FDAT	FAN DISCHARGE AIR TEMPERATURE
FDC	FIRE DEPARTMENT CONNECTION
FFD	FUNNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FH	FUME HOOD
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FL	FLUE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE CONNECTION
FLR	FLOOR
FM	FLOW METER
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
FR	FIELD RELAY
FS	FLOW SWITCH
FSD	FIRE & SMOKE DAMPER
FT	FEET or FOOT
FTR	FIN TUBE RADIATION
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
FZ	FREEZESTAT
G	GLYCOL
GA	GAUGE
GAL	GALLONS
GCF	GARAGE CIRCULATION FAN
GCO	GRADE CLEAN OUT
GEF	GARAGE EXHAUST FAN
GIF	GARAGE INTAKE FAN
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GR	GRAINS
H	HEIGHT
HB	HOSE BIBB
HC	HEATING COIL
HEX	HEAT EXCHANGER
HG	MERCURY
HHW	HEATING HOT WATER
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HI	HIGH
HL	HIGH LEVEL
HO	HUB OUTLET
HP	HORSE POWER
HR	HOUR
HTG	HEATING
HUM	HUMIDIFIER
HVAC	HEATING VENTILATING AND AIR CONDITIONING
HYD	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IFB	INTEGRAL FACE AND BY-PASS
IN	INCHES
INST	INSTALLED
INV	INVERT
IPLV	INTEGRATED PART LOAD VALUE
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATTS
KWH	KILOWATT HOURS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS	POUNDS
LBS/HR	POUNDS PER HOUR
LBSHR	POUNDS PER HOUR
LCP	LOCAL CONTROL PANEL
LDB	LEAVING DRY BULB TEMPERATURE
LEF	LAB EXHAUST FAN
LL	LOW LEVEL
LO	LOW
LP	LOW POINT
LRA	LOCKED ROTOR AMPERES
LV	LEVEL
LVG	LEAVING
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MAT	MIXED AIR TEMPERATURE
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBH	1000 BTU/HR
MC	MECHANICAL CONTRACTOR
MCA	MAXIMUM CURRENT AMPACITY
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MER	MECHANICAL EQUIPMENT ROOM
MFR	MANUFACTURER
MH	MANHOLE
MHP	MOTOR HORSEPOWER
MIN	MINIMUM
MISC	MISCELLANEOUS
MOCP	MAXIMUM OVER CURRENT PROTECTION
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)
MOCP	MAXIMUM OVER-CURRENT PROTECTION
MS	MOTOR STARTER
MSI	MASTER SYSTEMS INTEGRATER
MTG	MOUNTING
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NC	NOISE CRITERIA
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NPLV	NON STANDARD PART LOAD VALUE
NPSH	NET POSITIVE SUCTION HEAD
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAD	OUTSIDE AIR DAMPER
OAH	OUTDOOR AIR HUMIDITY
OAT	OUTDOOR AIR TEMPERATURE
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER / CENTER TO CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
OPR	OPERATING
ORS	OVERFLOW ROOF SUMP
OSBY	OUTSIDE SCREW AND YOKE
OV	OUTLET VELOCITY
OWS	OPERATOR WORK STATION
P	PUMP
PC	PLUMBING CONTRACTOR
PCB	PASSIVE CHILLED BEAM
PD	PRESSURE DROP (FEET OF WATER)
PG	PROPYLENE GLYCOL WATER SOLUTION
PH	PHASE
PHDT	PREHEAT DISCHARGE TEMPERATURE
PICGV	PRESSURE INDEPENDENT CHARACTERIZED CONTROL VALVE
PMCS	POWER MONITORING & CONTROL SYSTEM
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRV	PRESSURE REGULATING VALVE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PSI(G)	POUNDS PER SQUARE INCH (GAUGE)
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE Q
P/T	PRESSURE / TEMPERATURE PORT
QTY	QUANTITY
RA	RETURN/RELIEF AIR
RAH	RETURN AIR HUMIDITY
RAT	RETURN AIR TEMPERATURE
RC	ROOF CONDUCTOR
RE	REFERENCE
RELA	RELIEF AIR
REQD	REQUIRED
RET	RETURN
RF	RETURN FAN
RH	RELATIVE HUMIDITY
RHC	REHEAT COIL
RLA	RUNNING LOAD AMPS
RLF	RELIEF
RLMS	REFRIGERANT LEAK MONITORING SYSTEM
ROT	ROTATION MONITORING SENSOR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
RS	ROOF SUMP
RTU	ROOFTOP UNIT
S	SOLENOID
SA	SUPPLY AIR
SAN	SANITARY WASTE
SC	SELF CONTAINED UNIT
SCFM	STANDARD CUBIC FEET PER MINUTE
SD	SMOKE DAMPER/SMOKE DETECTOR
SEER	SEASONAL ENERGY EFFICIENCY RATIO
SENS	SENSIBLE
SF	SQUARE FEET
SG	SPECIFIC GRAVITY
SH	SHOWER
SL	SOUND LINING
SMW	SNOW MELT WATER
SP	STATIC PRESSURE (INCHES OF WATER)
SPD	SPEED
SPL	SOUND POWER LEVEL
SPS	STATIC PRESSURE SENSOR
SQ	SQUARE
SS	STAINLESS STEEL
STM	STEAM
SV	SUPPLY VALVE
SW	SWITCH
T	TEMPERATURE
T & P	TEMPERATURE AND PRESSURE
TAB	TESTING, ADJUSTING AND BALANCING
TC	TEMPERATURE CONTROL
TCC	TEMPERATURE CONTROLS CONTRACTOR
TEF	TOILET EXHAUST FAN
TH	THERMOSTAT
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TP	TOTAL PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
UR	URINAL
V	VOLTAGE/VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VIFB	VERTICAL INTEGRAL FACE AND BYPASS
VL	VALVE
VLP	VALVE POSITION
VO	VOLTAGE OUTPUT
VP	VIRTUAL POINT
VS	VIBRATION SWITCH
VTR	VENT THRU ROOF
W	WATTS/WIDTH
W&V	WASTE AND VENT
W/	WITH
W/O	WITHOUT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WG	WATER GAUGE
WH	WALL HYDRANT
WMS	WIRE MESH SCREEN
YCO	YARD CLEAN OUT

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Howell Community Center

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HOWELL PUBLIC SCHOOLS

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CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRE PROTECTION DATA SHEET

SHEET NO.
F001

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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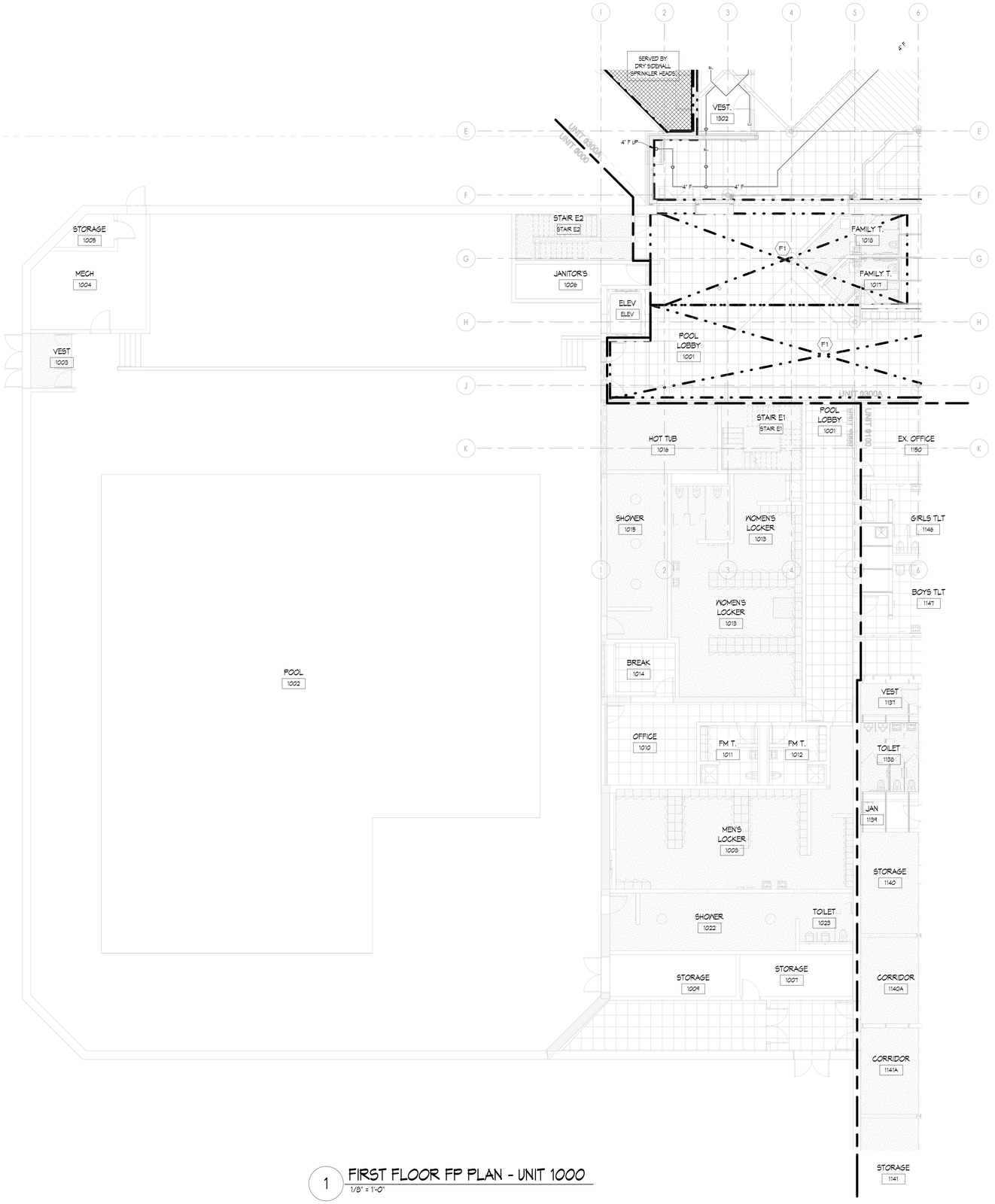

1 FIRST FLOOR FP PLAN - UNIT 1000
1/8" = 1'-0"

FIRE PROTECTION GENERAL NOTES

1. THESE DRAWINGS ARE DIAGRAMMATIC AND ILLUSTRATE THE GENERAL DESIGN INTENT, ARRANGEMENT, AND SYSTEM LAYOUT. PROVIDE/REWORK FIRE PROTECTION SYSTEMS COMPLETE, PER APPLICABLE CODES, NFPA, OWNERS INSURER'S REQUIREMENTS AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION INCLUDING ALL PIPING, OFFSETS, FITTINGS, DRAINS, VALVES, SPRINKLER HEADS, ETC. AS REQUIRED FOR A COMPLETE OPERABLE SYSTEM. PROVIDE SUPERVISORY SWITCHES AT LOCATIONS REQUIRED BY AHJ AND NFPA.
2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING TYPES, DESIRED SPRINKLER HEAD LOCATIONS, AND REQUIRED CUSTOM COLORS IN SENSITIVE AREAS. ALL SPRINKLERS SHALL BE INSTALLED IN THE CENTER OF CEILING TILES.
5. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".
6. FIRE PROTECTION TRADES SHALL SUBMIT PLANS, FLOW AND PRESSURE TEST AND CALCULATIONS TO THE ARCHITECT/ENGINEER, LOCAL FIRE MARSHAL AND TO THE BUILDING'S INSURING AGENCY FOR APPROVAL. CONTRACTOR SHALL THEN MAKE ALL NECESSARY CORRECTIONS AND RESUBMIT PLANS AND CALCULATIONS FOR RECORD TO THE ARCHITECT/ENGINEER AS WELL AS THE FIRE MARSHAL.
7. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
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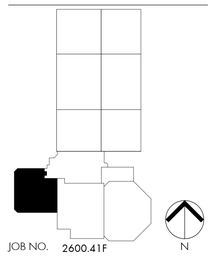
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

N

SHEET TITLE
FIRST FLOOR FP PLAN - UNIT 1000

SHEET NO.
F211.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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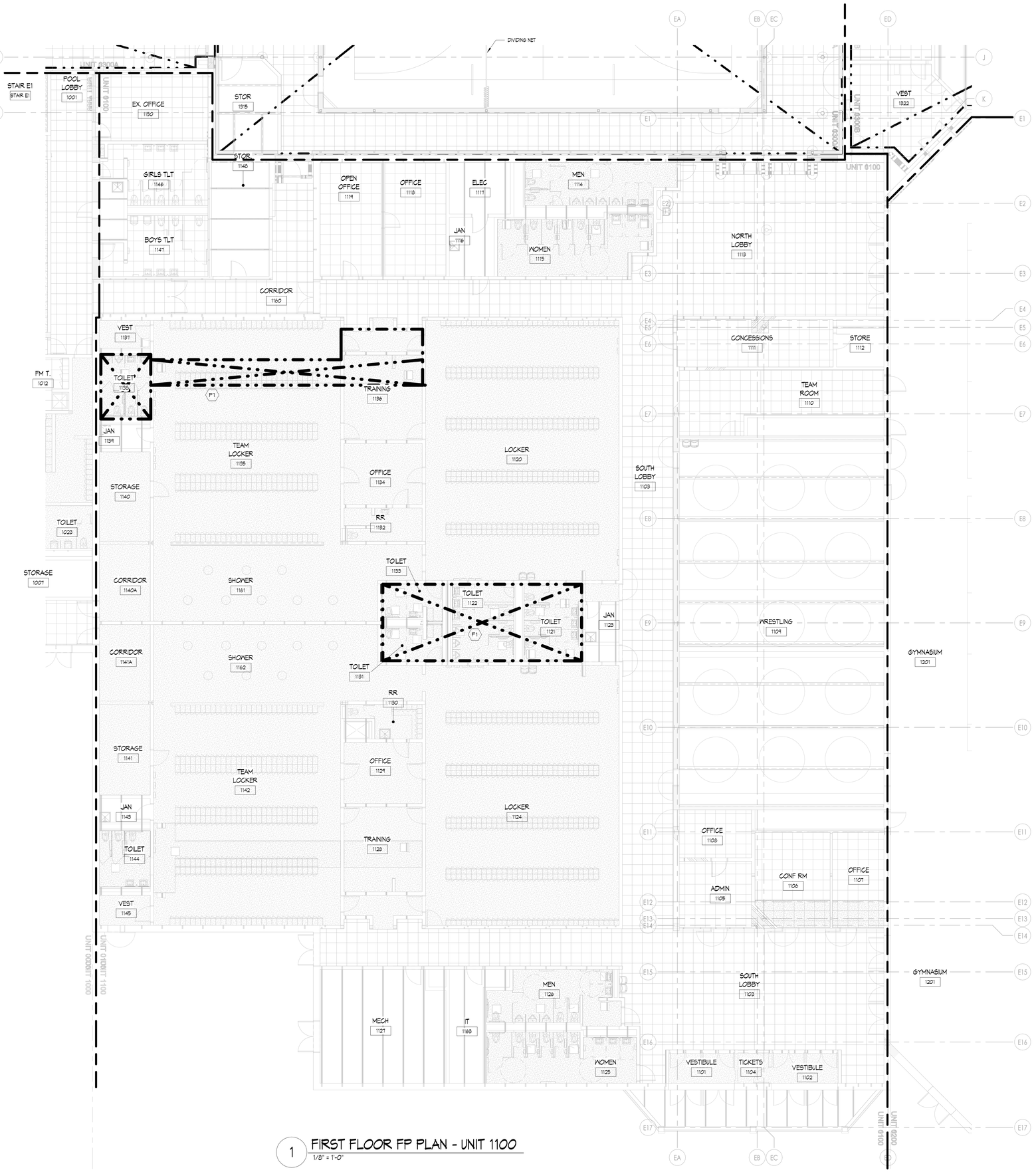

1 FIRST FLOOR FP PLAN - UNIT 1100
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE
FIRST FLOOR FP PLAN - UNIT 1100

SHEET NO.
F211.b

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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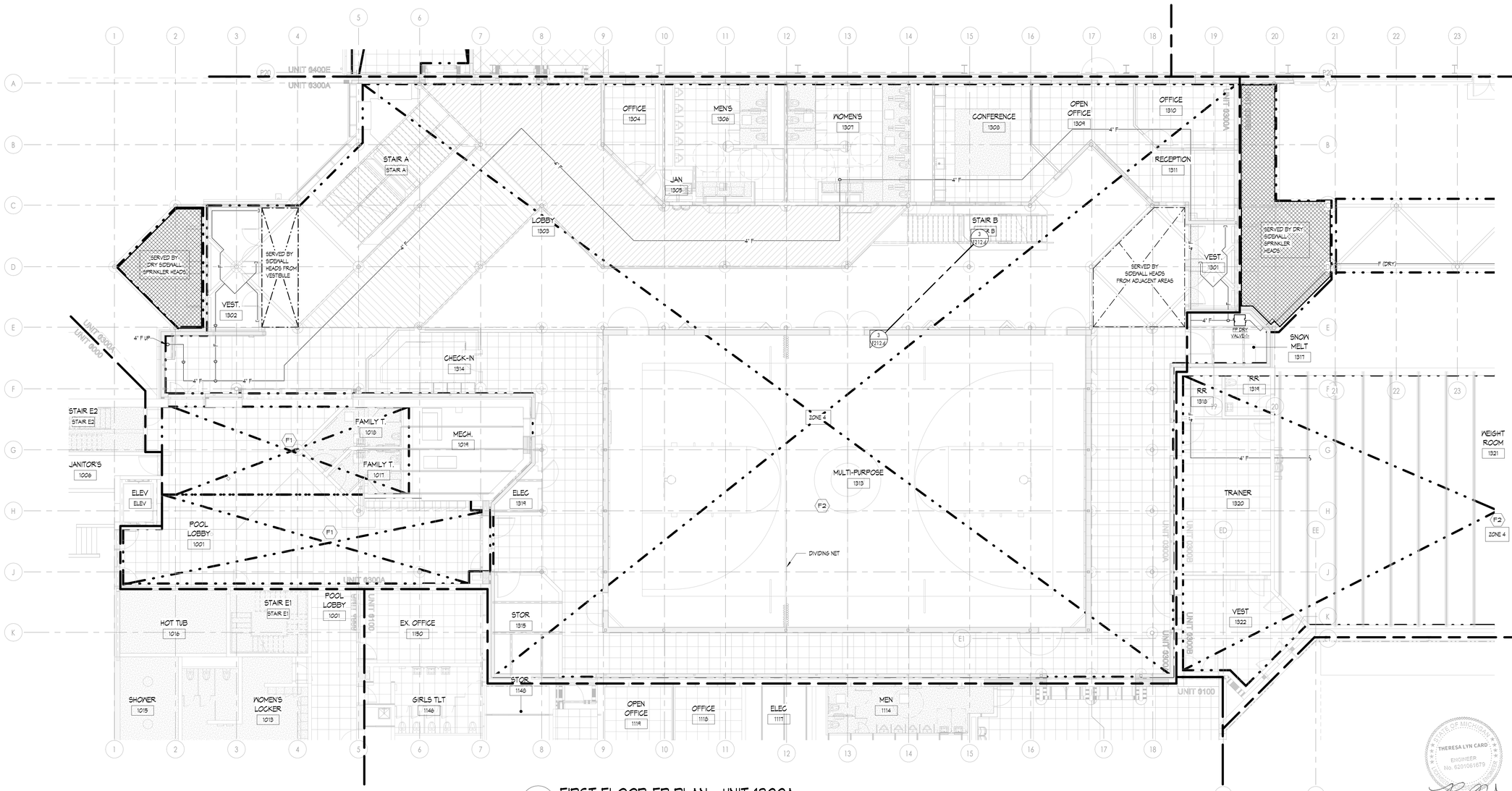

1 FIRST FLOOR FP PLAN - UNIT 1300A
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE

FIRST FLOOR FP PLAN - UNIT 1300A

SHEET NO.

F211.d

THERESA LYN CARD
ENGINEER
No. 6201061679
STATE OF MICHIGAN

07/30/2026

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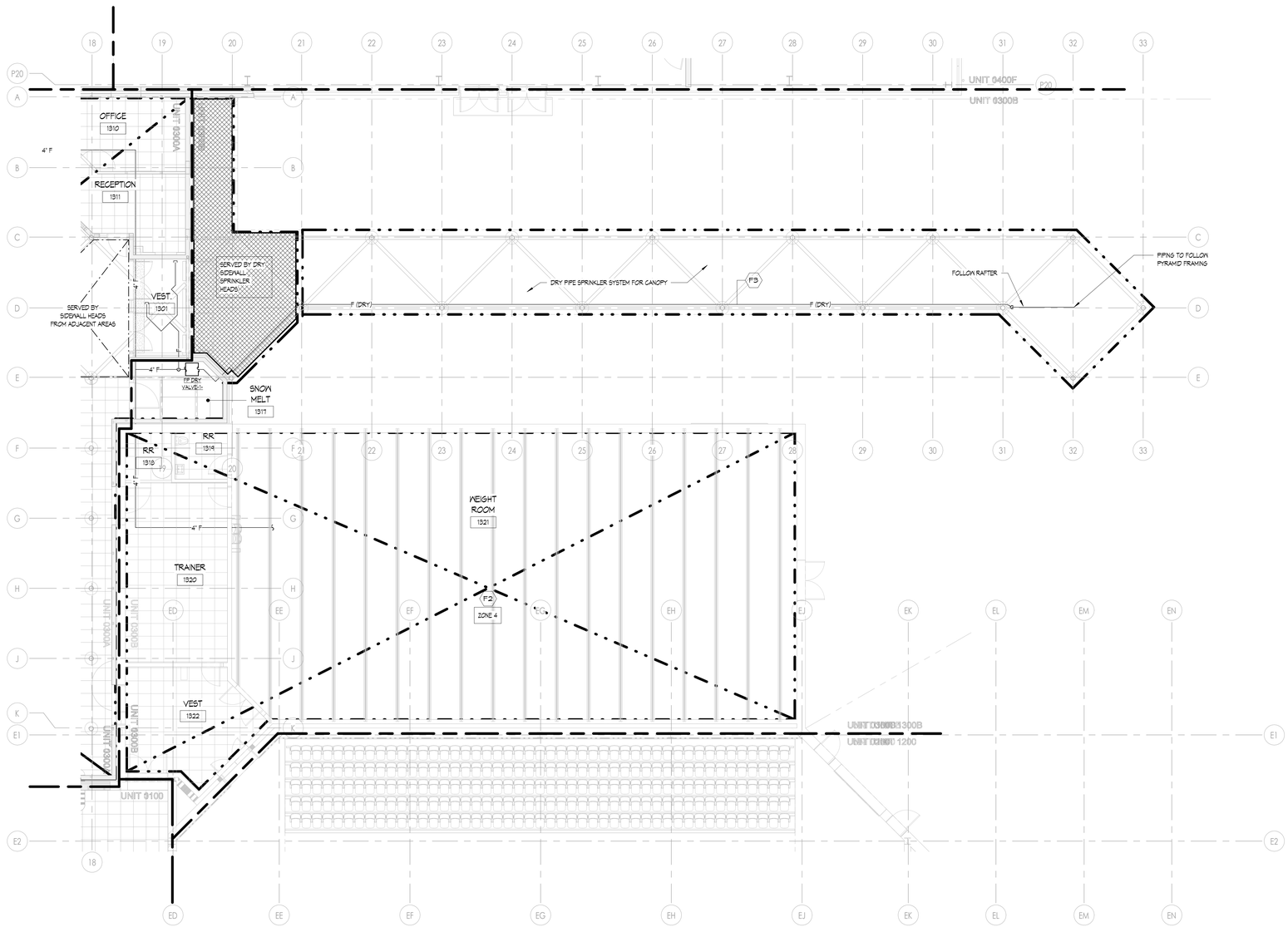

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Howell Community Center

Howell Public Schools

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR FP PLAN - UNIT 1300B

SHEET NO.
F211.e

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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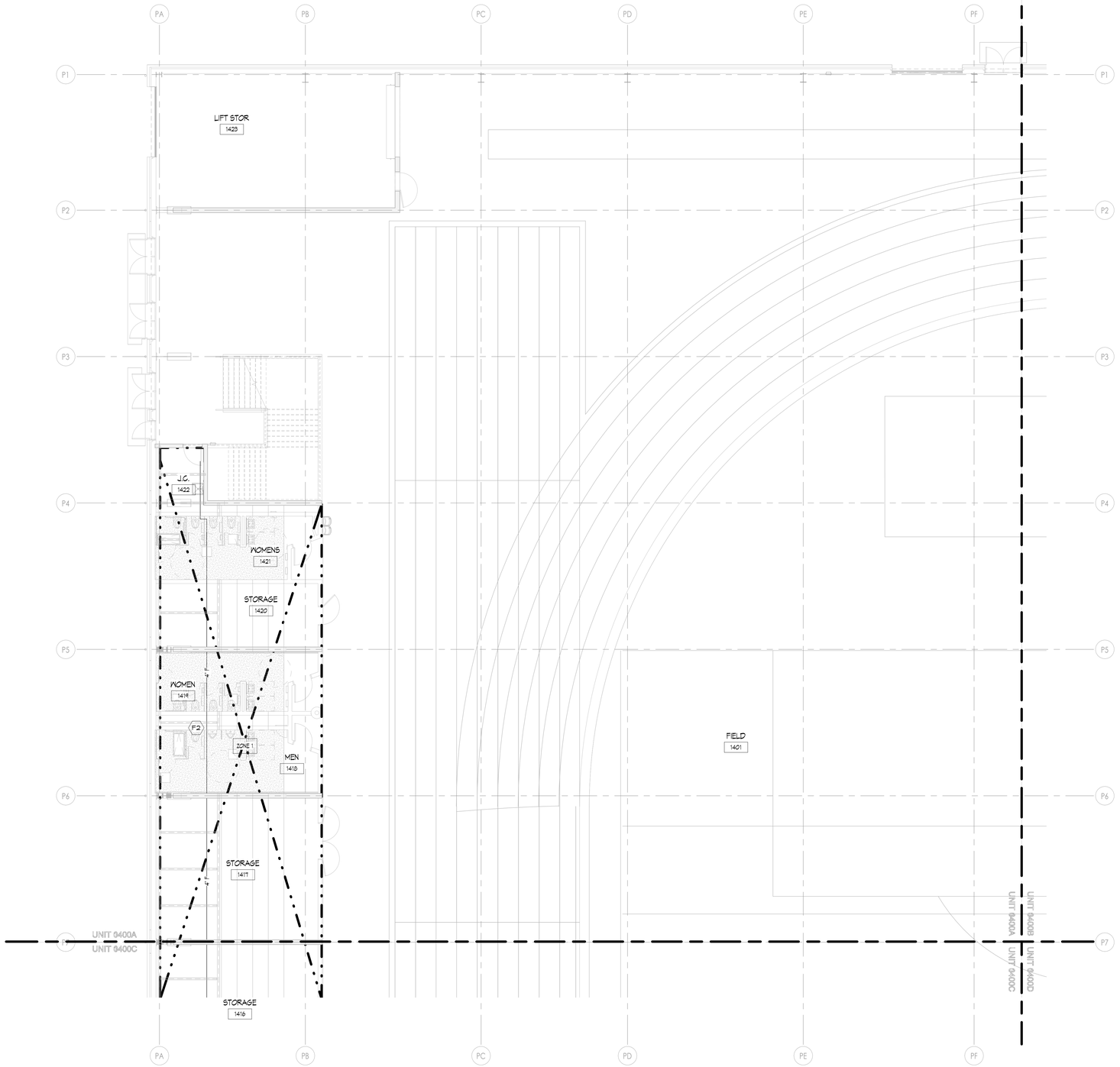

1 FIRST FLOOR FP PLAN - UNIT 1400A
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MPFP PEMB/IMP GENERAL NOTES

1. COORDINATION WITH PRE-ENGINEERED METAL BUILDING (PEMB) AND INSULATED METAL PANEL (IMP) MANUFACTURERS ARE REQUIRED. REVIEW ALL CONSTRUCTION INFORMATION AND SHOP DRAWINGS.
2. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC., FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THIS INCLUDES CUSTOM ANGLE BRACKETS THAT CONNECT TO A MINIMUM OF (2) GIRT LINES.
3. FOR ALL DUCTWORK AND PIPING TO BE SUPPORTED FROM PEMB - LOCATE ALL SUPPORT ANCHORS ON GIRT LINES AND SLEEVE AND SEAL SUPPORTS THROUGH INSULATED METAL PANEL AS REQUIRED.
4. PEMB WALL PENETRATIONS SHALL NOT BE THROUGH GIRT LINES UNLESS OTHERWISE COORDINATED WITH MANUFACTURER. PENETRATIONS SHALL BE FRAMED OUT BY PEMB MANUFACTURER. NOTIFY ARCHITECT AND CM IMMEDIATELY DURING CONSTRUCTION IF PENETRATIONS DO NOT MATCH PLAN LOCATIONS.
5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
6. ALL EXPOSED PIPING N PEMB WITH INSULATION SHALL COMPLETE PVC JACKETING.

MPFP PRECAST SYSTEM GENERAL NOTES

1. PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF PIPING, DUCTWORK, ETC. CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC.
2. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

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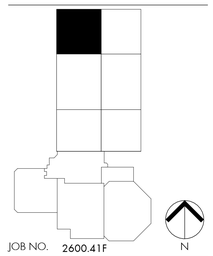
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE
FIRST FLOOR FP PLAN - UNIT 1400A

SHEET NO.
F211.f

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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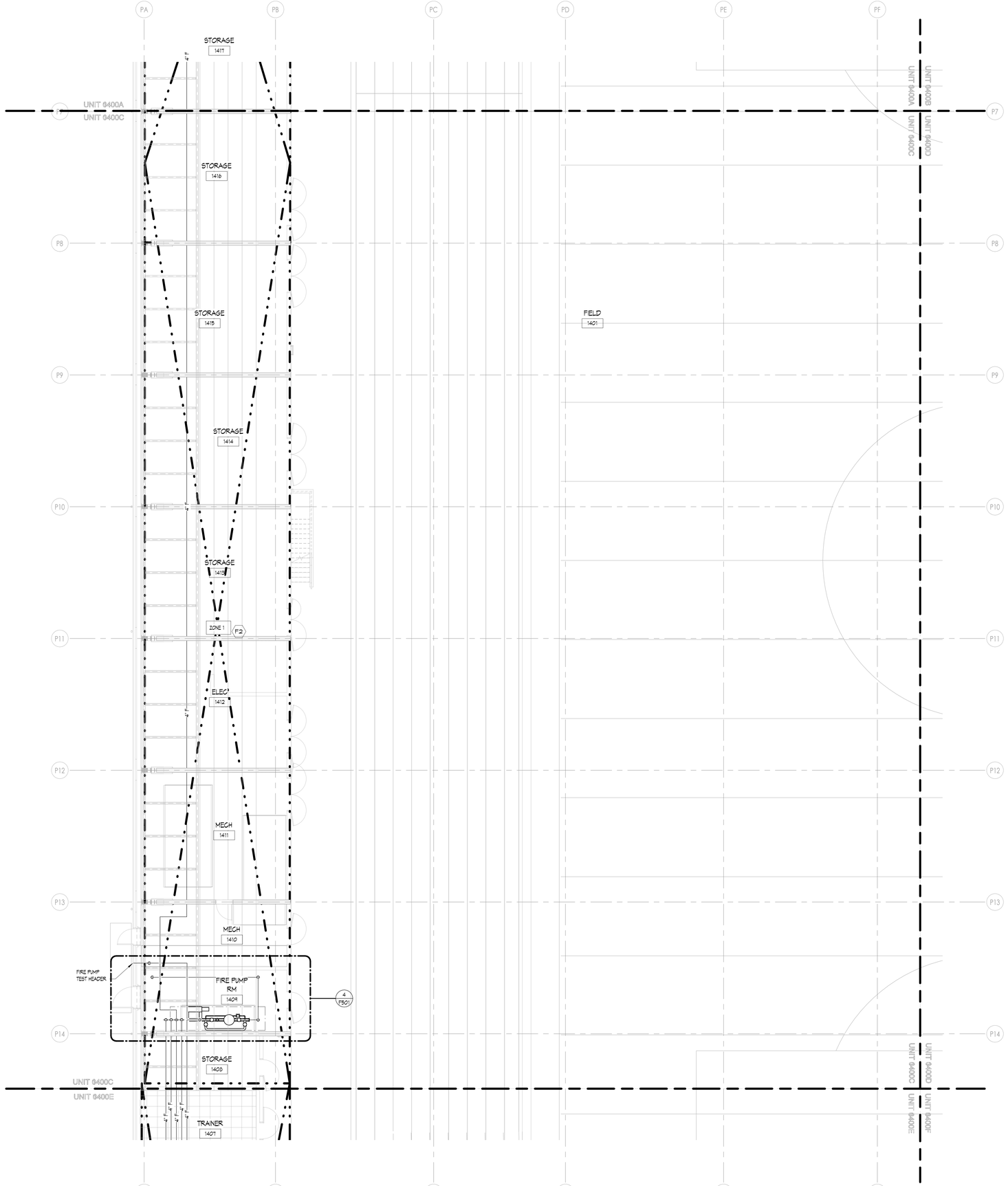

1 FIRST FLOOR FP PLAN - UNIT 1400C
1/8" = 1'-0"

FIRE PROTECTION GENERAL NOTES

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2. COORDINATION WITH OTHER TRADES IS REQUIRED. OBTAIN ALL CONSTRUCTION INFORMATION, ALL SPECIFICATION AND DRAWINGS (E.G. ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) MUST BE USED. PROVIDE THE ADDITIONAL FITTINGS, TRANSITIONS, OFFSETS, COMPONENTS, ETC. THAT WILL BE REQUIRED TO PROVIDE A FULLY FUNCTIONAL AND COMPLETE SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT/ENGINEER ANY INFORMATIONAL CONFLICTS WITHIN THE SPECIFICATIONS AND DRAWINGS. THE CONTRACTOR(S) SHALL NOT PROCEED WITH ANY WORK, EXCEPT AT ITS OWN RISK, UNTIL ALL CONFLICTS ARE RESOLVED AND THE CLARIFYING INFORMATION IS ISSUED TO THE CONTRACTOR(S) BY THE ARCHITECT/ENGINEER.
4. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR CEILING TYPES, DESIRED SPRINKLER HEAD LOCATIONS, AND REQUIRED CUSTOM COLORS IN SENSITIVE AREAS. ALL SPRINKLERS SHALL BE INSTALLED IN THE CENTER OF CEILING TILES.
5. MINIMUM RUN-OUT PIPE SIZE TO SPRINKLER HEADS SHALL BE 1".
6. FIRE PROTECTION TRADES SHALL SUBMIT PLANS, FLOW AND PRESSURE TEST AND CALCULATIONS TO THE ARCHITECT/ENGINEER, LOCAL FIRE MARSHAL AND TO THE BUILDING'S INSURING AGENCY FOR APPROVAL. CONTRACTOR SHALL THEN MAKE ALL NECESSARY CORRECTIONS AND RESUBMIT PLANS AND CALCULATIONS FOR RECORD TO THE ARCHITECT/ENGINEER AS WELL AS THE FIRE MARSHAL.
7. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
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11. ALL UPRIGHT SPRINKLER HEADS IN PEMB, STORAGE ROOMS AND MECHANICAL ROOMS SHALL HAVE CAGES.

MPFP PEMB/IMP GENERAL NOTES

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5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 9" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
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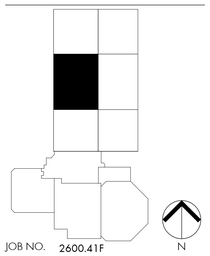
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

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SHEET TITLE

FIRST FLOOR FP PLAN - UNIT 1400C

SHEET NO.

F211.h

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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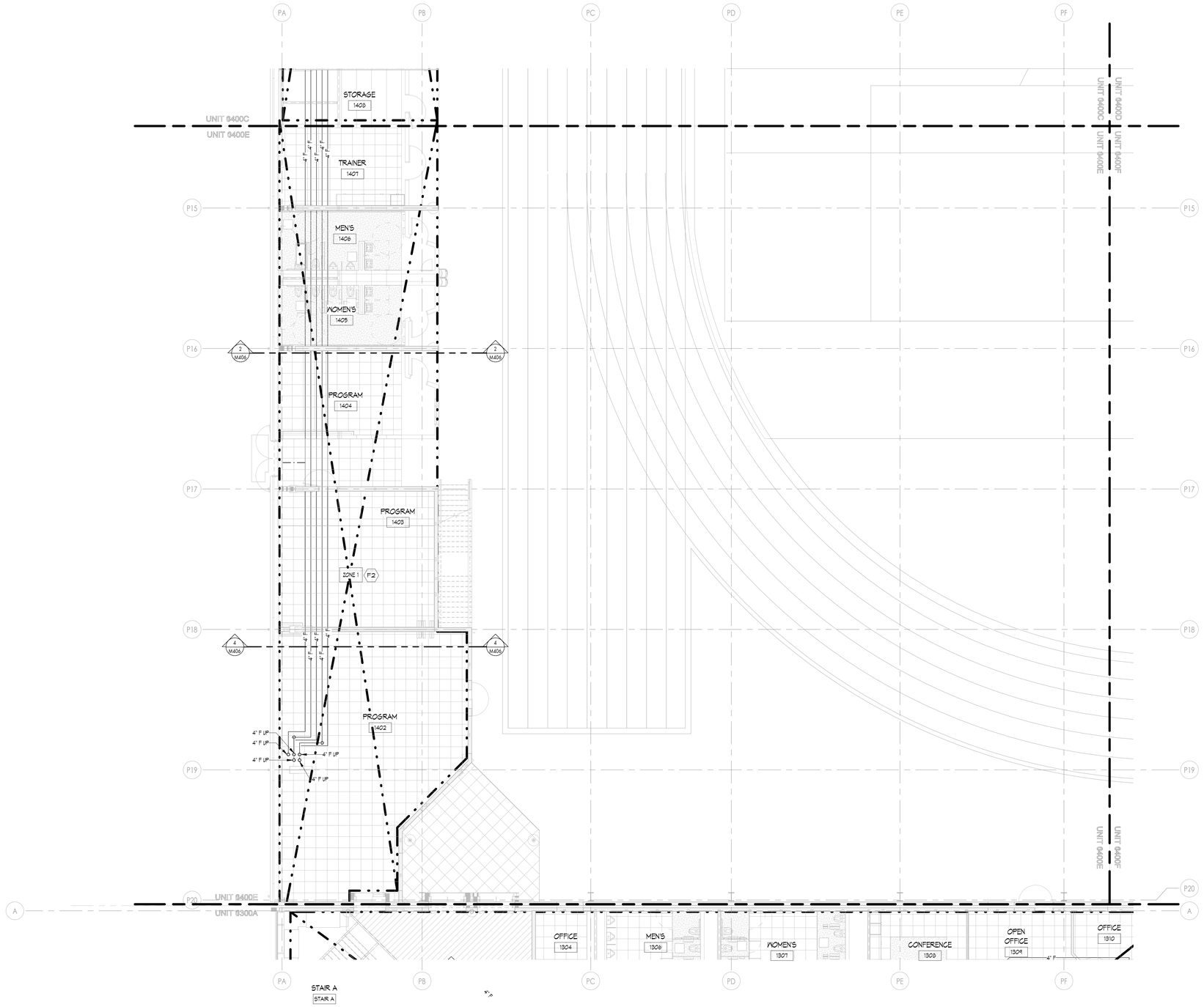

1 FIRST FLOOR FP PLAN - UNIT 1400E
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE

FIRST FLOOR FP PLAN - UNIT 1400E

SHEET NO.

F211.k

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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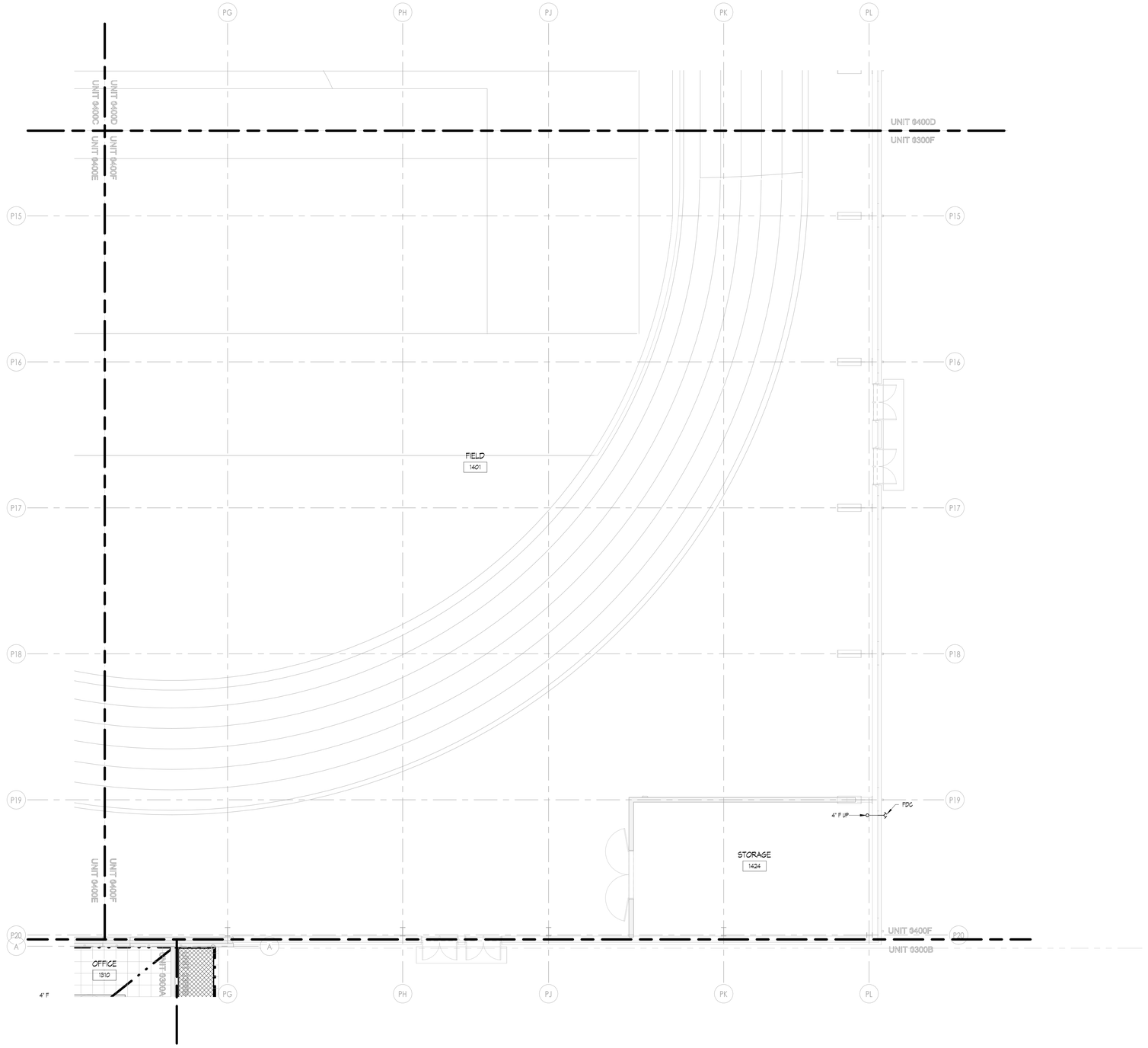

1 FIRST FLOOR FP PLAN - UNIT 1400F
1/8" = 1'-0"

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1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRST FLOOR FP PLAN - UNIT 1400F

SHEET NO.
F211.m

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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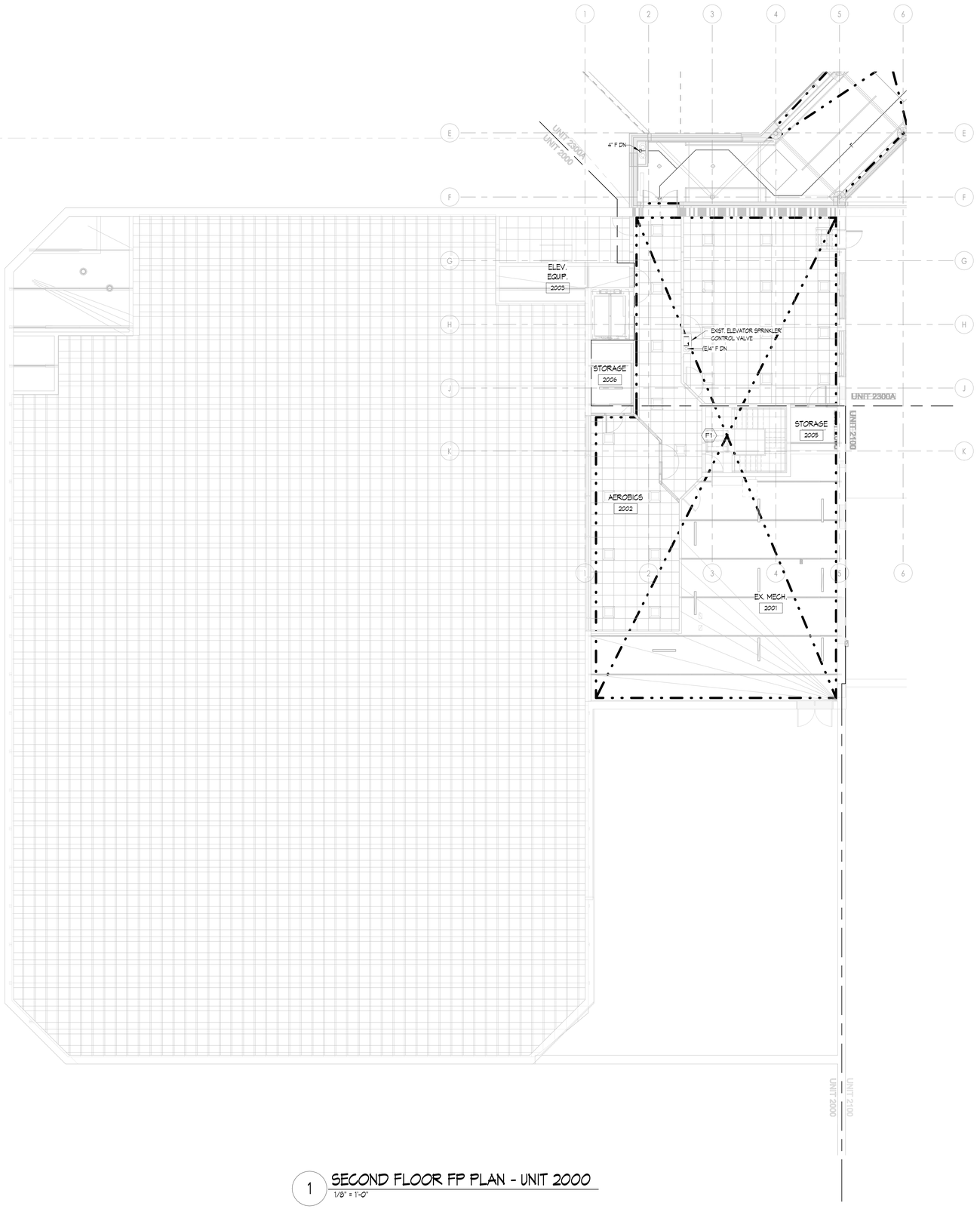

1 SECOND FLOOR FP PLAN - UNIT 2000
1/8" = 1'-0"

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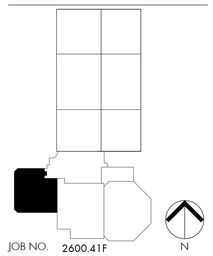
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR FP PLAN - UNIT 2000

SHEET NO.
F212.a

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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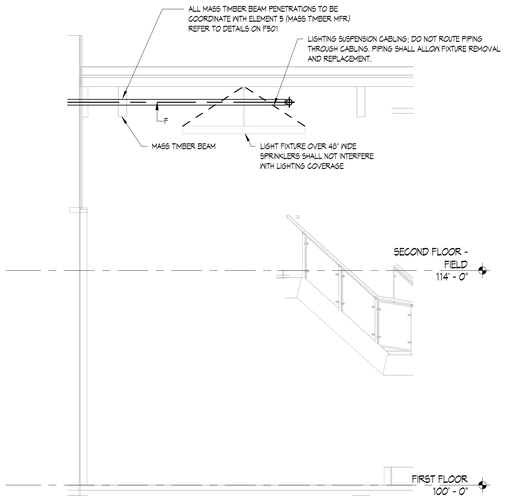

3 CONNECTOR LOBBY FP SECTION
1/4" = 1'-0"

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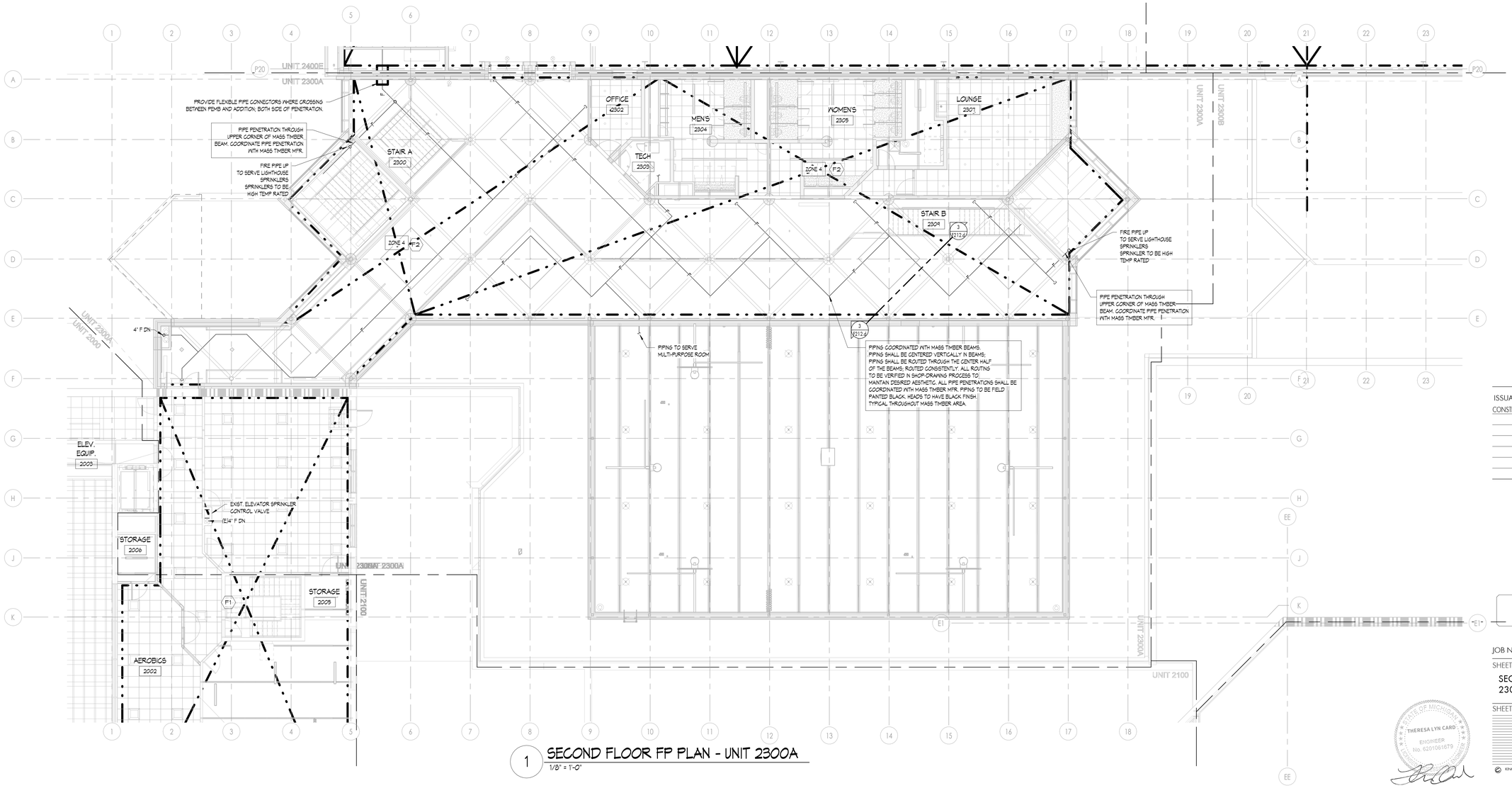

1 SECOND FLOOR FP PLAN - UNIT 2300A
1/8" = 1'-0"

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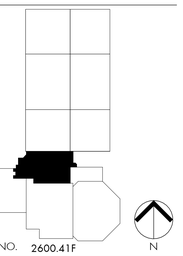
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR FP PLAN - UNIT 2300A

SHEET NO.
F212.d

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026
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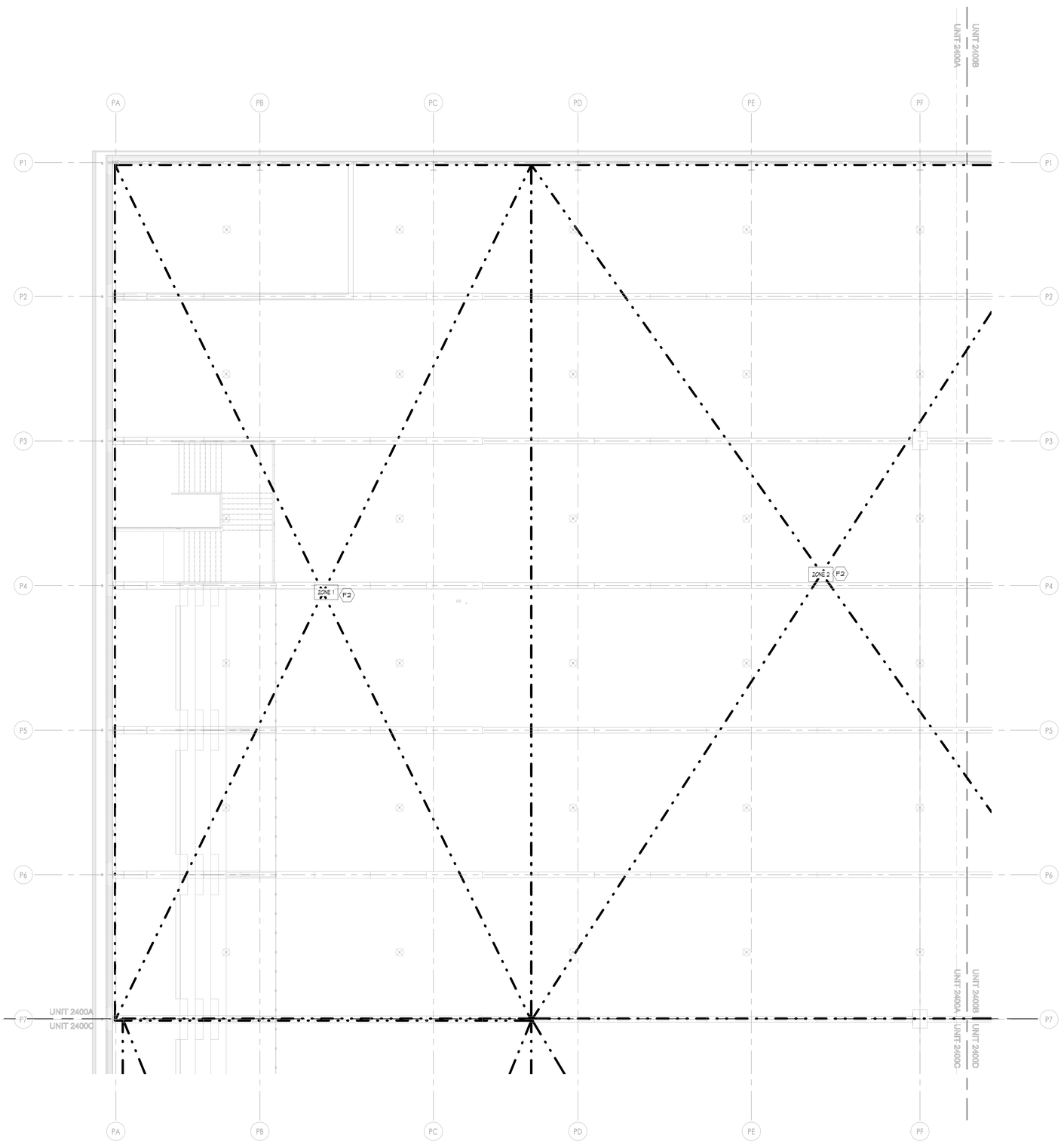

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5. INSULATED METAL PANEL PENETRATIONS SHALL BE CENTERED ON PANELS AND SHALL LEAVE MINIMUM 6" OF PANEL BETWEEN EDGE OF PENETRATION AND CENTER OF PANEL SEAM, UNLESS OTHERWISE NOTED ON PANEL SHOP DRAWINGS.
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PUBLIC SCHOOLS

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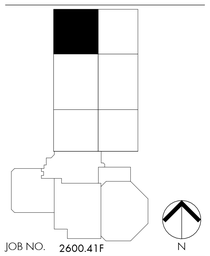
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

N

SHEET TITLE

SECOND FLOOR FP PLAN - UNIT 2400A

SHEET NO.

F212.f

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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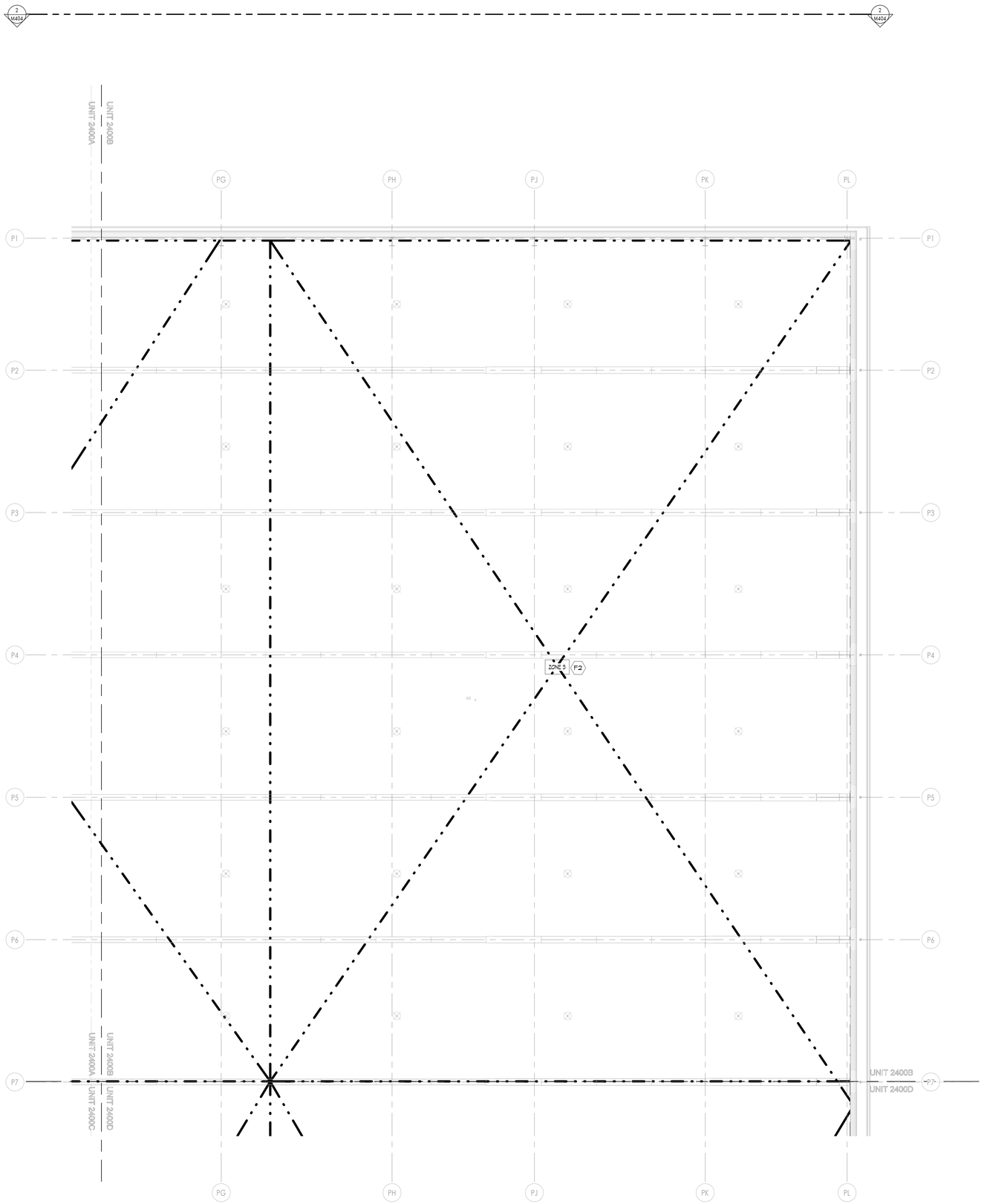

1 SECOND FLOOR FP PLAN - UNIT 2400B
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

N

SHEET TITLE
SECOND FLOOR FP PLAN - UNIT 2400B

SHEET NO.
F212.g

THERESA LYN CARD
ENGINEER
No. 6201061679
STATE OF MICHIGAN

07/30/2026

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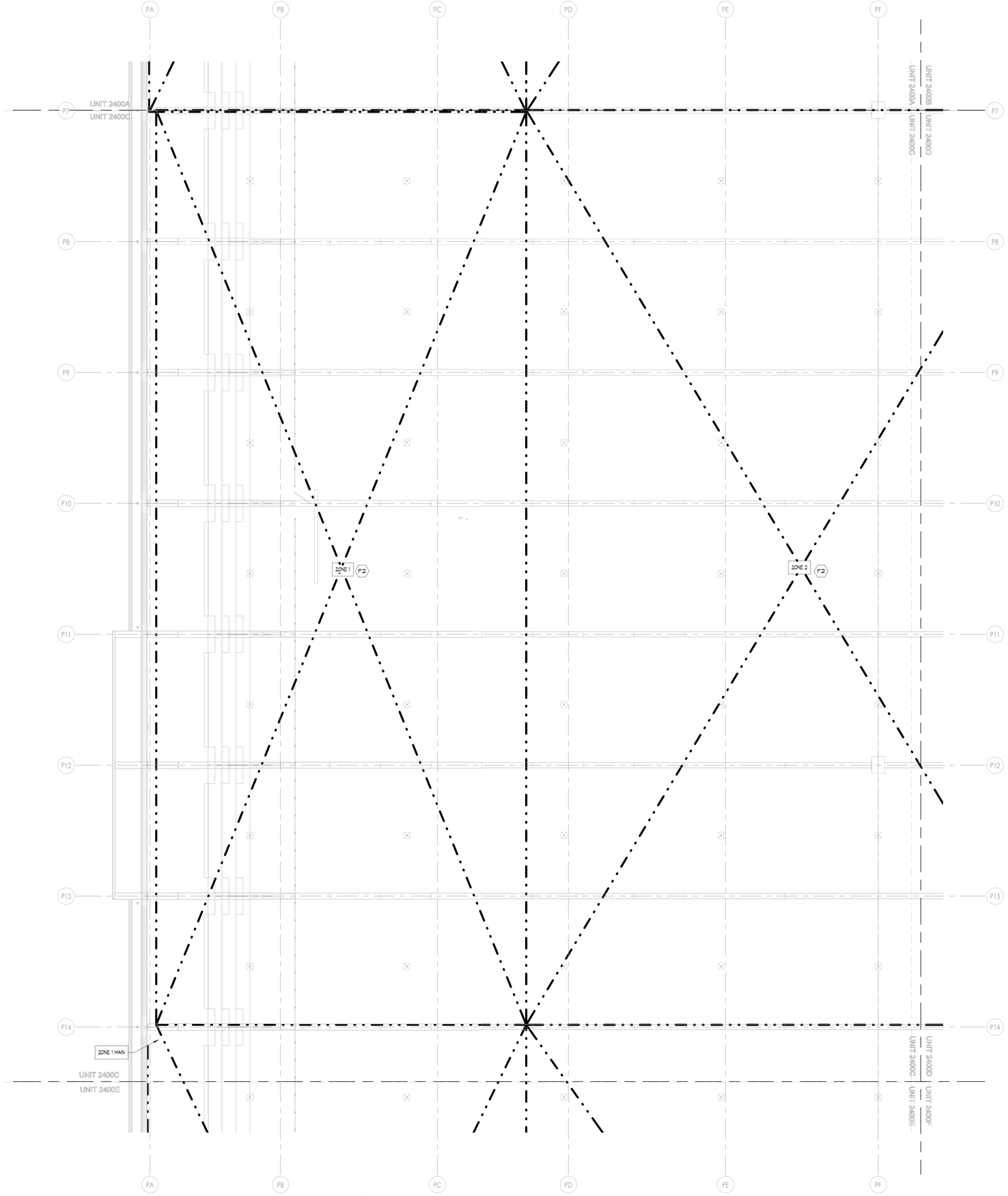

1 SECOND FLOOR FP PLAN - UNIT 2400C
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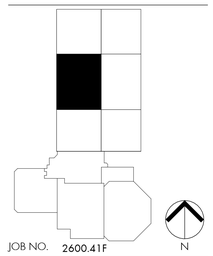
Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F

N

SHEET TITLE
SECOND FLOOR FP PLAN - UNIT 2400C

SHEET NO.
F212.h

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679

07/30/2026

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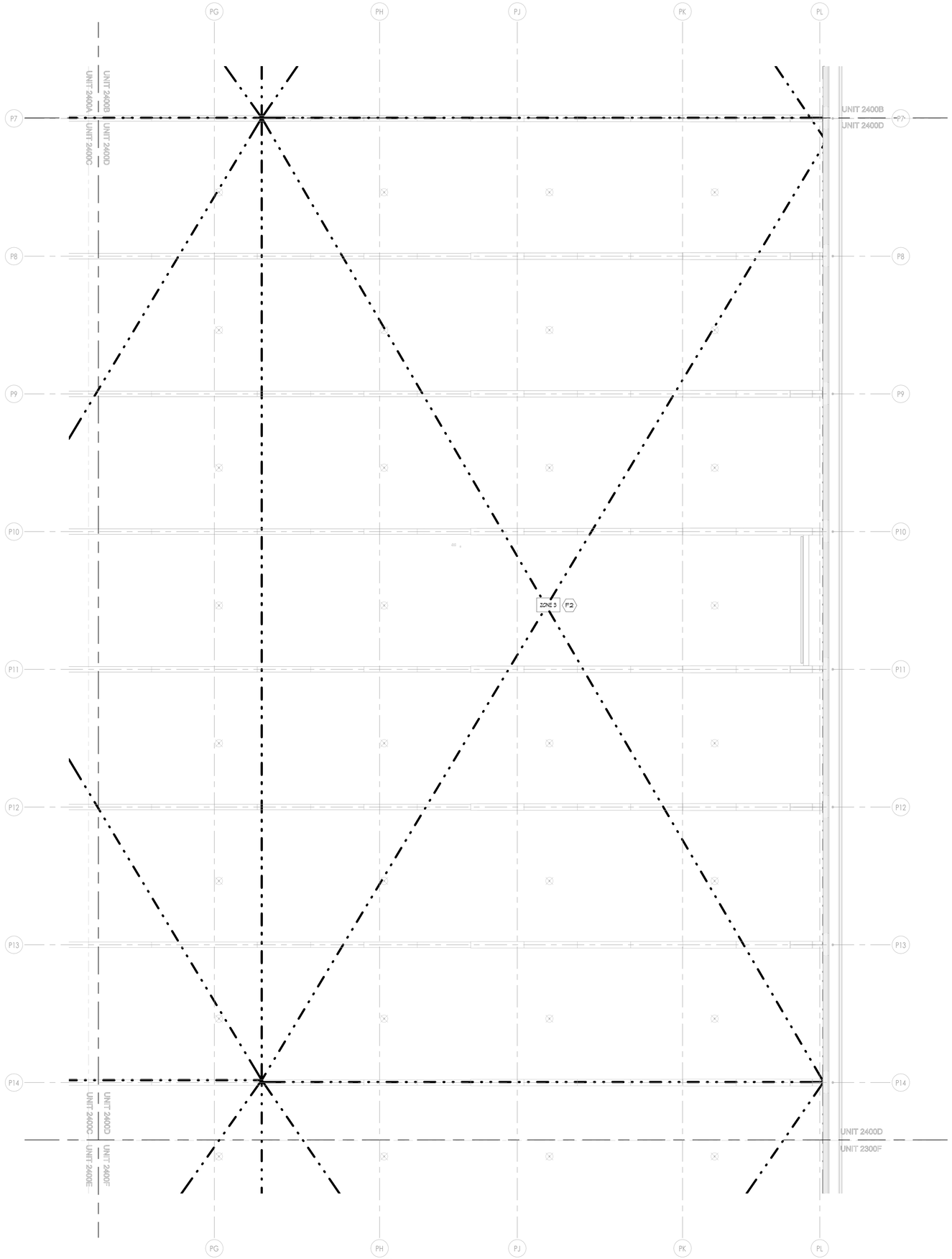

1 SECOND FLOOR FP PLAN - UNIT 2400D
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR FP PLAN - UNIT 2400D

SHEET NO.
F212.j

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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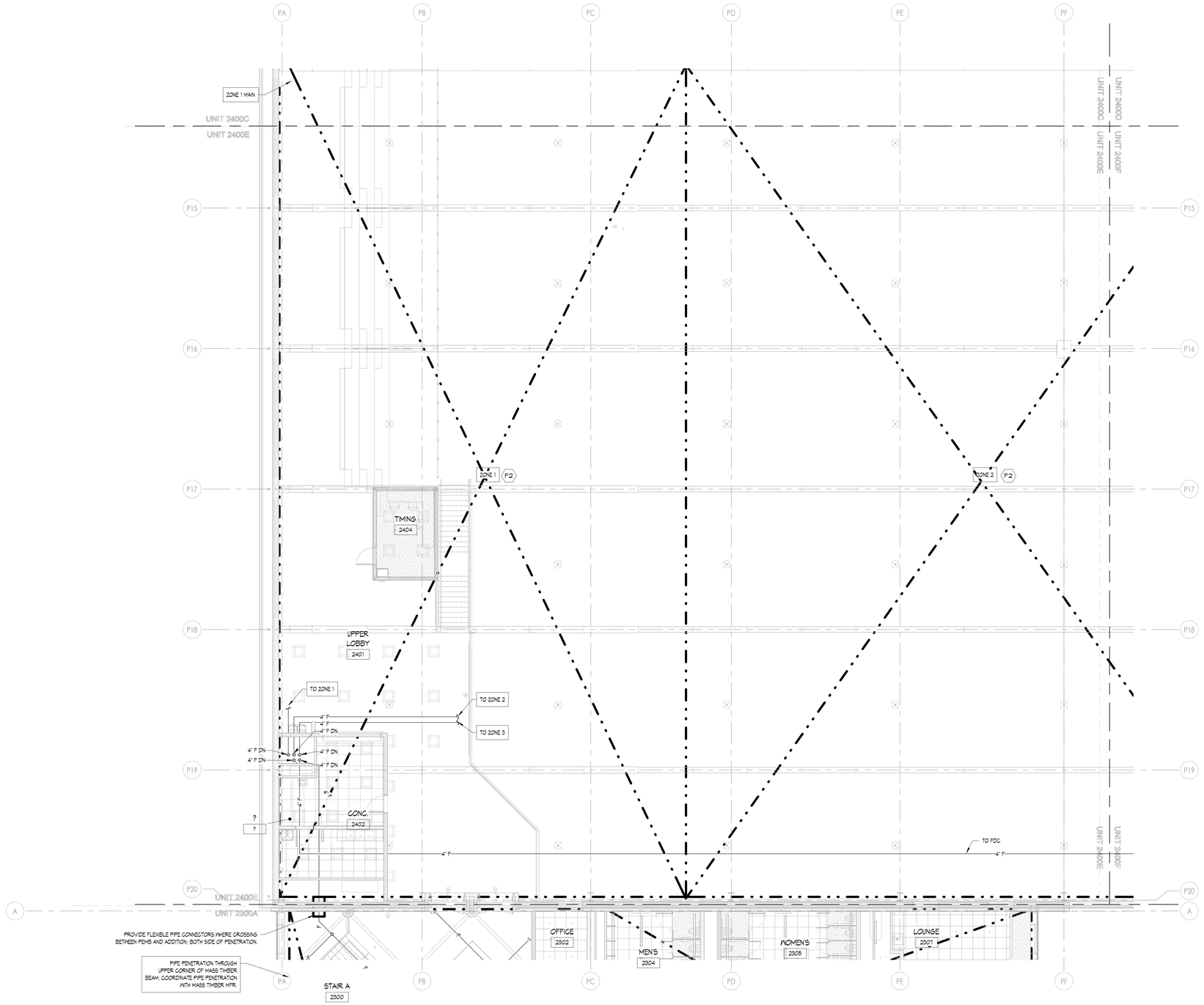

1 SECOND FLOOR FP PLAN - UNIT 2400E
1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
SECOND FLOOR FP PLAN - UNIT 2400E

SHEET NO.
F212.k

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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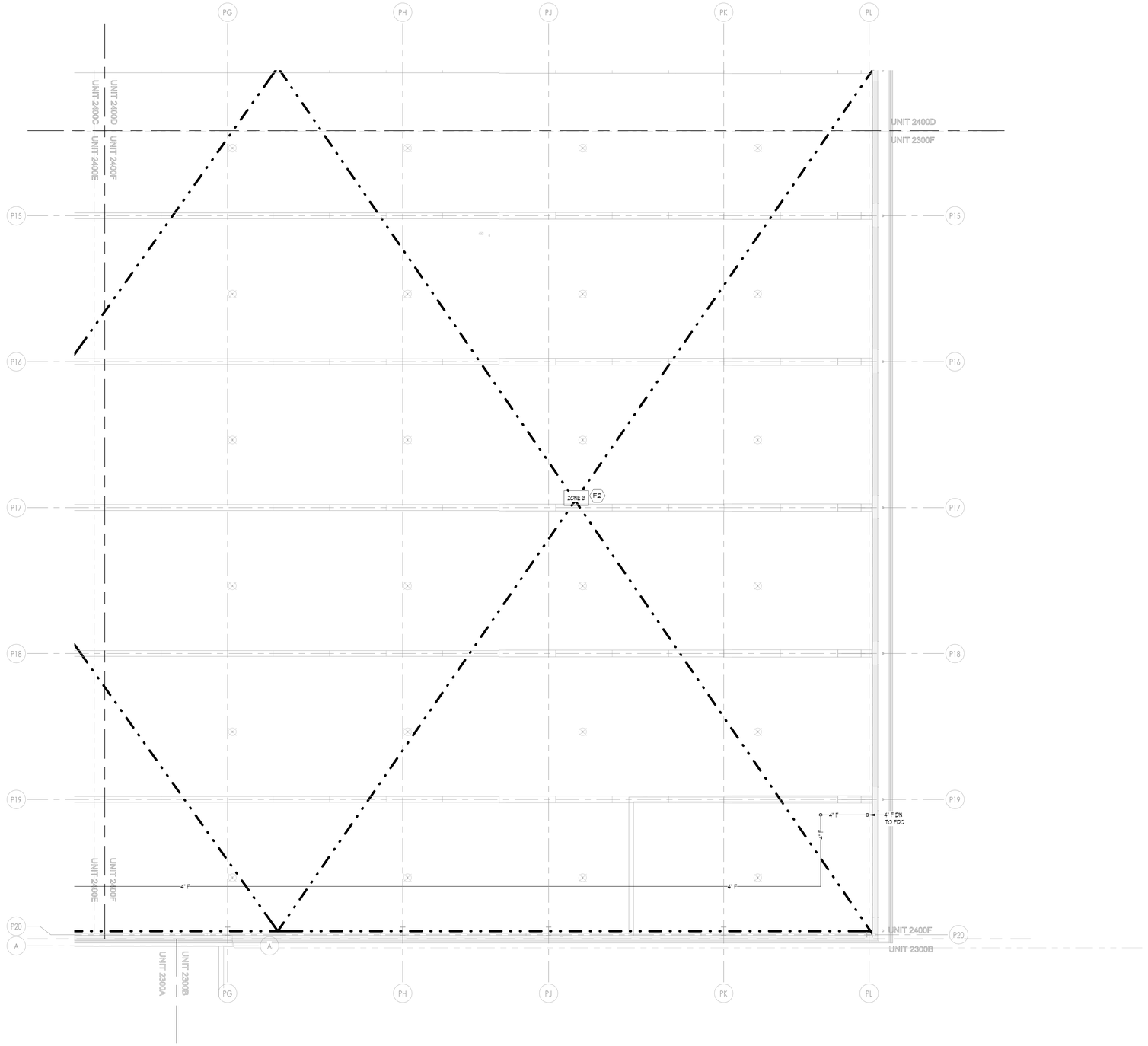

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Howell Public Schools

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PUBLIC SCHOOLS

ISSUANCES	DATE
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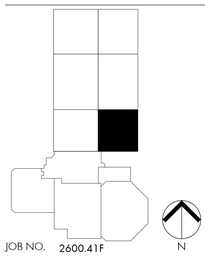

JOB NO. 2600.41F

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SHEET TITLE

SECOND FLOOR FP PLAN - UNIT 2400F

SHEET NO.

F212.m

STATE OF MICHIGAN
THERESA LYN CARD
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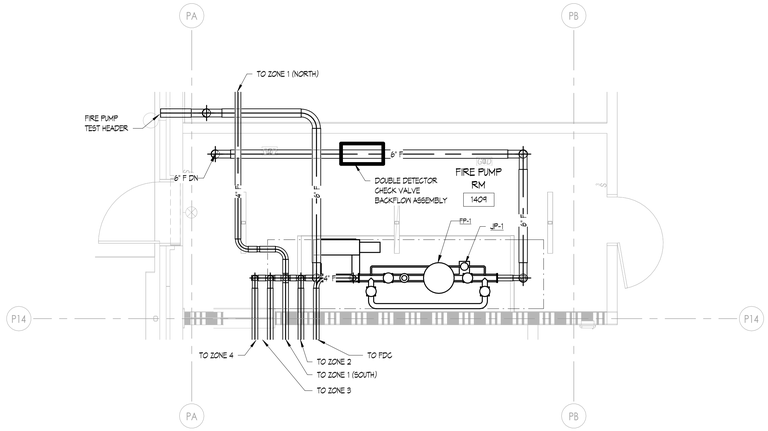


4 FIRE PUMP ROOM ENLARGED PLAN
1/4" = 1'-0"

FIRE PUMP SCHEDULE

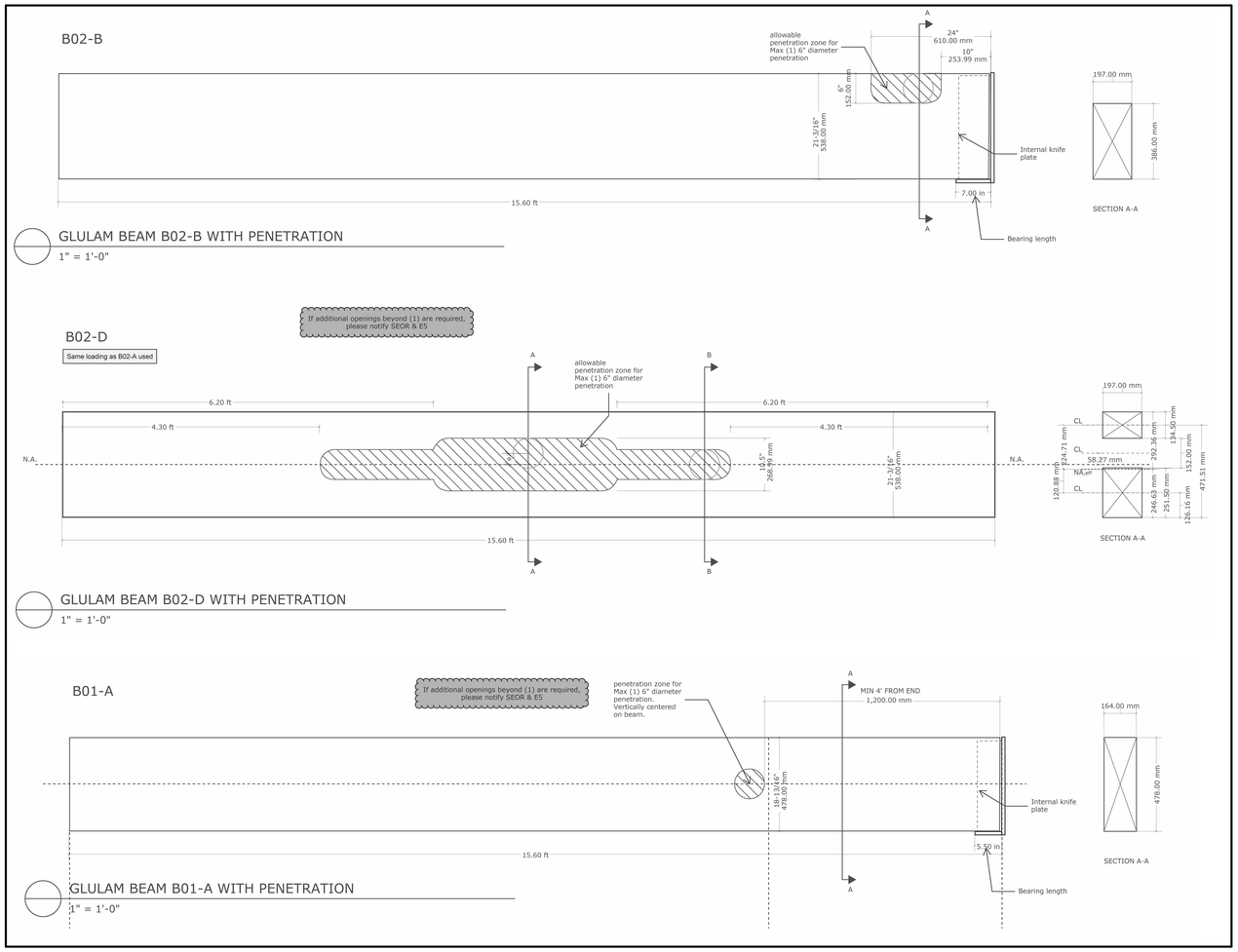
UNIT ID			ESTIMATED	ELECTRICAL			DISCONNECT/STARTER/CONTROL PANEL							
TAG	TAG #	FLOW	HEAD	HP	VOLTAGE	PHASE	TYPE	FURNISHED BY	INSTALLED BY	CONNECTED BY	MANUFACTURER	MODEL NO.	REMARKS	KEYED NOTES
FP	1	250 GPM	70.0 psi	20 hp	480 V	3	CONTROL PANEL	MANU	DIV 26	DIV 21	AC FIRE PUMP	3X3X11F	INLINE FIRE PUMP	

GENERAL NOTES:
1. FIRE PUMP PACKAGE SHALL INCLUDE 0.75 HP JOCKEY PUMP, JP-1, 480V, 3PH SIMILAR TO GOULDS 15V13.
2. THIS IS AN ESTIMATED HEAD PRESSURE. CONTRACTOR TO PROVIDE HYDRAULIC CALCULATIONS TO CONFIRM, BASED ON AN AUTOMATIC SPRINKLER SYSTEM.
3. MOUNT BOTH PUMPS ON 4" HOUSEKEEPING PAD.
4. FIRE PROTECTION CONTRACTOR TO PROVIDE FIRE PUMP AND JOCKEY PUMP CONTROLLERS AND DISCONNECTS. COORDINATE WITH ELECTRICAL AND FIRE ALARM CONTRACTOR. CONTROL PANELS SHALL COME WITH AUTOMATIC TRANSFER SWITCHES. STARTERS SHALL BE SOFT START AND FULL SERVICE TYPE.
5. MFR TO PROVIDE STAINLESS STEEL SUCTION AND DISCHARGE GAUGES, AIR RELEASE VALVE, UL LISTED CASING RELIEF VALVE, HOSE VALVE AND HEADER WITH HOSE VALVES, CAPS AND CHAINS (LOCAL THREADS) AND GLAVAL PUMP SUCTION CONTROL VALVE WITH 150# FLANGES.
6. CONTROLLERS SHALL BE PROVIDED WITH BACNET COMMUNICATION PROTOCOL FOR REMOTE MONITORING BY THE BMS.

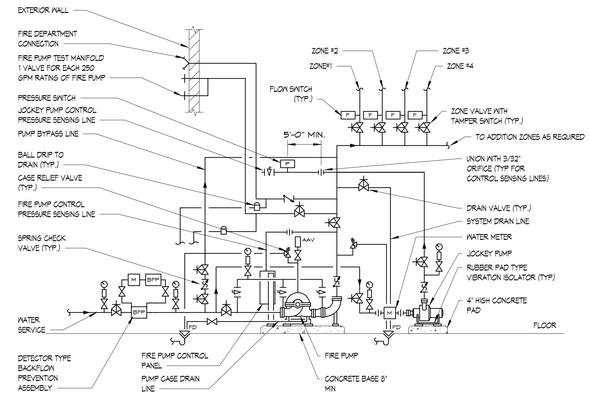
FIRE PROTECTION DRY VALVE SCHEDULE

UNIT ID			ESTIMATED SYSTEM VOLUME (GAL)	ESTIMATED AIR COMPRESSOR HP	COMPRESSOR VOLTAGE/PHASE	MANUFACTURER	MODEL	REMARKS
TAG	TAG#	SERVICE						
FP DRY VALV	1	NEW ADDITION CANOPY	50	1/2	115/1	VICTAULIC	NXT SERIES 768N	

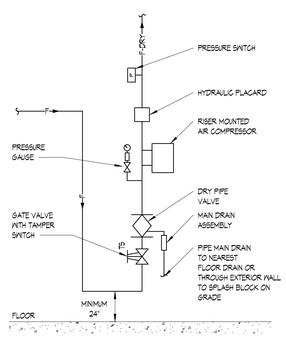
NOTES:
1. SYSTEM SIZE IS APPROXIMATE AND SHALL BE CONFIRMED BY FP CONTRACTOR THROUGH HYDRAULIC CALCULATIONS.
2. DIV 26 TO PROVIDE POWER VIA JUNCTION BOX AND DISCONNECT FOR RISER MOUNTED AIR COMPRESSOR.



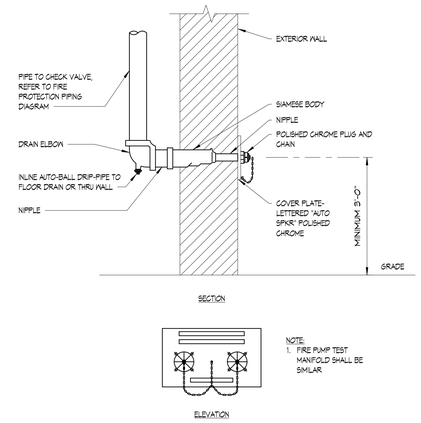
MASS TIMBER BEAM PENETRATION DETAILS
FINAL PENETRATIONS TO BE COORDINATED WITH MASS TIMBER MFR



FIRE PUMP AND JOCKEY PUMP DETAIL



DRY PIPE SPRINKLER ASSEMBLY PIPING DIAGRAM



FIRE DEPARTMENT CONNECTION DETAIL

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F

SHEET TITLE
FIRE PROTECTION DETAILS & SCHEDULES

SHEET NO.
F501

STATE OF MICHIGAN
THERESA LYN CARD
ENGINEER
No. 6201061679
07/30/2026

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ABBREVIATIONS

A, AMP	AMPERES
AF	AMP FUSE OR AMP FRAME
AFC	AVAILABLE FAULT CURRENT (SYMMETRICAL)
A.F.F.	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIC.	AMPERE INTERRUPTING CAPACITY
AM.	AMMETER
ASYM.	ASYMMETRICAL
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CAP.	CAPACITY OR CAPACITOR
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CKT.,CCT	CIRCUIT
C.O.	CONDUIT ONLY
CONN.	CONNECT OR CONNECTION
CU	COPPER
DA.	DURESS ALARM
DB	DOOR BELL
DISC.	DISCONNECT
DPST	DOUBLE POLE SINGLE THROW
EC	ELECTRICAL CONTRACTOR
EWC	ELECTRIC WATER COOLER (COORDINATE ACCESSIBILITY OF GFCI)
ELEC	ELECTRIC OR ELECTRICAL
ELEV	ELEVATION OR ELEVATOR
EMERG, EM	EMERGENCY
EPO	EMERGENCY POWER OFF
EMT	ELECTRICAL METAL TUBING
FIXT.	FIXTURE
FLA	FULL LOAD AMPERES
GRC,GCR	GALVANIZED RIGID CONDUIT
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GRD,GND,G	GROUND
HD	HAND DRYER
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HZ.	HERTZ
IMC	INTERMEDIATE METAL CONDUIT
I.G.	ISOLATED GROUND
INCAND.	INCANDESCENT
JB	JUNCTION BOX
KAIC	THOUSAND AMPERE INTERRUPTING CAPACITY
KVA	KILOVOLT AMPERES
KW	KILOWATT
KWH	KILOWATT HOUR
LTG	LIGHTING
LV	LOW VOLTAGE
MATV	MASTER ANTENNA TELEVISION
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MH	MANHOLE, METAL HALIDE OR MOUNTING HEIGHT
MLO	MAIN LUGS ONLY
N.C.	NORMALLY CLOSED
N.E.C.	NATIONAL ELECTRICAL CODE
N.I.C.	NOT IN CONTRACT
NF	NON FUSIBLE
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
OL	OVERLOADS
P	POLE
PB	PULLBOX
PH OR Ø	PHASE
PNL	PANEL
PR	PAIR
PVC	POLYVINYL CHLORIDE
PWR.	POWER
REC	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
SOL	SOLENOID
SPDT	SINGLE POLE DOUBLE THROW
SPKR	SPEAKER
SPST	SINGLE POLE SINGLE THROW
SW.	SWITCH
SWBD	SWITCHBOARD
SYM	SYMMETRICAL
TEL	TELEPHONE
XFMR	TRANSFORMER
TTB	TELEPHONE TERMINAL BACKBOARD
TV	TELEVISION
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLT
VA	VOLT AMPERES
VC	VOLUME CONTROL
VD	VOLTAGE DROP
VM	VOLT METER
W	WATTS OR WIRE
W/	WITH
W/O	WITHOUT
WP	WEATHERPROOF
XP	EXPLOSION PROOF

GENERAL

MOUNTING HEIGHTS TO BE AS INDICATED, UON. MOUNTING HEIGHTS ARE TO CENTER OF DEVICE FROM FINISHED FLOOR OR GRADE, UON. SEE SPECIFICATION DIV 26 FOR ADDITIONAL REQUIREMENTS.

KEY NOTE REFERENCE SYMBOL. DENOTES "SEE KEY NOTE NO. 2"

FOOT ON DEVICE INDICATES WALL MOUNTED

DEMOLITION AND REMODEL

EXISTING ELECTRICAL ITEM TO BE REMOVED, UON.

EXISTING ELECTRICAL ITEM TO REMAIN

B — EXISTING ELECTRICAL ITEM TO BE REMOVED AND PROVIDED WITH A BLANK COVERPLATE

EXISTING ELECTRICAL CIRCUIT TO BE REMOVED SHOWN ONLY WHERE CLARIFICATION BETWEEN EXISTING TO REMAIN AND REMOVED ITEMS IS REQUIRED

SEE PLANS AND NOTES FOR DEVICES INTEND FOR REUSE AND / OR REPURPOSING.

CIRCUIT DESIGNATIONS

1LN1-1 — PANEL NAME / POLE NUMBERS

BRANCH CIRCUIT HOMERUN. PROVIDE PHASE, NEUTRAL AND GROUND CONDUCTORS FOR EACH INDICATED CIRCUIT OR MULTI WIRE BRANCH AS REQUIRED. PROVIDE SWITCH LEGS FOR SWITCH CIRCUITING AS REQUIRED. PROVIDE EQUIPMENT GROUND WIRE IN ALL BRANCH CIRCUIT RACEWAYS/CIRCUITS. PROVIDE SEPARATE ISOLATED GROUND WIRE TO ALL ISOLATED GROUND DEVICES.

CONDUIT SIZE	MAX QUANTITY OF CONDUCTORS PER CONDUIT		
	CONDUCTOR SIZE		
	12	10	8
3/4 INCH	5 TO 8	5 TO 6	1 TO 3
1 INCH	9 TO 13	7 TO 11	4 TO 5

SEE SPECIFICATONS FOR LIMITATIONS ON QUANTITY OF CURRENT CARRYING CONDUCTORS PER CONDUIT

CONDUIT RISER UP

CONDUIT RISER DOWN

INDICATES CIRCUIT CONTINUATION

STUB INTO ACCESSIBLE CORRIDOR CEILING SPACE UNLESS OTHERWISE NOTED

CONDUIT SEAL FITTING FOR HAZARDOUS AREAS

CONDUIT SLEEVE

CAP END OF CONDUIT

CABLE OR CORD CONNECTED

LIGHTING

NOTE A: UPPER CASE ALPHANUMERIC SUBSCRIPT DENOTES FIXTURE TYPE. SEE SCHEDULE(S)

NOTE B: LOWER CASE LETTER SUBSCRIPT PROVIDED ADJACENT TO SWITCHING DEVICE AND ASSOCIATED LIGHT FIXTURE(S) WHERE REQUIRED FOR CLARIFICATION.

CEILING LIGHT OUTLET WITH FIXTURE CONNECTED TO NORMAL SOURCE

DIRECTIONAL AIMED FIXTURE AIM IN DIRECTION OF ARROW

WALL BRACKET LIGHT OUTLET WITH FIXTURE CONNECTED TO NORMAL SOURCE

RECESSED LIGHT OUTLET WITH FIXTURE CONNECTED TO NORMAL SOURCE

WALL BRACKET LIGHT OUTLET WITH FIXTURE CONNECTED TO NORMAL SOURCE

UNDERCABINET/ COUNTER LIGHT OUTLET OR STRIP LIGHT OUTLET WITH FIXTURE CONNECTED TO NORMAL SOURCE

LINEAR PENDANT/SUSPENDED LIGHT FIXTURE CONNECTED TO NORMAL SOURCE

EXIT LIGHT OUTLET WITH FIXTURE - SHADING INDICATES LOCATION OF FACE(S). ARROWS INDICATE DIRECTIONAL ARROWS WHERE REQUIRED. WALL MOUNTED SIGNS AT +90" CENTERED ABOVE DOOR WHERE APPLICABLE. EXIT SIGNS SHOWN AS CEILING MOUNTED IN OPEN CEILING APPLICATIONS SHALL BE RIGID SUSPENDED.

EMERGENCY LIGHT FIXTURE WITH INTEGRAL BATTERY SOURCE AND HEADS

TRACK LIGHT OUTLET WITH FIXTURE. TYPE INDICATED, QUANTITY AND LENGTH AS SHOWN OR SCHEDULED

PENDANT LIGHT FIXTURE CONNECTED TO NORMAL SOURCE

NL — PENDANT LIGHT FIXTURE TO SERVE AS A NIGHT LIGHT

LIGHTING STANDARD POLE FIXTURE, PROVIDE QUANTITY OF HEADS AND ORIENTATION AS INDICATED

LIGHTING STANDARD WITH POST-TOP FIXTURE

BOLLARD FIXTURE

CEILING LIGHT OUTLET WITH FIXTURE CONNECTED TO EMERGENCY SOURCE

WALL SCONCE LIGHT OUTLET WITH FIXTURE CONNECTED TO EMERGENCY SOURCE

LIGHT OUTLET WITH FIXTURE CONNECTED TO EMERGENCY SOURCE

LINEAR WALL LIGHT OUTLET WITH FIXTURE CONNECTED TO EMERGENCY SOURCE

SURFACE / STRIP LIGHT OUTLET WITH FIXTURE CONNECTED TO EMERGENCY SOURCE

PENDANT LIGHT FIXTURE CONNECTED TO EMERGENCY SOURCE

LINEAR PENDANT/SUSPENDED LIGHT FIXTURE CONNECTED TO EMERGENCY SOURCE

S — SWITCH AT +48" U.O.N.

THE FOLLOWING SUBSCRIPTS ARE USED TO INDICATE VARIOUS TYPES OF SWITCHES.

NO SUBSCRIPT - SINGLE POLE
2 — DOUBLE POLE
3 — THREE WAY
4 — FOUR WAY
D — DIMMER, COMPATIBLE WITH FIXTURE.
f — FUSED
L — LOW VOLTAGE SWITCH WITH DIMMING AND ON/OFF CONTROL.
L1 — LOW VOLTAGE SWITCH WITH ON/OFF CONTROL.
K — LOW VOLTAGE DIGITAL KEY SWITCH.
OS — WALL SWITCH OCCUPANCY SENSOR, DUAL TECHNOLOGY.
DOS — WALL SWITCH OCCUPANCY SENSOR W/ DIMMER, DUAL TECHNOLOGY.
TE — MANUAL STARTER WITH THERMAL ELEMENT
M — MOTOR RATED

WIRELESS DEVICE

PC — EXTERIOR PHOTOCELL. ON/OFF WITH ADJUSTABLE SET-POINT.

DH — DAYLIGHT HARVESTING SENSOR. ANALOG 0-10V OUTPUT WITH INTEGRAL MOTION SENSOR.

OS OS OS — CEILING / DIRECTIONAL / DIRECTIONAL WALL MOUNTED OCCUPANCY SENSOR DUAL TECHNOLOGY, WITH REQUIRED POWER PACKS. CEILING MOUNTED OCCUPANCY SENSORS LOCATED IN OPEN CEILING APPLICATIONS SHALL BE RIGID SUSPENDED FLUSH WITH THE BOTTOM OF THE LIGHT FIXTURES.

TC — TIME CLOCK AT +48"

POWER AND DIAGRAMS

NOTE:
A. OUTLETS IN FINISHED OR SHELL SPACES SHALL BE MOUNTED AT +18" UON.
B. OUTLETS IN GARAGE, MECHANICAL, AND ELECTRICAL SPACES SHALL BE MOUNTED AT 48" UON.
C. OUTLETS SHALL BE TAMPER PROOF. WHERE REQUIRED PER CODE.
D. OUTLETS SHALL HAVE AFCI PROTECTION. WHERE REQUIRED PER CODE.
E. OUTLETS SHALL HAVE GFCI PROTECTION, WHERE REQUIRED PER CODE.

THE FOLLOWING SUBSCRIPTS ARE USED TO INDICATE DIFFERENT TYPES OF RECEPTACLES

WP — WEATHERPROOF, EXTRA DUTY, WITH STEEL IN-USE COVER.
CL — CLOCK MOUNTED AT +84", REGRESSED SINGLE RECEPTACLE, WITH CLOCK HANGER.
H — HORIZONTAL MOUNTING
U — DUAL USB INCLUDED WITH RECEPTACLE TYPE SHOWN.

TYPICAL SYMBOLOGY:

20A, 125V, 2 POLE, 3 WIRE GROUNDING DUPLEX RECEPTACLE, NEMA 5-20R

20A, 125V, 2 POLE, 3 WIRE GROUNDING SINGLE RECEPTACLE, NEMA 5-20R

20A, 125V, 2 POLE, 3 WIRE GROUNDING DOUBLE DUPLEX RECEPTACLE, NEMA 5-20R

250V, 2 POLE, 3 WIRE GROUNDING SINGLE RECEPTACLE, SIZE AND TYPE AS NOTED.

RECEPTACLES WITH GROUND FAULT CIRCUIT INTERRUPTOR

RECEPTACLES MOUNTED 4" ABOVE COUNTER OR BACK SPLASH AS APPLICABLE, UON.

RECEPTACLES WITH GFCI AND MOUNTED 4" ABOVE COUNTER OR BACK SPLASH AS APPLICABLE.

CEILING MOUNTED RECEPTACLE. TYPE AS INDICATED ABOVE.

CEILING MOUNTED GFCI RECEPTACLES, TYPE AS INDICATED ABOVE.

FLUSH FLOOR MOUNTED RECEPTACLE, TYPE AS INDICATED ABOVE.

FLUSH FLOOR MOUNTED RECEPTACLE, GFCI, TYPE AS INDICATED ABOVE.

PEDESTAL MOUNTED RECEPTACLE, TYPE AS INDICATED ABOVE.

SPECIAL PURPOSE RECEPTACLE. SUBSCRIPT DENOTES NEMA TYPE.

COMBINATION POWER/ COMMUNICATIONS FLOOR BOX, TYPE AND COMMUNICATIONS DEVICE AS INDICATED.

JUNCTION BOX. 4" SQUARE, UON. WALL AND CEILING MOUNTED.

PIGTAIL TO SWITCH DENOTES TOP HALF OF RECEPTACLE SWITCHED.

SURFACE RECEPTACLE STRIP. TYPE AND LENGTH AS INDICATED.

JUNCTION BOX. 4" SQUARE, UON. WALL AND CEILING MOUNTED.

208 VOLT PANELBOARD AT +72" TO TOP

480 VOLT PANELBOARD AT +72" TO TOP

M — ELECTRIC METER

CABLE TRAY OR WIREWAY

SAFETY SWITCH AT +54". CHARACTERISTICS AS INDICATED BY FRAME/POLES.

FUSED SAFETY SWITCH AT +54". CHARACTERISTICS AS INDICATED BY FRAME/FUSESIZE/POLES.

MAGNETIC MOTOR STARTER AT +54". CHARACTERISTICS AS INDICATED BY FRAME SIZE/POLES/NEMA SIZE.

COMBINATION MAGNETIC MOTOR STARTER WITH DISCONNECT AT +54". CHARACTERISTICS AS INDICATED BY FRAME/FUSE/POLES/NEMA SIZE

AFD — ADJUSTABLE FREQUENCY DRIVE WITH INTEGRAL CIRCUIT BREAKER DISCONNECT

MAGNETIC CONTACTOR AT +54". AMPS/POLES/CONTACT VOLTS/ COIL VOLTS AS INDICATED.

CB — SEPARATELY MOUNTED, ENCLOSED MOLDED CASE CIRCUIT BREAKER AT +48". FLUSH MOUNTED IN FINISHED AREAS. AMP/POLES AS INDICATED.

CIRCUIT BREAKER. AMP/POLES AS INDICATED

FUSE. SIZE AS INDICATED

FUSIBLE SWITCH. AMP/POLES/FUSE SIZE AS INDICATED

AUTOMATIC TRANSFER SWITCH +72" TO TOP OR FLOOR MOUNTED.

DISCONNECT STABS FOR DRAWOUT TYPE EQUIPMENT

TRANSFORMER

GROUND CONNECTION

MOTOR CONNECTION, HP AS INDICATED

G — GENERATOR

START-STOP PUSHBUTTON STATION AT +48"

GROUND BUS ON STANDOFFS

CONTROL PANEL:

EQUIPMENT OR TERMINAL CABINET AT +72" TO TOP

PS — POWER SUPPLY

PUSHBUTTON STATION AT +48"

NOTE:
SYMBOLS SHOWN ARE FOR REFERENCE ONLY AND DO NOT CONSTITUTE A CHECK LIST OF DEVICES REQUIRED BY THE CONTRACT

FIRE DETECTION AND ALARM

FACP — CONTROL PANEL AT +72" TO TOP

FAAN — FIRE ALARM ANNUNCIATOR PANEL AT +72" TO TOP

F — MANUAL STATION AT +48"

FIRE SUPPRESSION SYSTEM ABORT SWITCH STATION AT +48"

COMBINATION CARBON MONOXIDE / SMOKE DETECTOR WITH ANNUNCIATION

SD — SMOKE DETECTOR - PHOTO ELECTRIC AREA BEAM

DD — DUCT SMOKE DETECTOR

FD — FIRE/ SMOKE DAMPER

HD — AUTOMATIC HEAT DETECTOR

THE FOLLOWING SUBSCRIPTS ARE USED TO INDICATE THE VARIOUS TYPE OF HEAT DETECTORS

NO SUBSCRIPT - FIXED TEMPERATURE (155 DEGREE U.O.N.)
R/F — COMBINATION RATE OF RISE FIXED TEMPERATURE (135 DEGREE U.O.N.)
XP — EXPLOSION PROOF, FIXED TEMPERATURE (135 DEGREE U.O.N.) CLASS 1, GROUP C

NOTE: WALL MOUNT VISUAL AND COMBINATION AUDIO/VISUAL NOTIFICATION APPLIANCES AT +80" AFF TO BOTTOM OF FACE PLATE U.O.N.

V — VISUAL NOTIFICATION APPLICANCE

A — WALL MOUNTED AUDIBLE NOTIFICATION APPLIANCE

AV — WALL MOUNTED COMBINATION AUDIBLE/VISUAL NOTIFICATION APPLIANCE

CEILING MOUNTED VISUAL NOTIFICATION APPLIANCE

CEILING MOUNTED AUDIBLE NOTIFICATION APPLIANCE

AV — CEILING MOUNTED COMBINATION AUDIBLE/VISUAL NOTIFICATION APPLIANCE

DH — MAGNETIC DOOR HOLDER. COORDINATE MOUNTING HEIGHT WITH DOOR MANUFACTURER.

FR — ELECTROMECHANICAL DOOR RELEASE. COORDINATE WITH DOOR MANUFACTURER.

FS — SPRINKLER OR STANDPIPE FLOW ALARM SWITCH CONNECTION

TS — VALVE TAMPER SWITCH

PIV — POST INDICATOR VALVE

TELECOMMUNICATION

REFER TO TECHNOLOGY SHEETS T-SEREIS SHEETS FOR DEVICES MOUNTED AT EACH DATA DROP LOCATION, CONDUIT PATHWAY DETAILS AND ANY ADDITIONAL CONDUIT INFORMATION.

GENERAL NOTES:
NOTE A: OUTLETS IN FINISHED OR SHELL SPACES SHALL BE MOUNTED AT +18" UON.
NOTE B: OUTLETS LOCATED AT COUNTERS SHALL BE LOCATED 18"AFF IN KNEE SPACE IF PROVIDED OR 4" ABOVE COUNTER OR BACK SPLASH AS APPLICABLE IF NO KNEE SPACE IS PROVIDED UON.

60" ▽ — MONITOR TELECOMMUNICATIONS OUTLET - PROVIDE EXTRA DEEP DOUBLE GANG BOX WITH MOD RING FOR DOUBLE GANG WALL PLATE AND (2) 1 1/4" CONDUITS UON TO ABOVE ACCESSIBLE FINISHED CEILING, MOUNTED AT HEIGHT (60" OR 72") AS NOTED. PROVIDE PLASTIC BUSHINGS AT THE ENDS OF THE CONDUITS. DATA DEVICES AND AUDIO/VIDEO DEVICES AND WIRING PROVIDED BY OTHERS, UON.

▼ — STANDARD TELECOMMUNICATIONS OUTLET - PROVIDE EXTRA DEEP DOUBLE GANG BOX WITH SINGLE GANG MUD RING AND (1) 1 1/4" CONDUIT UON TO ABOVE AN ACCESSIBLE FINISHED CEILING, MOUNTED AT 18" AFF, UON. PROVIDE PLASTIC BUSHING AT THE ENDS OF THE CONDUITS. DATA DEVICES AND WIRING PROVIDED BY OTHERS, UON.

95",120", 144" ▼ — TELECOMMUNICATIONS OUTLET - PROVIDE SINGLE GANG BOX WITH (1) 1 1/4" CONDUIT UON TO ABOVE AN ACCESSIBLE FINISHED CEILING, MOUNTED AT HEIGHT (95",120",144"). PROVIDE PLASTIC BUSHING AT THE ENDS OF THE CONDUITS. DATA DEVICES AND WIRING PROVIDED BY OTHERS, UON.

144" SPKR ▼ — TELECOMMUNICATIONS OUTLET - BACK BOXES PROVIDED BY PA CONTRACTOR AND INSTALLED BY E.C.. E.C. TO PROVIDE AND INSTALL (1) 1 1/4" CONDUIT UON TO ABOVE AN ACCESSIBLE FINISHED CEILING FROM BACK BOX. PROVIDE PLASTIC BUSHING AT THE ENDS OF THE CONDUITS. DATA DEVICES AND WIRING PROVIDED BY OTHERS, UON.

▽ — TELECOMMUNICATIONS OUTLET - PROVIDE EXTRA DEEP DOUBLE GANG BOX WITH SINGLE GANG MUD RING AND (1) 1 1/4" CONDUIT UON TO ABOVE AN ACCESSIBLE FINISHED CEILING, MOUNTED 4" ABOVE COUNTER OR BACK SPLASH, UON. PROVIDE PLASTIC BUSHING AT THE ENDS OF THE CONDUITS. DATA DEVICES AND WIRING PROVIDED BY OTHERS, UON.

THE FOLLOWING SUBSCRIPTS ARE USED TO INDICATE THE VARIOUS (NON-STANDARD) TYPES OF OUTLETS

F — FLOOR MOUNTED.
C — CEILING MOUNTED LOW VOLTAGE DEVICE. PROVIDE JUNCTION BOX WITH 1" CONDUIT ROUTED TO NEAREST ACCESSIBLE CEILING SPACE. REFER TO LOW VOLTAGE CONSULTANT DRAWINGS FOR TYPE OF DEVICE TO BE INSTALLED.

48" ▽ — MOUNTED 48" AFF, UON.
72" ▽ — MOUNTED 72" AFF, UON.
CAM ▽ C — CAMERA
▽ — TELEPHONE AT 44" AFF, UON.
TV — TELEVISION, MOUNTED AT NOTED HEIGHT.
B — BLANK (ROUGH-IN TO ACCESSABLE CEILING SPACE) WITH BLANK COVERPLATE
F — FIBER

C — WALL MOUNTED CLOCK THAT REQUIRES POWER AND DATA CONNECTIONS.

S — SPEAKER FOR PA SYSTEM - PROVIDE DOUBLE GANG BOX WITH 1 1/4" CONDUIT ROUTED CONCEALED TO THE NEAREST ACCESSIBLE CEILING SPACE. DEVICE AND WIRING PROVIDED BY OTHERS, UNO.

ADA DOOR CONTROL OPENER, COORDINATE WITH DOOR REQUIREMENTS

DC — DOOR CONTROLS, COORDINATE WITH SECURITY, AUTO AND MANUAL CONTROLS

DURESS ALARM BUTTON

SECURITY

CAM C — SEE T-SERIES SHEETS FOR CAMERA LOCATIONS
VIDEO SURVEILANCE CAMERA - PROVIDE SINGLE GANG JUNCTION BOX WITH 1" EMPTY CONDUIT RACEWAY WITH PULL STRING TO ABOVE ACCESSIBLE FINISHED CEILING SPACE FOR INTERIOR APPLICATION. CONDUIT FOR EXTERIOR CAMERA INSTALLATIONS SHALL BE ROUTED CONCEALED BEHIND ARCHITECTURAL FINISHES BACK TO INTERIOR SPACE OF THE BUILDING STUBBED ABOVE AN ACCESSIBLE CEILING SPACE. PROVIDE PLASTIC BUSHING AT THE END OF THE CONDUIT. UNLESS NOTED OTHERWISE.

DOOR POSITION SWITCH

CONNECTION TO ELECTRIC OR PNEUMATIC DOOR LOCK

CR — CARD READER AT +48"

GENERAL DEMOLITION NOTES:

1. DEMOLITION NOTES ARE BASED UPON FIELD OBSERVATION AND EXISTING RECORD DOCUMENTS. THE ELECTRICAL CONTRACTOR SHALL VERIFY EXACT CONDITIONS AT SITE AND REPORT DISCREPANCIES TO THE ARCHITECT/ENGINEER BEFORE DISTURBING THE INSTALLATION.
2. THE SCOPE OF REQUIRED DEMOLITION IS NOT LIMITED TO ITEMS OR WORK INDICATED ON THE CONTRACT DOCUMENTS. THE ELECTRICAL CONTRACTOR SHALL DETERMINE THE NATURE AND EXTENT OF WORK REQUIRED. THE CONTRACTOR ACCEPTS EXISTING SITE CONDITIONS AT THE START OF DEMOLITION.
3. WHERE ELECTRICAL COMPONENT ARE SHOWN TO BE REMOVED, THE ELECTRICAL CONTRACTOR SHALL RECONNECT REMAINING COMPONENTS TO EXISTING CIRCUIT(S).
4. WHERE THE DRAWINGS SHOW DEVICES OR EQUIPMENT TO BE PERMANENTLY REMOVED, THE ELECTRICAL CONTRACTOR SHALL REMOVE CONDUCTORS BACK TO SOURCE. TURN BREAKER 'OFF' AND LABEL THE BREAKER AS 'SPARE' ON NEWLY PRINTED PANEL DIRECTORY.
5. THE ELECTRICAL CONTRACTOR SHALL REMOVE ALL ABANDONED CONDUIT. THE ELECTRICAL CONTRACTOR SHALL CUT CONDUIT FLUSH WITH WALLS AND FLOORS, UON. PATCH ALL SURFACES AND PROVIDE FIRESTOP WHERE REQUIRED.
6. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF DAMAGE TO ALL ADJACENT CONSTRUCTION AND FINISHES. REPAIRS SHALL BE MADE TO RETURN SPACE TO ORIGINAL CONDITION PRIOR TO COMPLETION OF PROJECT.
7. EQUIPMENT AND DEVICES SHOWN AS DASHED ON THE DRAWING ARE TO BE REMOVED.
8. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT ALL ELECTRICAL SYSTEMS IN WALLS, FLOORS AND CEILINGS SCHEDULED FOR REMOVAL, INCLUDING SPECIAL SYSTEMS.
9. THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN OPERATION OF EXISTING SYSTEMS DURING CONSTRUCTION. CONDITIONS SHALL BE RETURNED TO NORMAL AT THE CLOSE OF THE PROJECT.
10. CONTRACTOR SHALL MAINTAIN ALL POWER AND DATA CONDUIT AND WIRING SERVING AREAS NOT INCLUDED IN THE SCOPE OF WORK, UON. NOTIFY ARCHITECT/ ENGINEER IF THESE DEVICES WILL IMPEDE UPON SCOPE OF WORK DURING RENOVATION TO RECEIVED DIRECTION ON RESOLUTION.
11. THE ELECTRICAL CONTRACTOR SHALL PROVIDE BLANK COVERS ON ALL JUNCTION BOXES WHERE DEVICE HAS BEEN REMOVED AND THE JUNCTION BOX IS TO REMAIN FOR FUTURE USE.
12. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR THE DISPOSAL OF ALL LAMPS AS REQUIRED AND DIRECTED IN THE LATEST STATE LAWS.
13. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR THE DISPOSAL OF ALL EQUIPMENT AND DEVICES REMOVED.
14. ALL DISRUPTIONS OF SERVICE SHALL BE COORDINATED AND APPROVED BY OWNER.

GENERAL NOTES:

1. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST ACCEPTED EDITION OF THE NATIONAL ELECTRICAL CODE, NEC, AND ALL STATE AND LOCAL CODES.
2. COORDINATE THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT AND CONNECTIONS WITH ARCHITECTURAL, STRUCTURAL, MECHANICAL AND EQUIPMENT DRAWINGS.
3. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL POWER, CONDUITS, CABLETRAY, AND OTHER COMPONENTS AS SHOWN ON THE EQUIPMENT PROVIDER DRAWINGS FOR INSTALLATION OF SYSTEM.
4. "BACK TO BACK" OR THROUGH THE WALL BOXES SHALL NOT BE USED.
5. INSTALL HANDLE LOCK-ON, ON ALL CIRCUIT BREAKERS CONTROLLING NIGHT LIGHT, EMERGENCY LIGHT AND EXIT LIGHT CIRCUITS.
6. ALL RECEPTACLES SHALL BE HARD USE, SPECIFICATION GRADE.
7. PROVIDE TAMPER RESISTANT RECEPTACLES WHERE REQUIRED BY APPLICABLE CODES.
8. RECEPTACLES INDICATED AS GROUND FAULT CIRCUIT INTERRUPTER TYPE SHALL BE MOUNTED IN AN ACCESSIBLE LOCATION, PER CODE OR PROVIDED WITH A GFCI BREAKER.
9. ALL CONDUCTORS SHALL BE COPPER. ALUMINUM WIRES SHALL NOT BE USED.
10. MINIMUM CONDUIT SIZE SHALL BE 3/4" FOR POWER FEEDS AND 1" FOR DATA FEEDS.
11. FINAL CONNECTION TO ITEMS SUBJECT TO VIBRATION SHALL BE MADE WITH LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT.
12. 120/208VAC CIRCUIT WIRING FOR ANY ROOM OR AREA MAY BE GROUPED INTO RACEWAYS UNLESS SEPARATE RACEWAYS ARE REQUIRED BY THE NEC. COMPLY WITH NEC REQUIREMENTS FOR CONDUCTOR DERATING.
13. PROVIDE EQUIPMENT GROUNDING CONDUCTORS FOR ALL POWER AND LIGHTING CIRCUITS.
14. ALL LIGHTING AND POWER CONDUCTORS SHALL BE 12 AWG MINIMUM. ALL CONTROL CONDUCTORS SHALL BE 14 AWG MINIMUM OR AS SPECIFIED BY MANUFACTURER.
15. DEDICATED NEUTRAL SHALL BE PROVIDED FOR ALL CIRCUITS. SHARED NEUTRALS ARE NOT ALLOWED.
16. BASIS OF DESIGN IS FOR A COMPLETE ELECTRICAL SYSTEM, INSTALLED PER CODE REQUIREMENTS.
17. PROVIDE AN UNSWITCHED HOT TO ALL EMERGENCY BATTERY PACKS, LIGHTING INVERTERS AND EMERGENCY LIGHTING UNITS AHEAD OF LIGHTING CONTROLS FROM THE BRANCH CIRCUIT SERVING LIGHTING IN THE SURROUNDING AREA.
18. HORIZONTAL RUNS OF CONDUIT IN COMPOSITE CONCRETE SLABS ARE NOT PERMITTED. CONDUITS SHALL BE MOUNTED BELOW THE COMPOSITE SLABS AND PENETRATE THROUGH FITTINGS PROVIDED WHERE NECESSARY, SUBJECT TO APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD. CONTRACTOR SHALL PROVIDE ALL NECESSARY RADAR SERVICES TO CONFIRM STRUCTURAL REINFORCING LOCATED IN COMPOSITE CONCRETE SLABS PRIOR TO DRILLING FOR ALL ANCHOR AND MOUNTING SYSTEMS FOR ALL ELECTRICAL AND LOW VOLTAGE SYSTEMS. VERIFY ALL MOUNTING REQUIREMENTS WITH STRUCTURAL ENGINEER OF RECORD ON COMMUNITY CENTER PROJECT PRIOR TO STARTING CONSTRUCTION.
19. CONTRACTOR SHALL PROVIDE COMMISSIONING OF ELECTRICAL SYSTEMS BY AN INDEPENDENT THIRD PARTY AGENCY OR INDEPENDENT COMMISSIONING AGENT AS REQUIRED BY THE 2021 MICHIGAN COMMERCIAL ENERGY CODE SECTIONS 408.2.4, AND 408.3. TEST, CERTIFY, AND PROVIDE DOCUMENTATION OF LIGHTING CONTROL DEVICES AND CONTROL SYSTEMS TO ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS, THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND ENERGY CONTROL DESIGN GUIDELINES. REFER TO SPECIFICATIONS ADDITIONAL REQUIREMENTS.
20. PROVIDE ALL NECESSARY UNISTRUT AND MOUNTING HARDWARE FOR ALL ELECTRICAL AND LIGHTING SYSTEMS TO BE INDEPENDENTLY SUPPORT SEPARATELY FROM MECHANICAL AND PLUMBING SYSTEMS. SUPPORTING AND ANCHORING OF ELECTRICAL SYSTEMS TO AND OR FROM MECHANICAL AND PLUMBING SYSTEMS WILL NOT BE ALLOWED.
21. VERIFY ALL FINAL LV BACK BOXES AND CONDUIT PATHWAY SIZES, LV DEVICE MOUNTING HEIGHT AND FINAL LOCATIONS WITH THE LOW VOLTAGE CONSULTANT AND OWNER PRIOR TO ROUGH-IN.
22. FIELD VERIFY FINAL MOUNTING HEIGHTS FOR HILTI SLEEVES WITH LV CONTRACTOR AND ARCHITECT PRIOR TO ROUGH-IN.
23. PROVIDE DUCT SEAL INSIDE ALL CONDUIT PENETRATIONS THROUGH THE EXTERIOR SHELL OF THE BUILDING. REFER TO DETAIL 12 ON SHEET 811 FOR SEALING AROUND CONDUIT PENETRATIONS THROUGH EXTERIOR WALLS.

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HOWELL PUBLIC SCHOOLS

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CONSTRUCTION DOCUMENTS	07.30.2026

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JOB NO. Project Number

SHEET TITLE
ELECTRICAL COVER SHEET

SHEET NO.
E001

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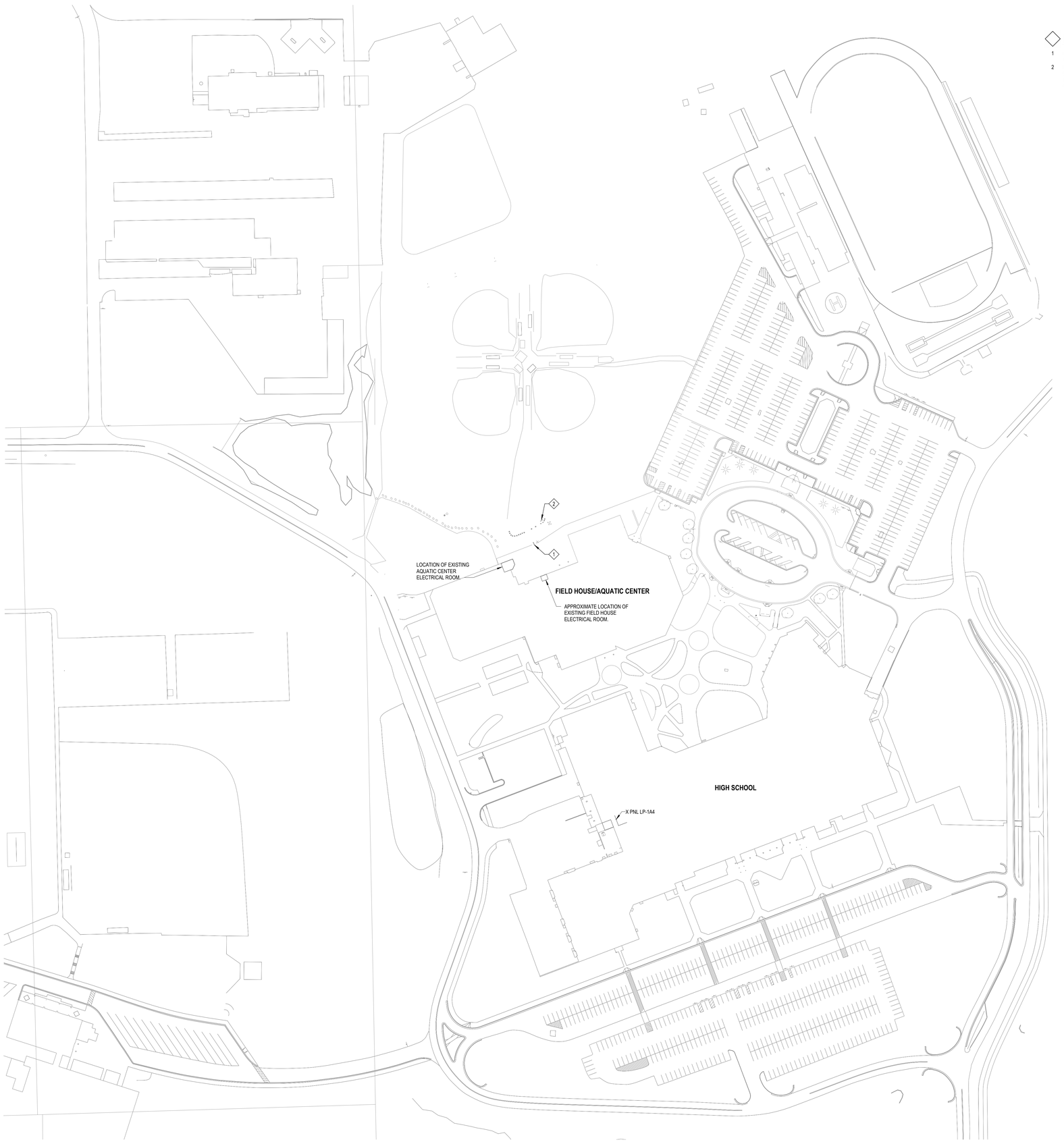

1 E111 **SITE PLAN - ELECTRICAL DEMOLITION**
SCALE = 1" = 80'-0"

KEYNOTES:

1. DISCONNECT AND REMOVE EXISTING POLE MOUNTED LIGHT. REMOVE CIRCUIT BACK TO SOURCE. TURN POLE AND LIGHT OVER TO OWNER FOR OWNER STOCK.
2. DISCONNECT AND REMOVE EXISTING LIFT STATION DISCONNECT, TRANSFORMER AND PUMP CONTROL PANEL. REMOVE CIRCUIT BACK TO SOURCE. TURN OVER DISCONNECT AND TRANSFORMER OVER TO OWNER TO FOR OWNER STOCK. COORDINATE WITH OWNER IF PUMP CONTROL PANEL AND ASSOCIATED PUMPS ARE TO BE DISPOSED OR SALVAGED.

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SHEET TITLE
SITE PLAN - ELECTRICAL DEMOLITION

SHEET NO.
E111

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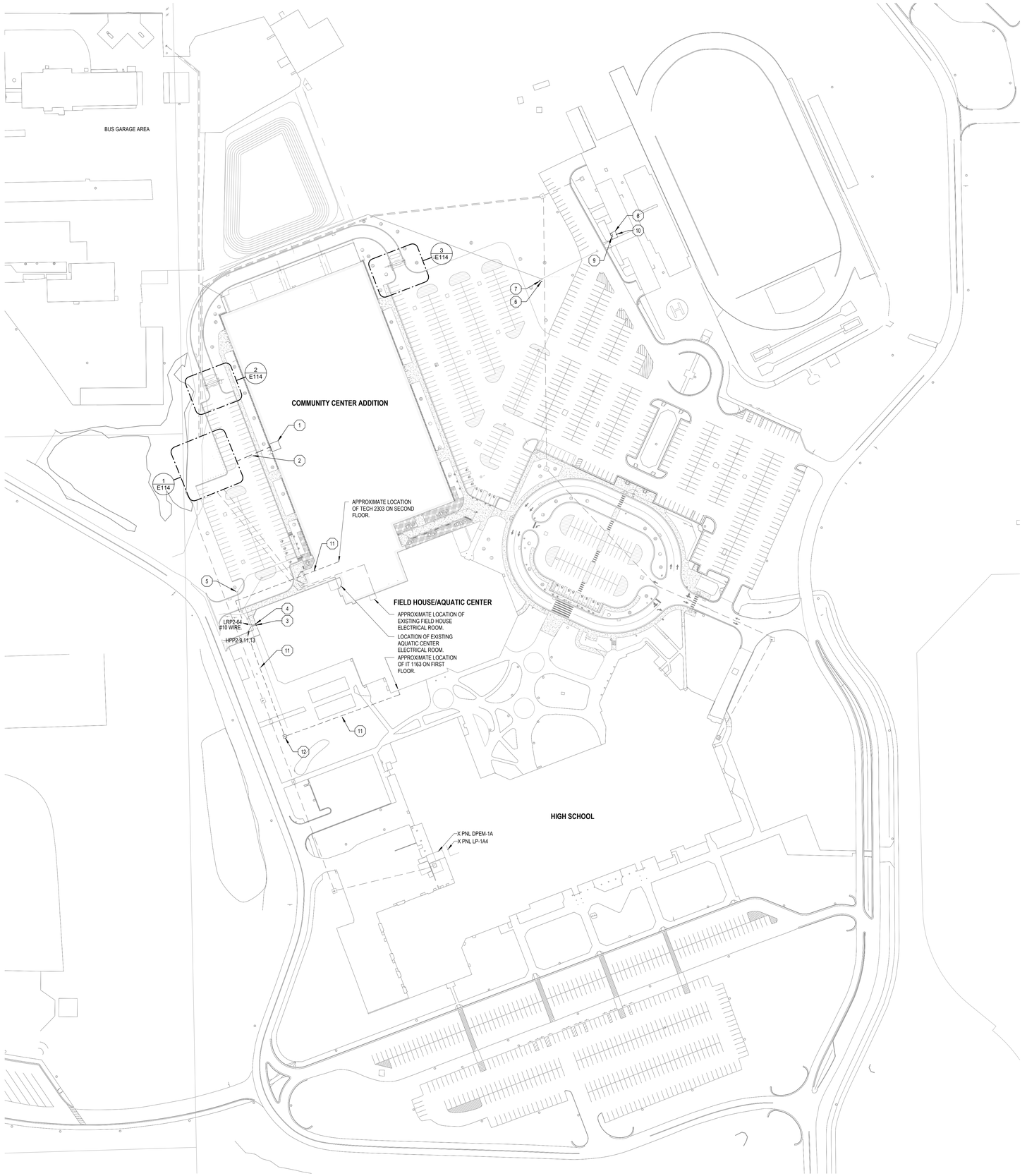

1 E112 **SITE PLAN - ELECTRICAL COMMUNITY CENTER**
SCALE = 1" = 80'-0"

KEYNOTES:

1. APPROXIMATE LOCATION OF COMMUNITY CENTER MAIN ELECTRICAL ROOM.
2. UNDERGROUND SERVICE LATERALS FROM THE MEDIUM VOLTAGE TRANSFORMER TO THE COMMUNITY CENTER MAIN ELECTRICAL ROOM. REFER TO ENLARGED SITE ELECTRICAL PLAN AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
3. PROVIDE AND INSTALL A 30/15/3 NEMA 3R FUSED DISCONNECT SWITCH TO POWER NEW GRINDER PUMP LIFT STATION. INSTALL DISCONNECT ON THE EXTERIOR OF THE EXISTING AQUATIC CENTER JUST NORTH OF THE EXISTING EXTERIOR DOUBLE DOORS. CONNECT TO PANEL HPP2 LOCATED IN ELECTRICAL 1319.
4. GRINDER PUMP CONTROL PANEL CONNECT TO 120V POWER FROM PANEL LRP2 LOCATED IN ELECTRICAL 1319. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH CIVIL CONTRACTOR PRIOR TO ROUGH-IN.
5. APPROXIMATE LOCATION OF GRINDER PUMP. VERIFY FINAL LOCATION WITH CIVIL CONTRACTOR PRIOR TO START OF CONSTRUCTION.
6. PROVIDE AND INSTALL A NEW 30/15/3 NEMA 3R FUSED DISCONNECT SWITCH TO POWER NEW GRINDER PUMP LIFT STATION PUMP. INSTALL FUSED DISCONNECT ON A NEW UNISTRUT RACK FRAME LOCATED ADJACENT TO THE GRINDER PUMP PIT. CONNECT TO A NEW 20A-3P BREAKER TO BE INSTALLED IN THE EXISTING MAIN SWITCHBOARD LOCATED IN THE CONCESSION BUILDING ELECTRICAL ROOM OF THE OUTDOOR ATHLETIC COMPLEX. EXISTING SWITCHBOARD IS AN EATON POW-R-LINE C SERIES RATED 480/277V-3PH-4W. REPLACE EXISTING ELECTRICAL EQUIPMENT FACEPLATES TO ACCOMMODATE THE NEW BREAKER. ROUTE BRANCH CIRCUIT BELOW GRADE IN THE AREA OF THE PARKING LOT SCHEDULED TO BE REPLACED TO ACCOMMODATE A NEW STORM DRAIN. SEE CIVIL PLAN SHEET C4.1 FOR MORE INFORMATION. REFER TO UNISTRUCT RACK SYSTEM DETAIL 6 ON SHEET E811 FOR MOUTING OF FUSED DISCONNECT SWITCH.
7. GRINDER PUMP CONTROL PANEL SHALL CONNECT TO A 120V CIRCUIT FROM PANEL RP-1D1 LOCATED IN THE CONCESSION BUILDING THAT SERVES THE OUTDOOR ATHLETIC COMPLEX. PANEL LEGEND INDICATES SPARES AT POLE POSITIONS 25,27,29, 30, AND 37. CONNECT TO A SPARE 20A CIRCUIT BREAKER NOTED AT ONE OF THE POLE LOCATIONS. BRANCH CIRCUIT FEED SHALL BE ROUTED BELOW GRADE FROM THE PUMP CONTROL PANEL TO EXISTING PANEL RP-1D1. PUMP CONTROL PANEL BRANCH CIRCUIT SHALL FOLLOW THE 480V-3PH FEED FOR THE NEW LIFT STATION PUMP ROUTED BELOW GRADE IN THE AREA OF THE PARKING LOT SCHEDULED TO BE REPLACED TO ACCOMMODATE A NEW STORM DRAIN. REFER TO CIVIL PLAN SHEET C4.1 FOR MORE INFORMATION. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH CIVIL CONTRACTOR PRIOR TO ROUGH-IN. GRINDER PUMP CONTROL PANEL TO BE MOUNTED ON UNISTRUT RACK SYSTEM REFER TO DETAIL 6 ON SHEET E811.
8. CONCESSION BUILDING MAIN ELECTRICAL ROOM.
9. APPROXIMATE LOCATION OF CONCESSION BUILDING EXISTING MAIN SWITCHBOARD.
10. APPROXIMATE LOCATION OF CONCESSION BUILDING EXISTING BRANCH PANEL RP-1D1. EXISTING PANEL IS AN EATON POW-R-LINE C PRL1a SERIES RATED 208/120V-3PH-4W.
11. ROUTE (2) 3" EMPTY DATA CONDUITS WITH PULLSTRINGS BELOW GRADE FROM TECH 2303 TO IT SPACE 1163. CONDUITS ROUTING SHALL AVOID ALL EXISTING AND NEW UNDERGROUND UTILITES. VERIFY FINAL CONDUIT ROUTING IN THE FIELD WITH THE GC FOUNDATION CONTRACTOR AND CIVIL TRADES PRIOR TO THE START OF CONSTRUCTION. REFER TO SHEETS E411.b AND E421.d FOR ADDITIONAL CONDUIT ROUTING INFORMATION.
12. PROVIDE A 24"WX24"DX24"H QUAZITE HAND HOLE BOX WITH GASKETED MECHANICALLY FASTENED COVER.

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JOB NO. Project Number

SHEET TITLE
SITE PLAN - ELECTRICAL

SHEET NO.
E112

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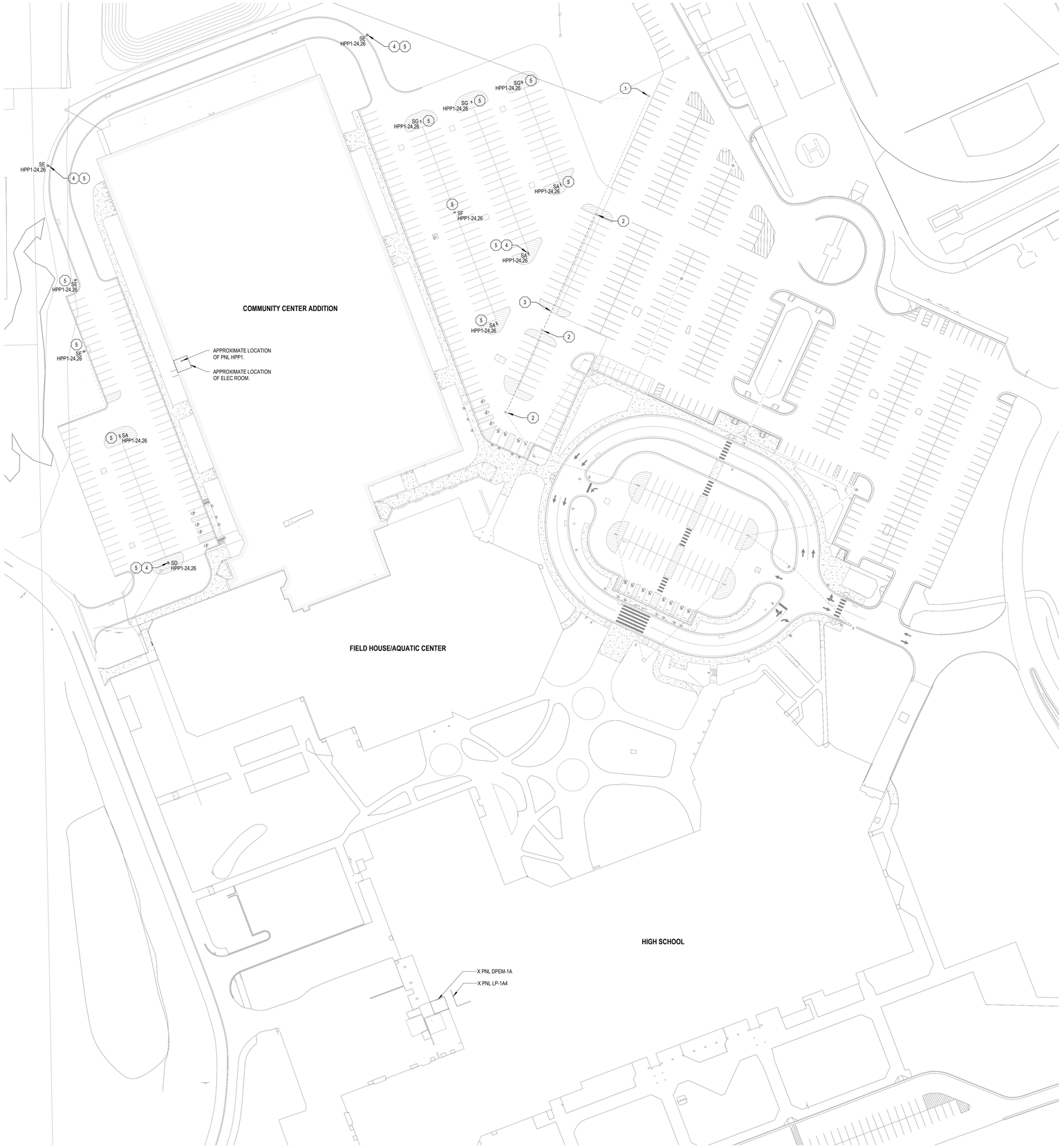

1 E113 **SITE PLAN - LIGHTING NEW COMMUNITY CENTER**
SCALE = 1" = 50'-0"

KEYNOTES:

1 EXISTING POLE MOUNTED LIGHT LOCATION TO REMAIN.
2 DISCONNECT AND REMOVE EXISTING POLE MOUNTED LIGHT AND TURN OVER TO OWNER FOR OWNERS STOCK. REMOVE BRANCH CIRCUIT WIRING BACK TO THE NEXT EXISTING LIGHT POLE TO REMAIN. CONDUIT PATHWAY SHALL BE REMOVED BETWEEN POLE MOUNTED LIGHTS SCHEDULED TO BE DEMOED.
3 INTERCEPT, REWORK AND EXTEND EXISTING CONDUIT LEFT IN PLACE AFTER DEMO OF EXISTING POLE MOUNTED LIGHT TO COMPLETE CONDUIT RACEWAY PATH FOR EXTERIOR LIGHTING CIRCUIT. PROVIDE NEW BRANCH CIRCUIT WIRING ROUTED BETWEEN EXISTING LIGHT POLES TO RECONNECT TO EXISTING LIGHTING BRANCH CIRCUITING.
4 PROVIDE A WIRELESS LONG RANGE ANTENNA MODEL 'PSC-ZKV-WCM-100-BLE-SR/EXA' FROM MWCONNECT MOUNTED ON TOP OF (1) FIXTURE HEAD THAT HAS A COVERAGE OF 750' CIRCULAR COVERAGE. COORDINATE ADDITIONAL ELECTRICAL REQUIREMENTS WITH EQUIPMENT MANUFACTURER.
5 REFER TO DETAIL 4 ON SHEET E811 FOR POLE BASE DETAIL INFORMATION.

GENERAL SITE NOTE:

CONTRACTOR SHALL GROUND RADAR ALL AREAS PLANNED TO RECEIVE BRANCH CIRCUIT ROUTING PATHS BELOW GRADE AND NEW POLE LOCATIONS TO AVOID DAMAGING EXISTING UNDERGROUND UTILITIES.

PROVIDE #10 WIRE TO ALL NEW EXTERIOR POLE MOUNTED LIGHTS.

COMMUNITY CENTER GENERAL NOTE:
ALL NEW LIGHT FIXTURES SHALL BE SUPPLIED WITH INTEGRAL WIRELESS CONTROLS WITH MOTION, TIME OF DAY CONTROL AND BE PROGRAMMED AS FOLLOWS. PROGRAM ALL NEW POLE MOUNTED LIGHT FIXTURES TO OPERATE TOGETHER AND COME ON AT DUSK AND SHUTOFF AT DAWN. WHEN NO MOTION IS DETECTED AFTER 20 MINUTES FIXTURES SHALL DIM DOWN TO 50% AND UPON MOTION DETECTED LIGHTS GO TO FULL OUTPUT. LIGHTING LOCATED THE EASTSIDE OF THE COMMUNITY CENTER NORTH OF THE PARENT DROP OFF LOOP SHALL BE PROGRAMMED AS (1) GROUPED LIGHTING ZONE AND THE LIGHTING LOCATED ON THE WESTSIDE OF THE COMMUNITY CENTER SHALL BE PROGRAMMED AS ANOTHER GROUPED LIGHTING ZONE.

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SHEET TITLE
SITE PLAN - LIGHTING NEW COMMUNITY CENTER

SHEET NO.
E113

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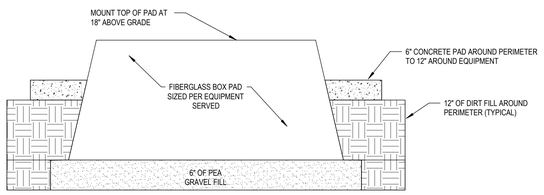
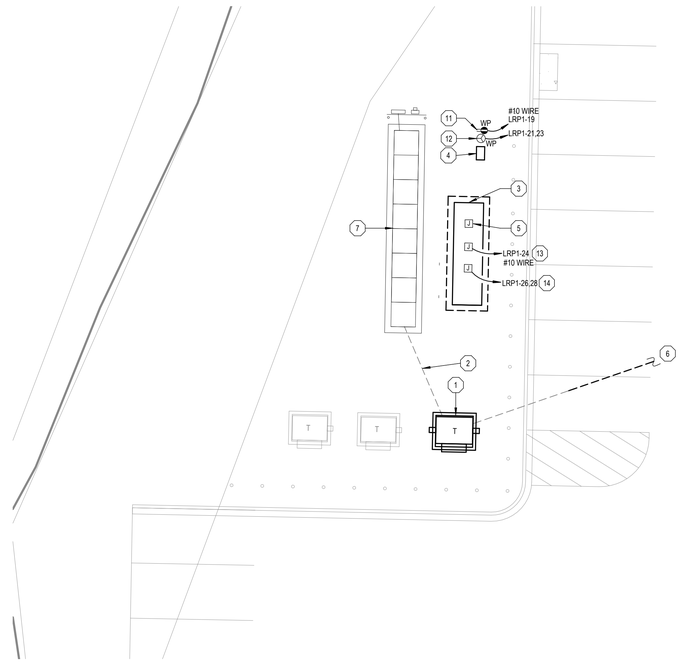


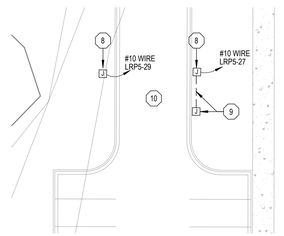
4 E114 **TRANSFORMER PAD DETAIL COMMUNITY CENTER**

SCALE = 1/8" = 1'-0"



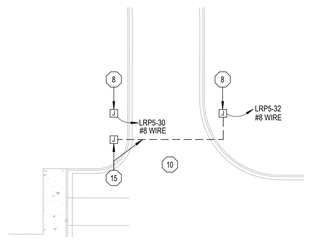
1 E114 **PARTIAL ENLARGED SITE PLAN - ELECTRICAL PRIMARY GEAR**

SCALE = 1" = 10'-0"



2 E114 **PARTIAL ENLARGED SITE PLAN - WEST GATE**

SCALE = 1" = 20'-0"



3 E114 **PARTIAL ENLARGED SITE PLAN - EAST GATE**

SCALE = 1" = 20'-0"

KEYNOTES:

1. COMMUNITY CENTER PAD MOUNTED TRANSFORMER. SEE DETAIL THIS SHEET FOR TRANSFORMER PAD INFORMATION. REFER TO ONE LINE DIAGRAM FOR TRANSFORMER INFORMATION.
2. EXISTING CONDUIT INSTALLED DURING EARLY PRIMARY LOOP SCOPE. ROUTE NEW PRIMARY FEED IN EXISTING 4 " CONDUIT. REFER TO ONE LINE DAIGRAM FOR ADDITIONAL INFORMATION.
3. NEW NATURAL GAS EMERGENCY/STANDBY GENERATOR. REFER TO ONE LINE DIAGRAM FOR ADDITIONAL INFORMATION.
4. UNISTRUT MOUNTED GENERATOR DOCKING STATION WITH INTEGRAL CAM LOCKS. PROVIDE A 1" EMPTY CONDUIT ROUTED BELOW GRADE TO THE GENERATOR ANNUCIATOR PANEL LOCATED IN ELECTRICAL 1412 FOR MONITORING BREAKER POSITION OF CAMLOCK CABINET. ENSURE CAMLOCK CABINET HAS AUXILARY CONTACTS TO EXCEPT MONITORING FEED. REFER TO ONE LINE DIAGRAM FOR ADDITIONAL INFORMATION. REFER TO DETAIL 6 ON SHEET E811 FOR REFERENCE TO UNISTRUT RACK SYSTEM DETAIL FOR THE GENERATOR DOCKING STATION.
5. PROVIDE CONNECTIONS FROM GENERATOR TO BMS PANEL FOR MONITORING OF GENERATOR.
6. INTERCEPT EXISTING 4" CONDUITS STUBBED OUT DURING THE EARLY PRIMARY GEAR WORK SCOPE AND EXTEND TO THE MAIN DISTRIBUTION GEAR HDP LOCATED IN THE MAIN ELECTRICAL OF THE COMMUNITY CENTER. REFER TO THE ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
7. PRIMARY ELECTRICAL GEAR INSTALLED IN PREVIOUS PHASE.
8. PROVIDE 120V POWER TO THE MOTORIZED GATE ARM. ROUTE CIRCUIT BELOW GRADE BACK TO PANEL DESIGNATED.
9. PROVIDE (1) 1 1/2" EMPTY DATA CONDUIT WITH PULL STRING FROM GOOSE NECK POST FOR SECURITY ACCESS EQUIPMENT. ROUTE EMPTY DATA CONDUIT UNDERGROUND BACK TO THE MAIN ELECTRICAL ROOM 1412 AND EXTEND TO CEILING SPACE ABOVE. PROVIDE AN ADDITIONAL 1" EMPTY CONDUIT WITH PULLSTRING ROUTED BELOW GRADE FROM GOOSE NECK MAIN GATE OPERATOR FOR ACCESS CONTROL INTERFACE. COORDINATE CONDUIT ROUTING WITH GATE VENDOR, CIVIL CONTRACTOR, ARCHITECT AND GC PRIOR TO ROUGH-IN.
10. REFER TO SHEET L1.2 ON LANDSCAPING PLANS FOR ADDITIONAL CONDUIT INFORMATION TO SERVE GATE OPERATORS. EC IS RESPONSIBLE TO PROVIDE AND INSTALL ALL EMPTY CONDUIT PATHWAYS NOTED ON LANDSCAPING PLANS.
11. POWER TO ROLL UP GENERATOR BATTERY CHARGER. PROVIDE A WHEATHER PROOF WHILE IN USE COVER. COORDINATE ELECTRICAL REQUIREMENTS WITH ROLL GENERATOR FOR PROPER SPECIFICATIONS.
12. POWER TO ROLL UP GENERATOR BLOCK HEATER. PROVIDE A WHEATHER PROOF WHILE IN USE COVER. COORDINATE ELECTRICAL REQUIREMENTS WITH ROLL GENERATOR FOR PROPER SPECIFICATIONS.
13. POWER TO GENERATOR BATTERY CHARGER. INTERCEPT EXISITNG 1" CONDUIT STUBBED OUT DURING THE EARLY PRIMARY GEAR WORK SCOPE AND EXTEND TO THE PANEL SOURCE DESIGNATED.
14. POWER TO GENERATOR BLOCK HEATER. INTERCEPT EXISTNG 1" CONDUIT STUBBED OUT DURING THE EARLY PRIMARY GEAR WORK SCOPE AND EXTEND TO THE PANEL SOURCE DESIGNATED.
15. PROVIDE (1) 1 1/2" EMPTY DATA CONDUIT WITH PULL STRING FROM GOOSE NECK POST FOR SECURITY ACCESS EQUIPMENT ROUTED UNDERGROUND TO THE SOUTH WALL OF FIELD 1401 STUBBING UP INTO WALL CAVITY. EXTEND CONDUIT UP IN WALL CAVITY TO A HEIGHT JUST ABOVE THE SECOND FLOOR CEILING IN TOILET 1306. TURN CONDUIT 90 DEGREES LANDING INSIDE THE TOILET ROOM ABOVE THE ACCESSIBLE CEILING. PROVIDE AN ADDITIONAL 1 " EMPTY CONDUIT WITH PULLSTRING ROUTED BELOW GRADE FROM GOOSE NECK MAIN GATE OPERATOR FOR ACCESS CONTROL INTERFACE. COORDINATE CONDUIT ROUTING WITH GATE VENDOR, CIVIL CONTRACTOR, ARCHITECT AND GC PRIOR TO ROUGH-IN.

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SHEET TITLE

PARTIAL ENLARGED SITE PLAN - ELECTRICAL NEW

SHEET NO.

E114

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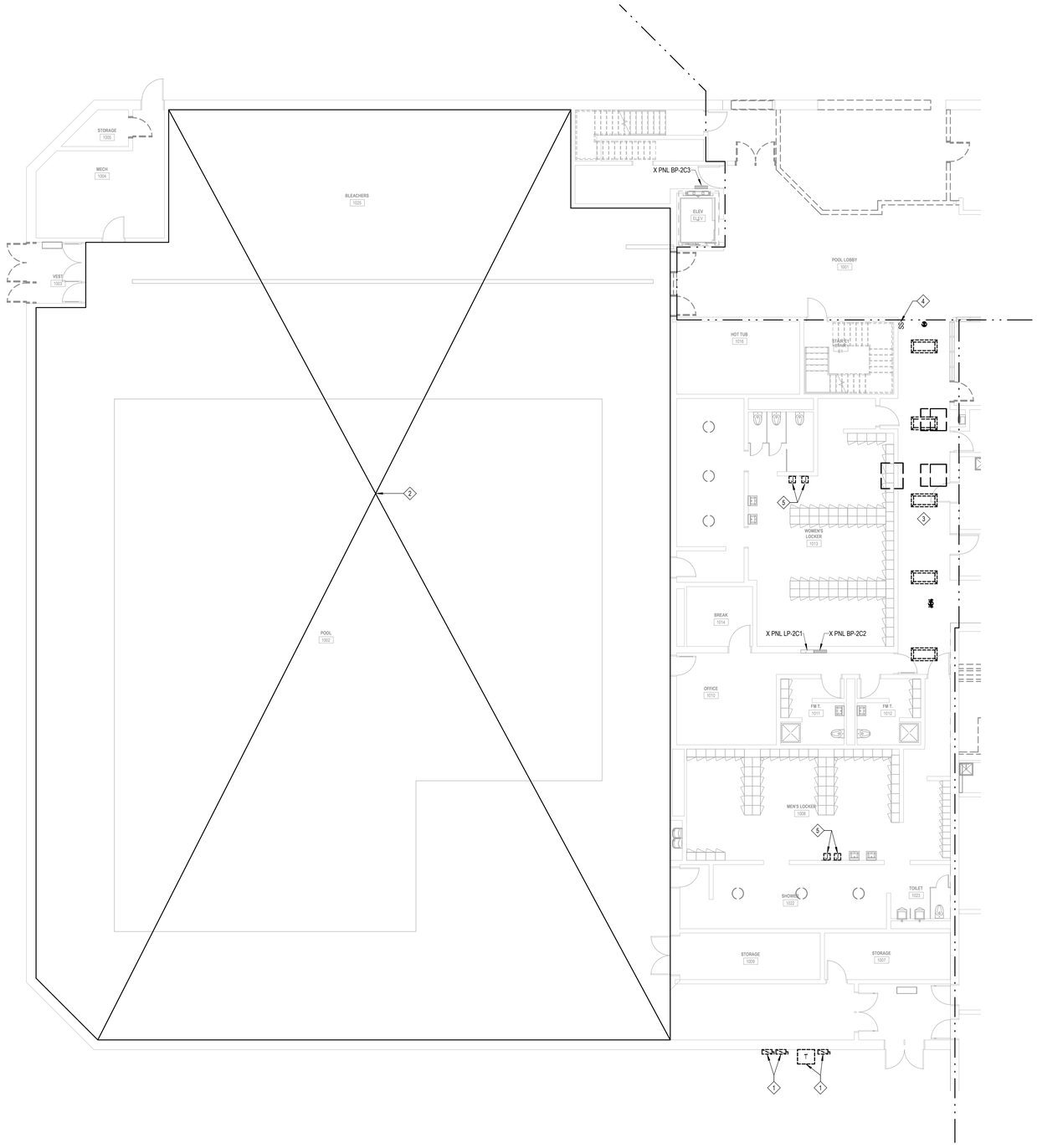

1 E211.a **FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1000**

SCALE = 1/8" = 1'-0"

KEYNOTES:

1. DISCONNECT AND REMOVE EXISTING DISCONNECT SWITCH, STEP DOWN TRANSFORMER AND ADJACENT (2) DISCONNECT SWITCHES THAT SERVED CLASSROOM PODS THATS BEEN ALREADY REMOVED. REMOVE ALL CONDUIT AND WIRE BACK TO SOURCE.
2. NO LIGHTING DEMO SCOPE IN THIS AREA. REFER TO SHEET E311.a FOR NEW EMERGENCY LIGHTING.
3. REMOVE LIGHTING AND CONTROLS IN SPACE. REMOVE WIRE AND CONDUIT BACK TO THE NEAREST JUNCTION BOX LOCATED ABOVE THE FINISHED CEILING. MAINTAIN BRANCH CIRCUIT FOR CONNECTION TO NEW LIGHT FIXTURES.
4. REMOVE EXISTING SWITCH AND ASSOCIATED CONTROL WIRING. MAINTAIN EXISTING JUNCTION BOX AND CONDUIT PATHWAY FOR NEW LIGHTING CONTROLS.
5. DISCONNECT POWER TO EXISTING HAIR/HAND DRYER SCHEDULED TO BE REPLACED. EXISTING DRYER BRANCH CIRCUIT WILL REMAIN FOR CONNECTION TO NEW HAIR/HAND DRYER.

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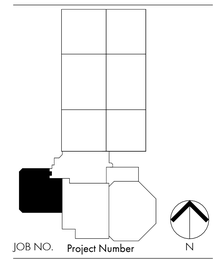

JOB NO. Project Number

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FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1000

SHEET NO.

E211.a

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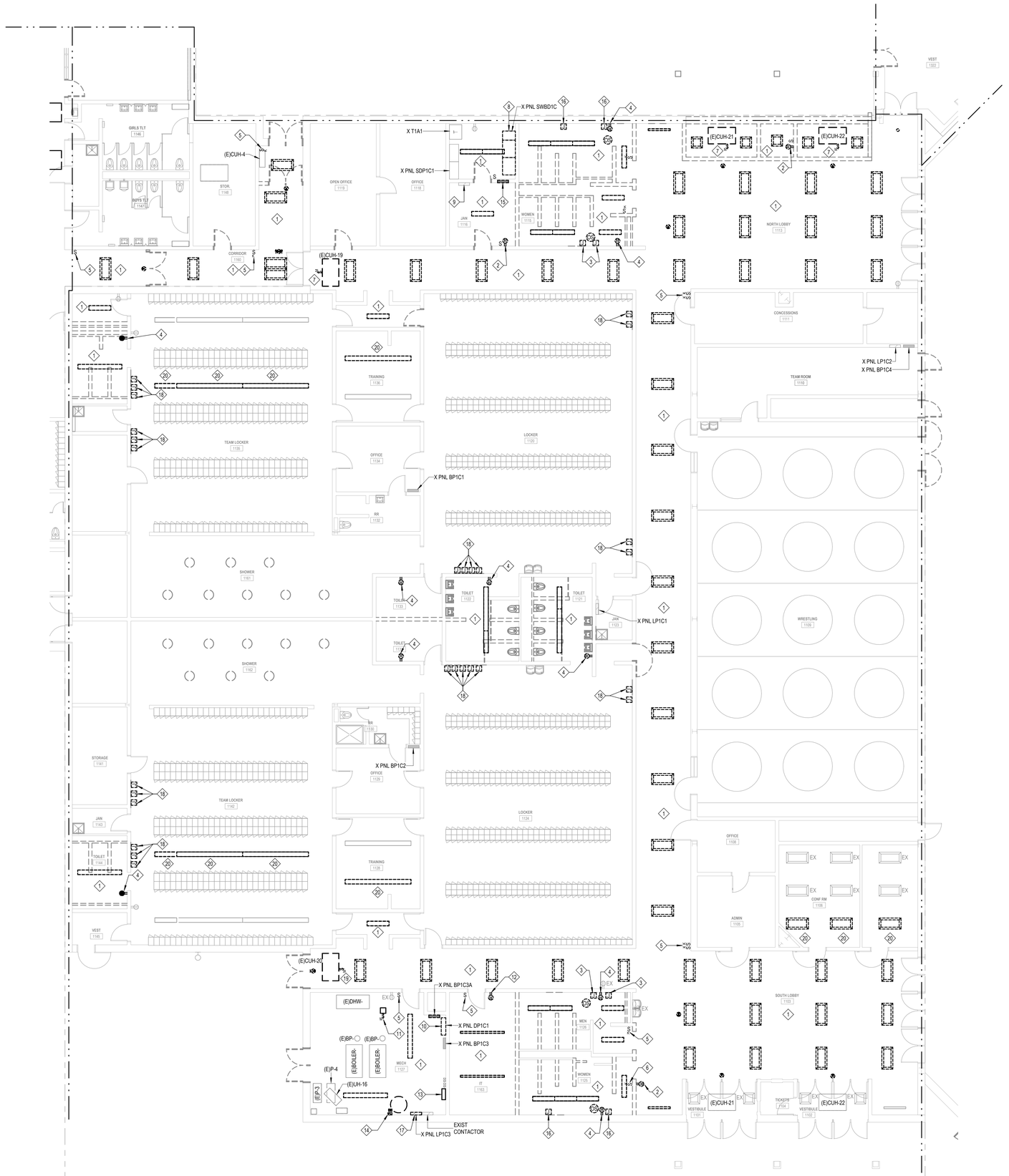

1 E211.b **FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1100**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. REMOVE LIGHTING AND CONTROLS IN SPACE. REMOVE WIRE AND CONDUIT BACK TO THE NEAREST JUNCTION BOX LOCATED ABOVE THE FINISHED CEILING. MAINTAIN BRANCH CIRCUIT FOR CONNECTION TO NEW LIGHT FIXTURES.
2. DISCONNECT AND REMOVE EXISTING RECEPTACLE. REMOVE CONDUIT AND WIRE BACK TO THE NEAREST JUNCTION BOX LOCATED ABOVE THE FINISH CEILING FOR REUSE WITH NEW OUTLET.
3. REMOVE HAND DRYER. MAINTAIN WIRE AND CONDUIT IN BOX FOR NEW HAND DRYER.
4. REMOVE RECEPTACLE. MAINTAIN EXISTING BOX IN WALL FOR NEW RECEPTACLE IN EXISTING BOX.
5. REMOVE EXISTING SWITCH AND ASSOCIATED CONTROL WIRING. MAINTAIN EXISTING JUNCTION BOX AND CONDUIT PATHWAY FOR NEW LIGHTING CONTROLS.
6. REMOVE EXISTING SWITCH. REMOVE WIRE AND CONDUIT BACK TO JUNCTION BOX ABOVE FINISHED CEILING. MAINTAIN BRANCH CIRCUIT FOR CONNECTION TO NEW LIGHT SWITCH.
7. CEILING CABINET HEATER TO BE REMOVED. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
8. DISCONNECT AND REMOVE EXISTING FIELD HOUSE MAIN ELECTRICAL DISTRIBUTION EQUIPMENT FOR REPLACEMENT. EXISTING BRANCH CIRCUITS SCHEDULED TO REMAIN WILL BE REWORKED AND CONNECTED TO THE NEW DISTRIBUTION EQUIPMENT. EXISTING INCOMING FEEDERS SHALL REMAIN FOR CONNECTION TO NEW SERVICE ELECTRICAL EQUIPMENT.
9. EXISTING FIELD HOUSE AND AQUATIC CENTER EMERGENCY PANEL 'LPEM1C1' TO REMAIN. EM PANEL IS CURRENTLY FED FROM THE HIGH SCHOOL GENERATOR AND EMERGENCY DISTRIBUTION PANEL DPEM-1A. DISCONNECT AND REMOVE EXISTING PANEL LPEM-1C1 FROM THE HIGH SCHOOL EMERGENCY PANEL DPEM-1A. REMOVE CONDUIT AND WIRE BACK TO PANEL DPEM-1A LOCATED IN THE HIGH SCHOOL. REMOVE EMPTY CONDUIT PATHWAY AND ASSOCIATED JUNCTION BOXES ROUTED OVERHEAD FROM PANEL LPEM-1C1 TO EXISTING MECHANICAL ROOM 1137. CUT CONDUIT FLUSH WITH FLOOR AND CAULK WITH AN APPROVED FIRESTOPPING MATERIAL.
10. DISCONNECT AND REMOVE EXISTING 480/277V-3PH-4W DISTRIBUTION PANEL FOR REPLACEMENT. EXISTING BRANCH CIRCUITS WILL BE RECONNECTED TO A NEW ELECTRICAL PANEL.
11. DISCONNECT AND REMOVE POWER CONNECTED TO EXISITNG RECIRCULATION PUMP SCHEDULED TO BE DEMOED. REMOVE CIRCUIT BACK TO SOURCE.
12. DISCONNECT AND REMOVE RECEPTACLE. REMOVE BRANCH CIRCUIT BACK TO THE NEXT ELECTRICAL DEVICE TO REMAIN. REMOVE EMPTY JUNCTION BOX AND ABANDON EMPTY CONDUIT PATHWAY WITHIN WALL. PATCH WALL FLUSH TO MATCH SURROUNDING SURFACES.
13. DISCONNECT POWER TO EXISTING MECHANICAL CONTROL PANEL. REMOVE CIRCUIT BACK TO SOURCE.
14. DISCONNECT POWER TO EXISTING AIR COMPRESSOR SCHEDULED TO BE REMOVED. REMOVE CIRCUIT BACK TO SOURCE.
15. DISCONNECT AND REMOVE EXISTING SPARE FUSE CABINET. EXISTING WALL OPENING WILL NEED TO BE PATCHED AFTER REMOVAL OF EXISTING CABINET. COORDINATE WALL PATCHING WITH THE GC PRIOR TO START OF CONSTRUCTION.
16. REMOVE HAND DRYER. DISCONNECT AND REMOVE EXISTING JUNCTION BOX AND BRANCH CIRCUIT WIRING BACK TO THE NEAREST JUNCTION BOX LOCATED ABOVE THE FINISH CEILING. MAINTAIN BRANCH CIRCUIT WIRING FOR CONNECTION TO NEW HAND DRYER.
17. DISCONNECT AND REMOVE EXISTING ELECTRICAL PANEL LP1C3. EXISTING BRANCH CIRCUIT WIRING CONNECTED TO A 20A-2P BREAKER LOCATED AT POLE POSITION 1 SHALL REMAIN FOR CONNECTION TO NEW ADJACENT PANEL DP1C1 SCHEDULED TO BE REPLACED. REFER TO NEW ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.
18. DISCONNECT POWER TO EXISTING HAIR/HAND DRYER SCHEDULED TO BE REPLACED. EXISTING DRYER BRANCH CIRCUIT WILL REMAIN FOR CONNECTION TO NEW HAIR/HAND DRYER.
19. DISCONNECT POWER FROM EXISTING CABINET UNIT HEATER SCHEDULED TO BE REMOVED. PULL CIRCUIT BACK TO ALLOW FOR REMOVAL OF CUH. CUH BRANCH CIRCUIT WILL REMAIN FOR REUSE WITH NEW CUH.
20. TEMPORARLY DISCONNECT AND REMOVE EXISTING LIGHT FIXTURE TO ALLOW FOR DEMOLITION OF EXISTING ABOVE CEILING PIPING. EXISTING BRANCH CIRCUIT TO REMAIN TO BE RECONNECTED TO LIGHT FIXTURES. REINSTALL IN THE SAME LOCATION.

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N

SHEET TITLE

FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1100

SHEET NO.

E211.b

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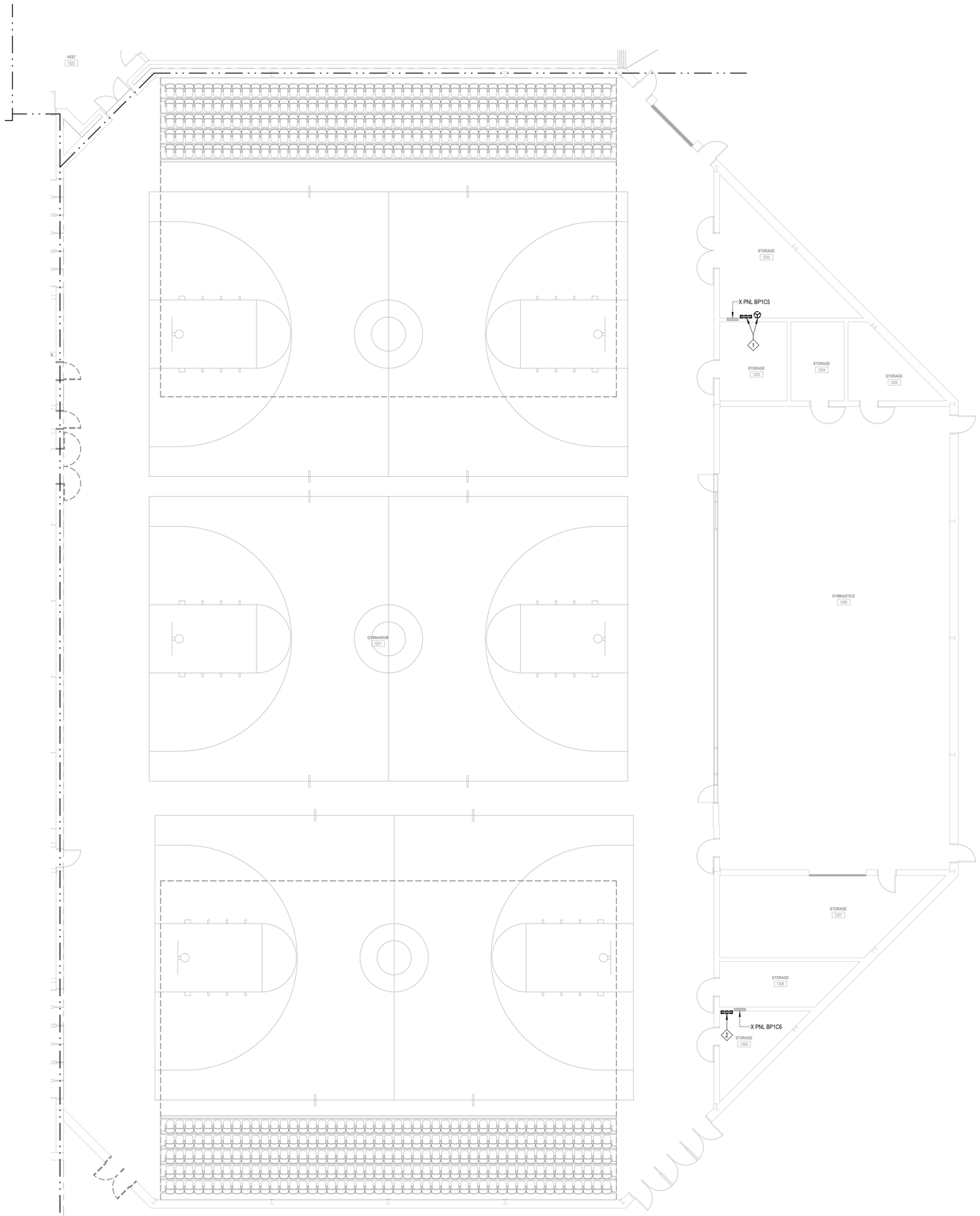

1 E211.c **FIRST FLOOR ELECTRICAL DEMOLITION PLAN - UNIT 1200**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. DISCONNECT AND REMOVE EXISTING SURFACE MOUNTED PANEL, SIDE MOUNTED SPECIAL OUTLET, AND WIRE BACK TO SOURCE. EXISTING BREAKER SERVING PANEL SHALL BE TURNED OFF AND LABELED SPARE. PATCH ALL HOLES LEFT AFTER REMOVAL OF EXISTING PANEL AND ASSOCIATED RECEPTACLE WITH SIMILAR MATERIAL. COORDINATE WALL PATCHING WITH THE GC PRIOR TO THE START OF CONSTRUCTION.
2. DISCONNECT AND REMOVE EXISTING SURFACE MOUNTED PANEL, AND WIRE BACK TO THE SOURCE. EXISTING BREAKER SERVING PANEL SHALL BE TURNED OFF AND LABELED SPARE. PATCH ALL HOLES LEFT AFTER REMOVAL OF EXISTING PANEL AND ASSOCIATED RECEPTACLE WITH SIMILAR MATERIAL.COORDINATE WALL PATCHING WITH THE GC PRIOR TO THE START OF CONSTRUCTION.

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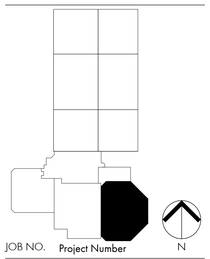

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SHEET TITLE
FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1200

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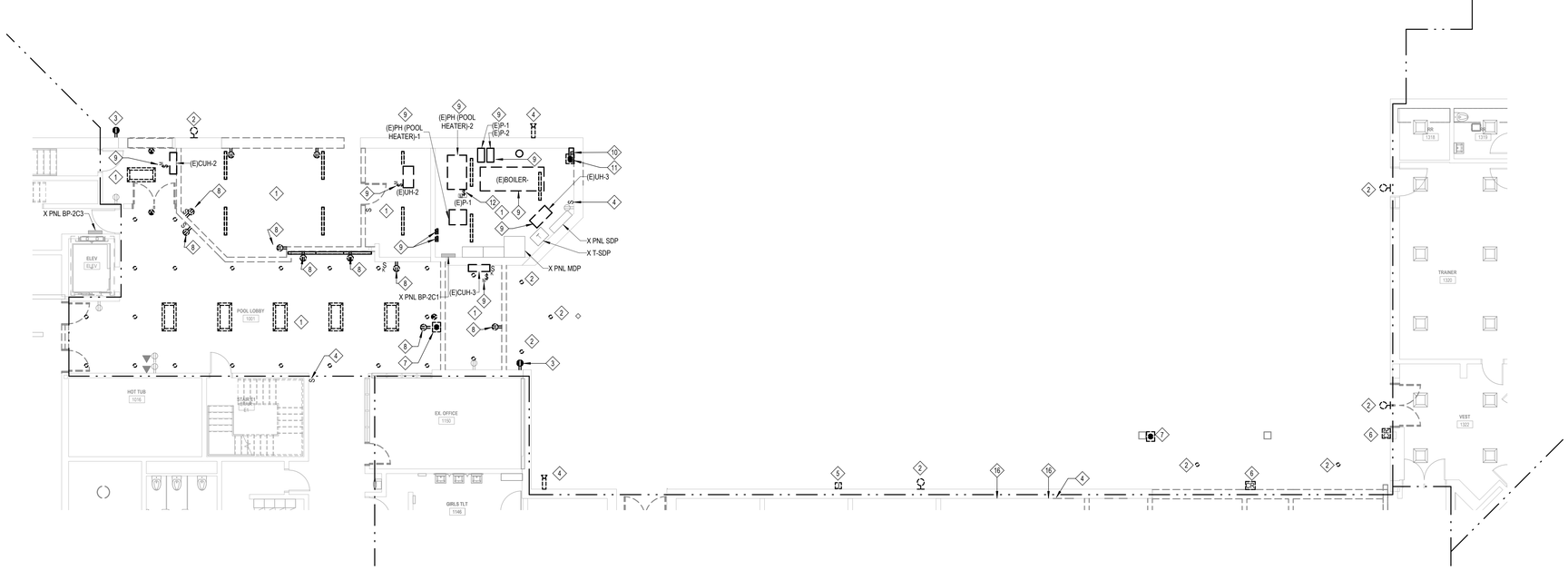
KEYNOTES:

1. REMOVE LIGHTING AND CONTROLS IN SPACE. REMOVE WIRE AND CONDUIT BACK TO THE NEAREST JUNCTION BOX LOCATED ABOVE THE FINISHED CEILING. MAINTAIN BRANCH CIRCUIT FOR CONNECTION TO NEW LIGHT FIXTURES.
2. REMOVE EXTERIOR LIGHT FIXTURE. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
3. DISCONNECT AND REMOVE EXTERIOR RECEPTACLE AND BRANCH CIRCUIT WIRING BACK TO SOURCE OR THE NEXT ELECTRICAL DEVICE SCHEDULED TO REMAIN. REMOVE EMPTY JUNCTION BOX AND ABANDON EMPTY RACEWAY WITHIN WALL CAVITY. COORDINATE PATCHING OF WALL WITH THE GC PRIOR TO THE START OF CONSTRUCTION.
4. CAMERA TO BE REMOVED. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
5. REMOVE WEATHER PROOF RECEPTACLE BOX. REMOVE BRANCH CIRCUIT WIRING BACK TO SOURCE.
6. CARD READER TO BE REMOVED. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
7. DISCONNECT AND REMOVE POWER TO ADA DOOR OPERATORS SCHEDULED TO BE DEMOED. REMOVE BRANCH CIRCUIT WIRING BACK TO SOURCE.
8. REMOVE RECEPTACLE. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
9. DISCONNECT AND REMOVE POWER CONNECTED MECHANICAL EQUIPMENT SCHEDULED TO BE REMOVED. REMOVE CIRCUIT BACK TO THE SOURCE.
10. DISCONNECT AND REMOVE POWER CONNECTED TO MECHANICAL CONTROL PANEL SCHEDULED TO BE REMOVED. REMOVE CIRCUIT BACK TO THE SOURCE.
11. DISCONNECT AND REMOVE EMERGENCY BOILER SHUT DOWN BUTTON AND ASSOCIATED WIRING BACK TO SOURCE.
12. DISCONNECT AND REMOVE DISCONNECT SWITCH THAT SERVE EXISTING BOILER AND ASSOCIATED BOILER PUMP. PULL CONDUIT AND WIRE BACK TO ALLOW FOR DEMOLITION OF EXISTING BOILER. EXISTING BRANCH CIRCUIT WILL REMAIN FOR RECONNECTION TO EXISTING PUMP. REFER TO SHEET E411.d FOR ADDITIONAL INFORMATION.



1 E211.d **FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1300A**
SCALE = 1/8" = 1'-0"

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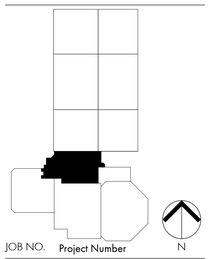

JOB NO. Project Number

SHEET TITLE
FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1300A

SHEET NO.
E211.d

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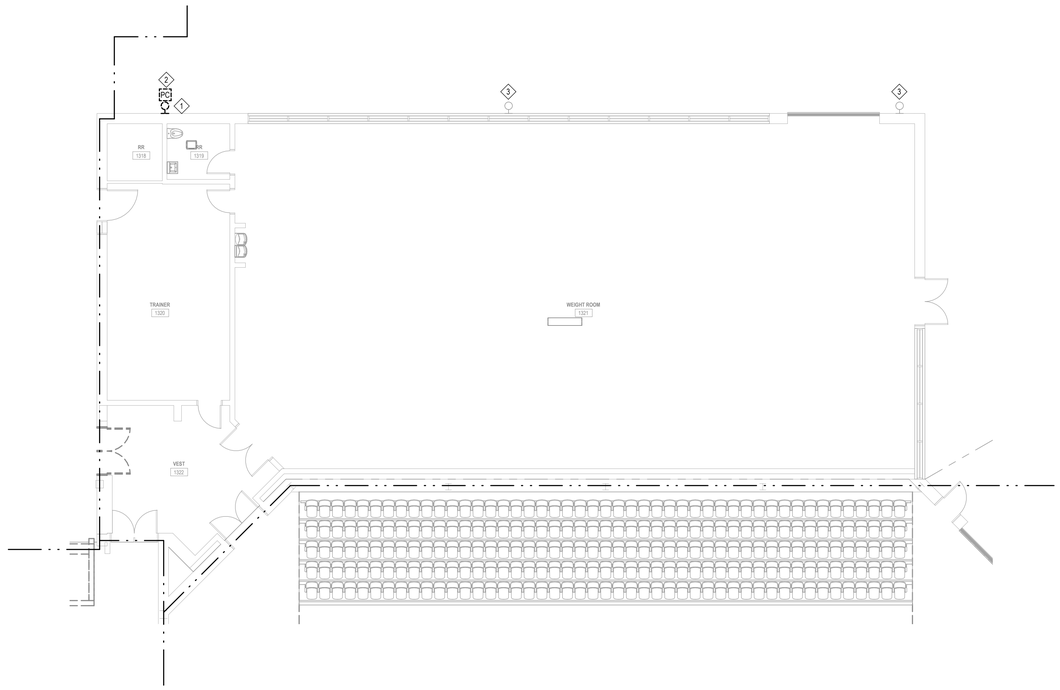

1 E211.e **FIRST FLOOR ELECTRICAL DEMOLITION - UNIT 1300B**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 REMOVE EXTERIOR LIGHT FIXTURE AND TURN OVER TO OWNER. REMOVE JUNCTION BOX, WIRE AND CONDUIT BACK TO SOURCE. COORDINATE ALL NECESSARY WALL PATCHING WITH ARCHITECTURAL TRADES AND THE GC. WALL PATCHING TO MATCH EXISTING SURROUNDING SURFACE MATERIAL.
2 REMOVE PHOTOCELL. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
3 EXISTING LIGHT FIXTURE TO REMAIN.

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FIRST FLOOR ELECTRICAL DEMO PLAN - UNIT 1300B

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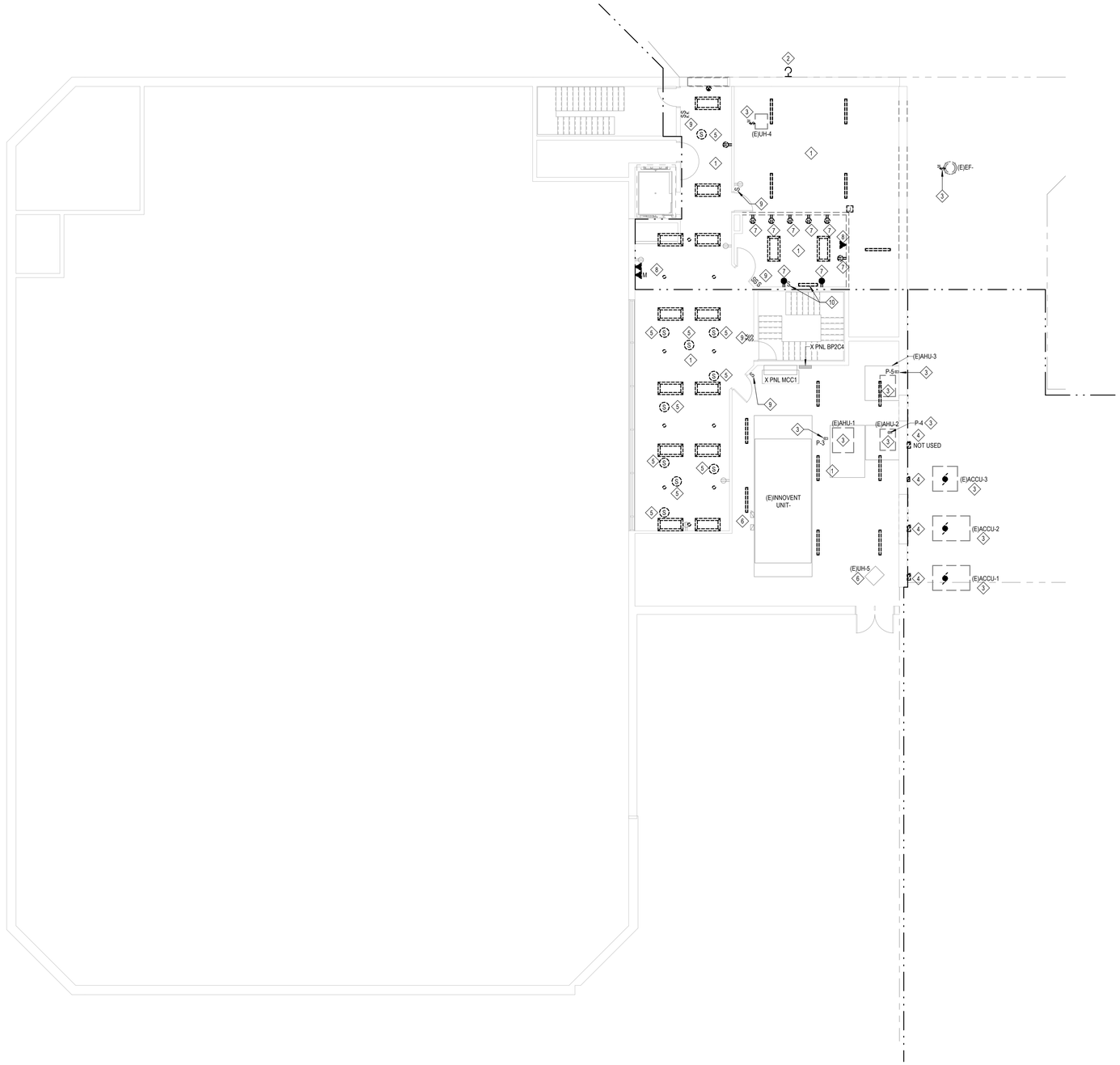

1 E221.a **SECOND FLOOR ELECTRICAL DEMO PLAN - UNIT 2000**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. REMOVE LIGHTING IN SPACE. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
2. REMOVE EXTERIOR LIGHT. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
3. EXISTING MECHANICAL UNIT TO BE REMOVED. REMOVE WIRE, CONDUIT, AND ASSOCIATED DISCONNECT SWITCH BACK TO SOURCE.
4. REMOVE DISCONNECT. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
5. REMOVE CEILING MOUNTED SPEAKER. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
6. EXISTING MECHANICAL UNIT TO REMAIN.
7. REMOVE RECEPTACLE. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
8. REMOVE DATA RECEPTACLE. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
9. REMOVE SWITCHES. EXISTING JUNCTION BOX AND AND CONDUIT PATHWAY TO REMAIN FOR REUSE. REMOVE CIRCUIT BACK TO THE NEAREST JUNCTION BOX LOCATED ABOVE THE FINISH CEILING FOR REUSE WITH NEW LIGHTING AND CONTROLS.
10. DISCONNECT AND REMOVE EXISTING UNDERCABINET LIGHTING. REMOVE ASSOCIATED LIGHTING CONTROLS AND BRANCH CIRCUIT WIRING BACK TO THE NEAREST JUNCTION BOX. REMOVE RECESSED JUNCTION BOX AND ABANDON CONDUIT RACEWAY WITHIN WALL CAVITY. PATCH WALL OPENING WITH THE SAME MATERIAL TO MATCH SURROUNDING SURFACE. COORDINATE ALL WALL PATCHING WITH THE GC PRIOR TO THE START OF CONSTRUCTION.

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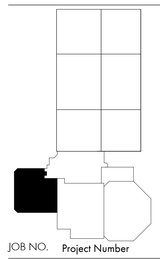

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SHEET TITLE
SECOND FLOOR ELECTRICAL DEMO PLAN - UNIT 2000

SHEET NO.
E221.a

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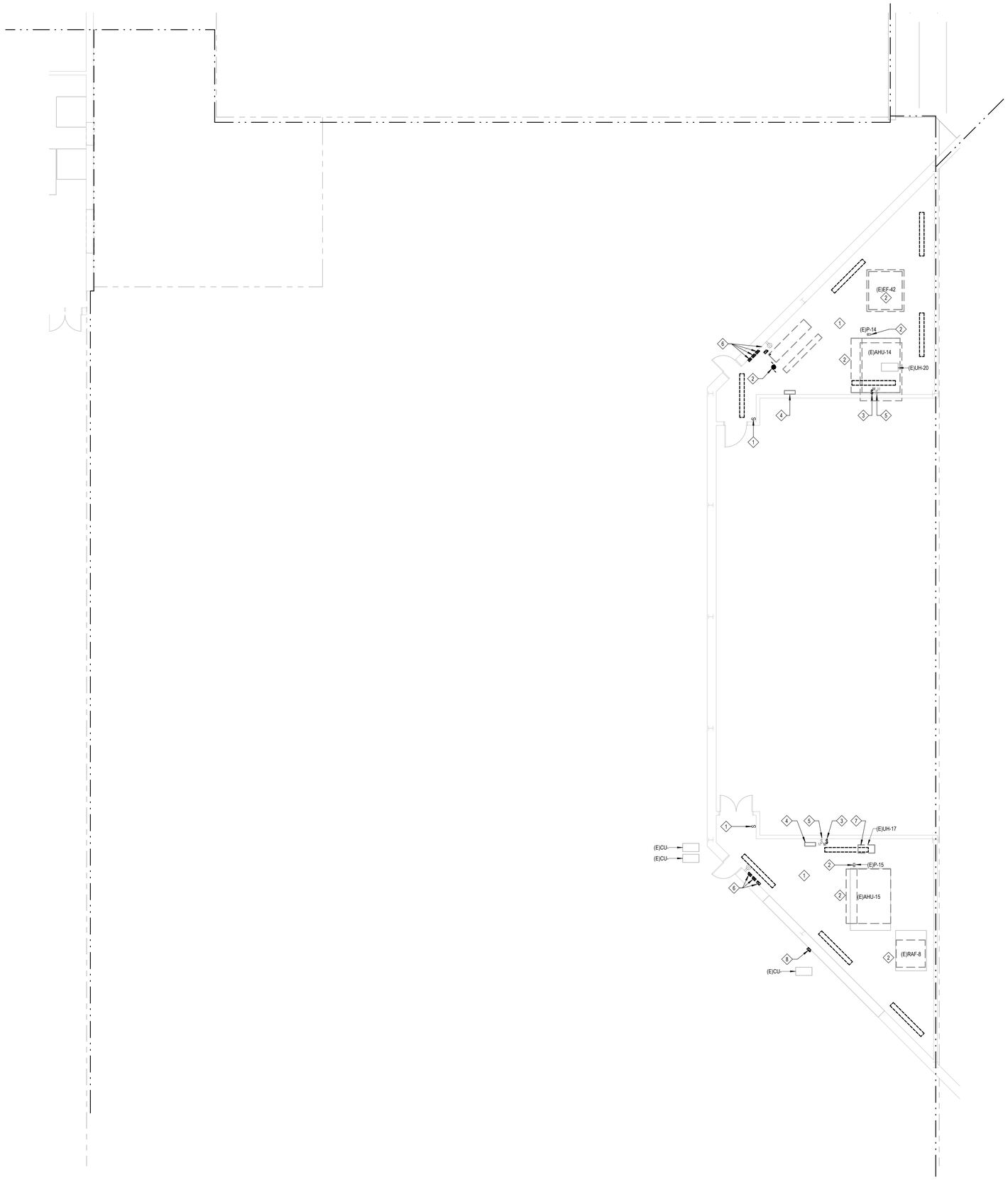

1 E221.b **SECOND FLOOR ELECTRICAL DEMO PLAN - UNIT 2100**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. REMOVE LIGHTING IN SPACE. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
2. EXISTING MECHANICAL UNIT TO BE REMOVED. REMOVE WIRE, CONDUIT, AND ASSOCIATED DISCONNET SWITCH BACK TO SOURCE.
3. REMOVE DISCONNECT SWITCH THAT SERVE PUMP SCHEDULED TO BE REMOVED. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
4. DISCONNECT AND REMOVE CIRCUIT SERVING MECHANICAL CONTROL PANEL SCHEDULED TO BE REMOVED FOR REPLACEMENT. REMOVE CIRCUIT BACK TO THE SOUCE.
5. DISCONNECT FOR UNIT HEATER SCHEDULED TO REMAIN.
6. REMOVE DISCONNECTS. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
7. DISCONNECT AND REMOVE POWER FROM EXISTING UNIT HEATER SCHEDULED TO BE RELOCATED. UH BRANCH CIRCUIT WILL REMAIN FOR RECONNECTION TO RELOCATED UH.
8. EXISTING DISCONNECT SWITCH AND ASSOCIATED BRANCH CIRCUIT WIRING SHALL BE DISCONNECTED FROM EXISTING CONDENSING UNIT TO ALLOW FOR DEMOLITION OF THE EXISTING WALL. EXISTING DISCONNECT SWITCH SHALL BE RELOCATED. SEE NEW ELECTRICAL PLAN ON SHEET E421.b.

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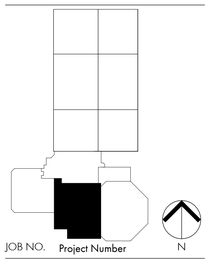

JOB NO. Project Number

SHEET TITLE
SECOND FLOOR ELECTRICAL DEMO PLAN - UNIT 2100

SHEET NO.
E221.b

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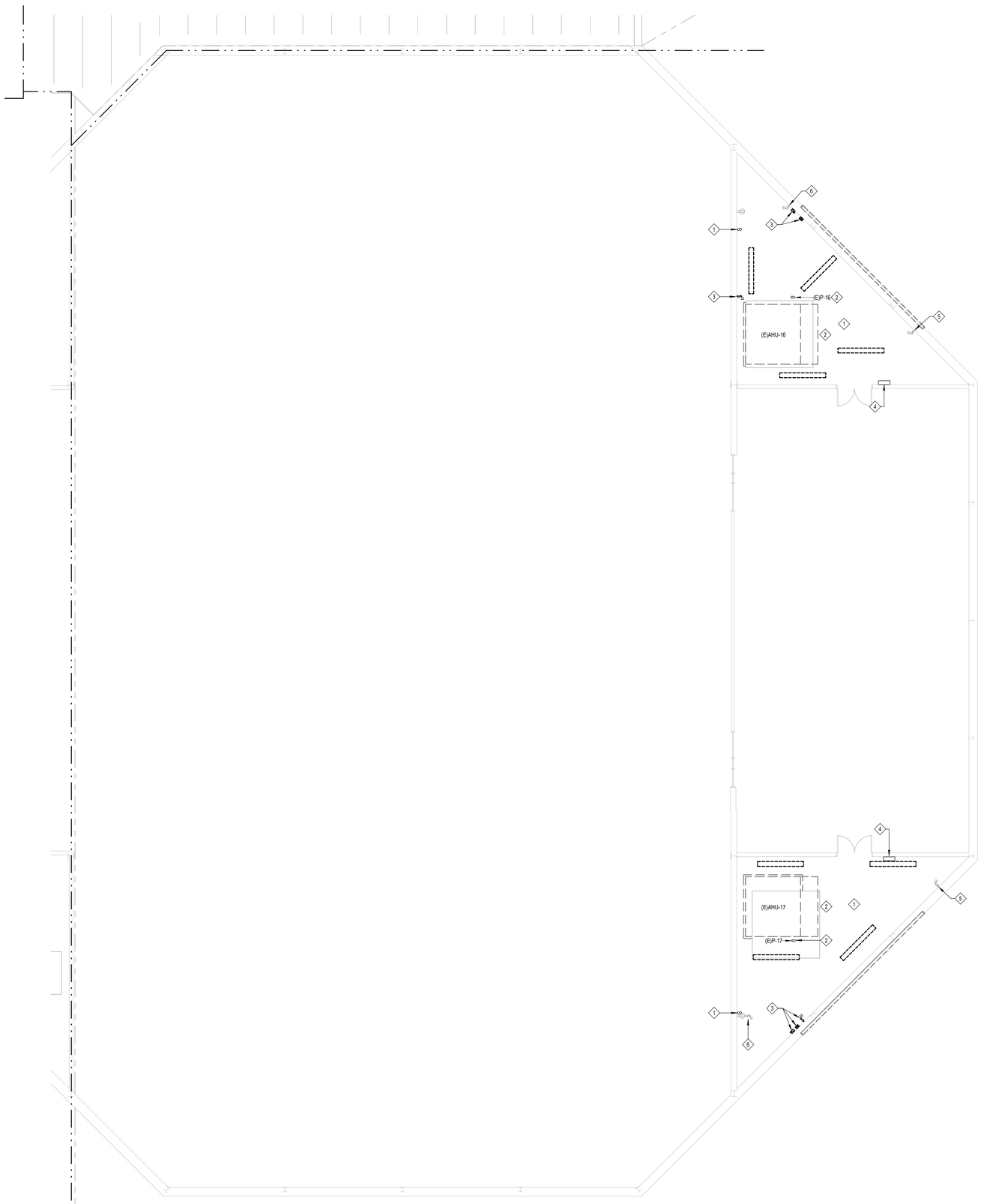

1 E221.c **SECOND FLOOR ELECTRICAL DEMO PLAN - UNIT 2200**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 REMOVE LIGHTING IN SPACE. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
2 EXISTING MECHANICAL UNIT TO BE REMOVED. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
3 REMOVE DISCONNECTS. REMOVE WIRE AND CONDUIT BACK TO SOURCE.
4 DISCONNECT AND REMOVE CIRCUIT SERVING MECHANICAL CONTROL PANEL SCHEDULED TO BE REMOVED FOR REPLACEMENT. REMOVE CIRCUIT BACK TO SOURCE.
5 DISCONNECT FOR UNIT HEATER SCHEDULED TO REMAIN.
6 DISCONNECT FOR EXHAUST FAN SCHEDULED TO REMAIN.

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SHEET TITLE
SECOND FLOOR ELECTRICAL DEMO PLAN - UNIT 2200

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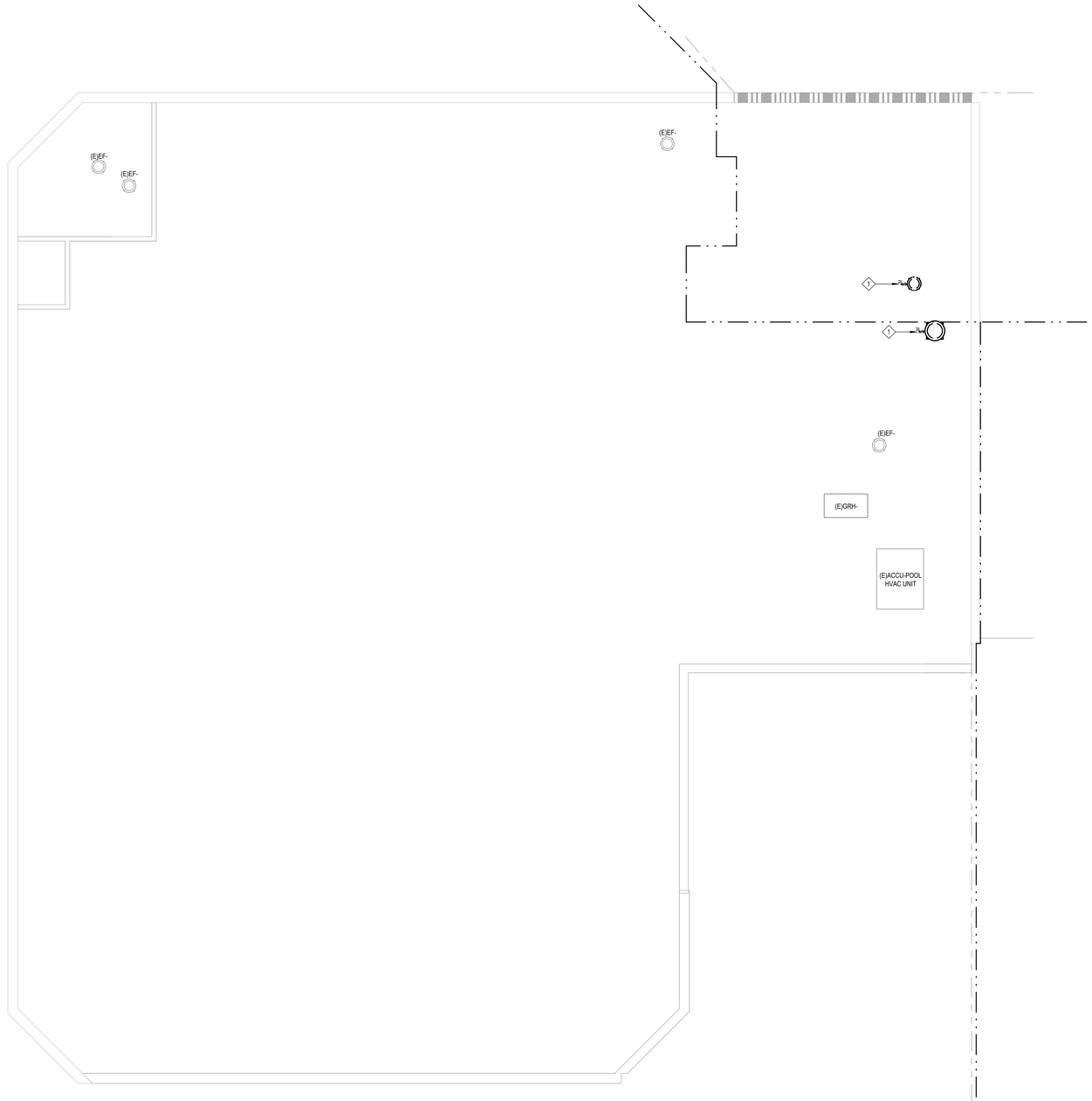

1 E231.a **ROOF ELECTRICAL DEMO PLAN - UNIT 3000**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 DISCONNECT AND REMOVE POWER TO EXISTING ROOF MOUNTED EXHAUST FANS SCHEDULED TO BE DEMOED. REMOVE CIRCUITS BACK TO THE SOURCE.

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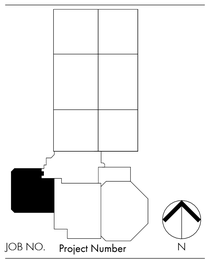

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SHEET TITLE
ROOF ELECTRICAL DEMO PLAN - UNIT 3000

SHEET NO.
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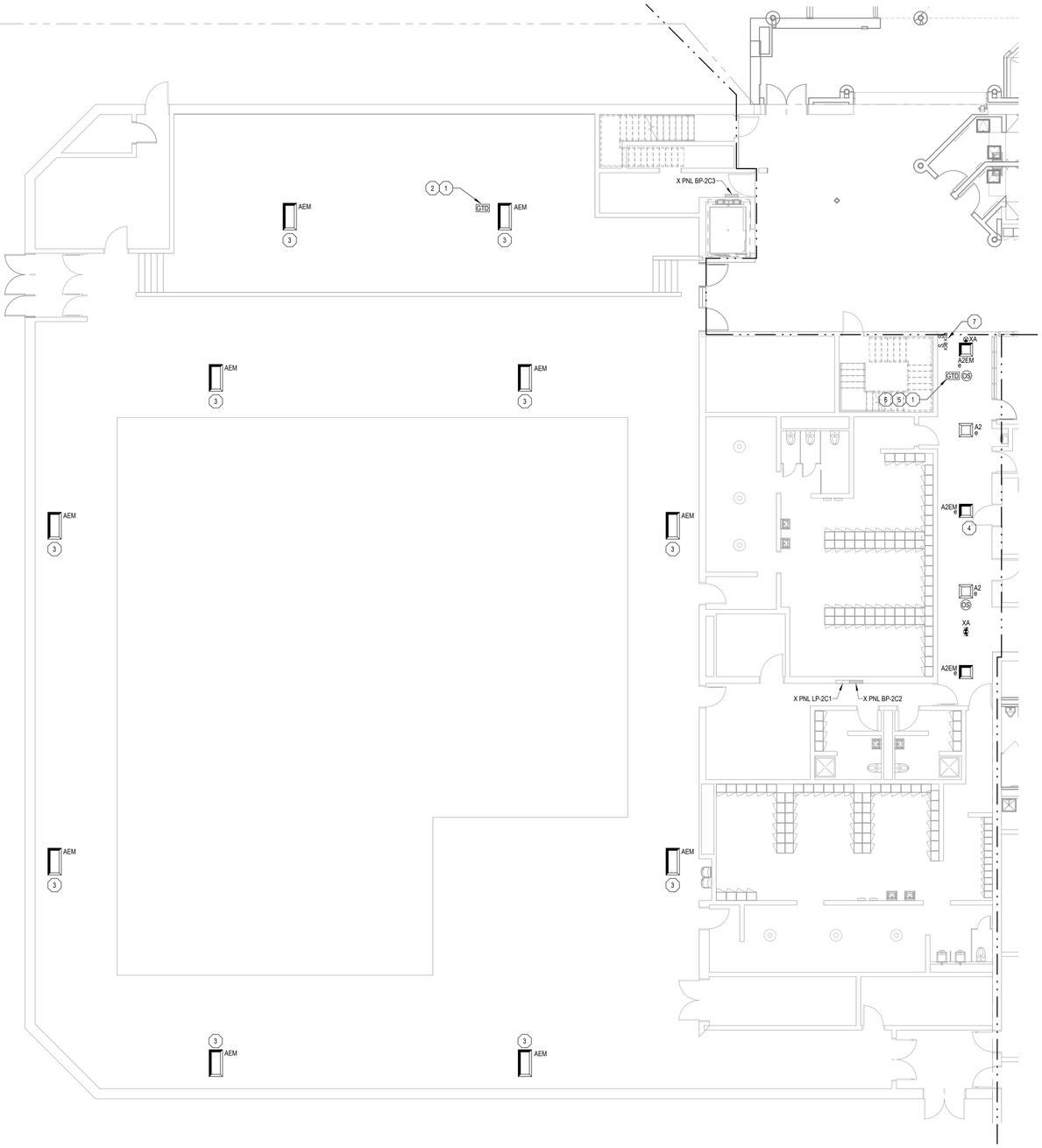

1 E311.a **FIRST FLOOR LIGHTING PLAN - UNIT 1000**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED ABOVE AN ACCESSIBLE CEILING SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.
2. CONTRACTOR SHALL INTERCEPT EXISTING EMERGENCY LIGHTING CIRCUIT THAT SERVED THE EXISTING INDIRECT POOL LIGHTS THAT HOUSED A QUARTZ LAMP THAT PROVIDED EMERGENCY LIGHTING IN THE EXISTING LIGHT FIXTURE HOUSING SINCE REMOVED AND THE CIRCUIT ABANDONED IN PLACE PER THE OWNER'S ONSITE ELECTRICIAN. INTERCEPT EXISTING EMERGENCY CIRCUIT AHEAD OF ANY LIGHTING CONTROLS AND EXTEND THE UNSWITCHED HOT LEG TO THE GTD NOTED IN KEYNOTE 1. A SECOND NORMAL BRANCH CIRCUIT WILL NEED TO BE INTERCEPTED AHEAD OF ANY SWITCHING/CONTROLS AND EXTENDED TO THE GTD FOR VOLTAGE LOSS SENSING. CONTRACTOR SHALL TIE INTO EXISTING CIRCUIT LP2C1-4 THAT SERVES EXISTING POOL LIGHTING AND EXTEND TO THE GTD.
3. LIGHT FIXTURES ARE INTENDED TO BE NORMALLY OFF AND ONLY COME ON DURING LOSS OF POWER. LIGHT FIXTURE WILL RECEIVE POWER FROM THE GTD NOTED IN KEYNOTE 1 AND 2.
4. LIGHTING CONTROLS LOCATED WITHIN THE SPACE ARE STAND ALONE CONTROLS AND SHALL BE PROGRAMMED AS NOTED IN THE SEQUENCE OF OPERATIONS.
5. CONNECT LIGHT FIXTURES DESIGNATED AS EMERGENCY TO EXISTING EMERGENCY CIRCUIT LOCATED ABOVE THE EXISTING CEILING. EMERGENCY CIRCUIT SHALL BE ROUTED THROUGH A NEW GTD NOTED ON THE LIGHTING PLAN.
6. CONNECT LIGHT FIXTURES DESIGNATED AS NORMAL LIGHTING SOURCES TO AN EXISTING NON-EMERGENCY LIGHTING CIRCUIT LOCATED ABOVE THE FINISH CEILING. CIRCUIT SHALL BE ROUTED THROUGH GTD SHOWN ON THE LIGHTING PLAN.
7. MOUNT NEW LIGHT SWITCHES IN EXISTING LIGHT SWITCH JUNCTION BOX LEFT IN PLACE AFTER COMPLETION OF DEMOLITION WORK.

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Howell Community Center

Howell Public Schools

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE

FIRST FLOOR LIGHTING PLAN - UNIT 1000

SHEET NO.

E311.a

STATE OF MICHIGAN
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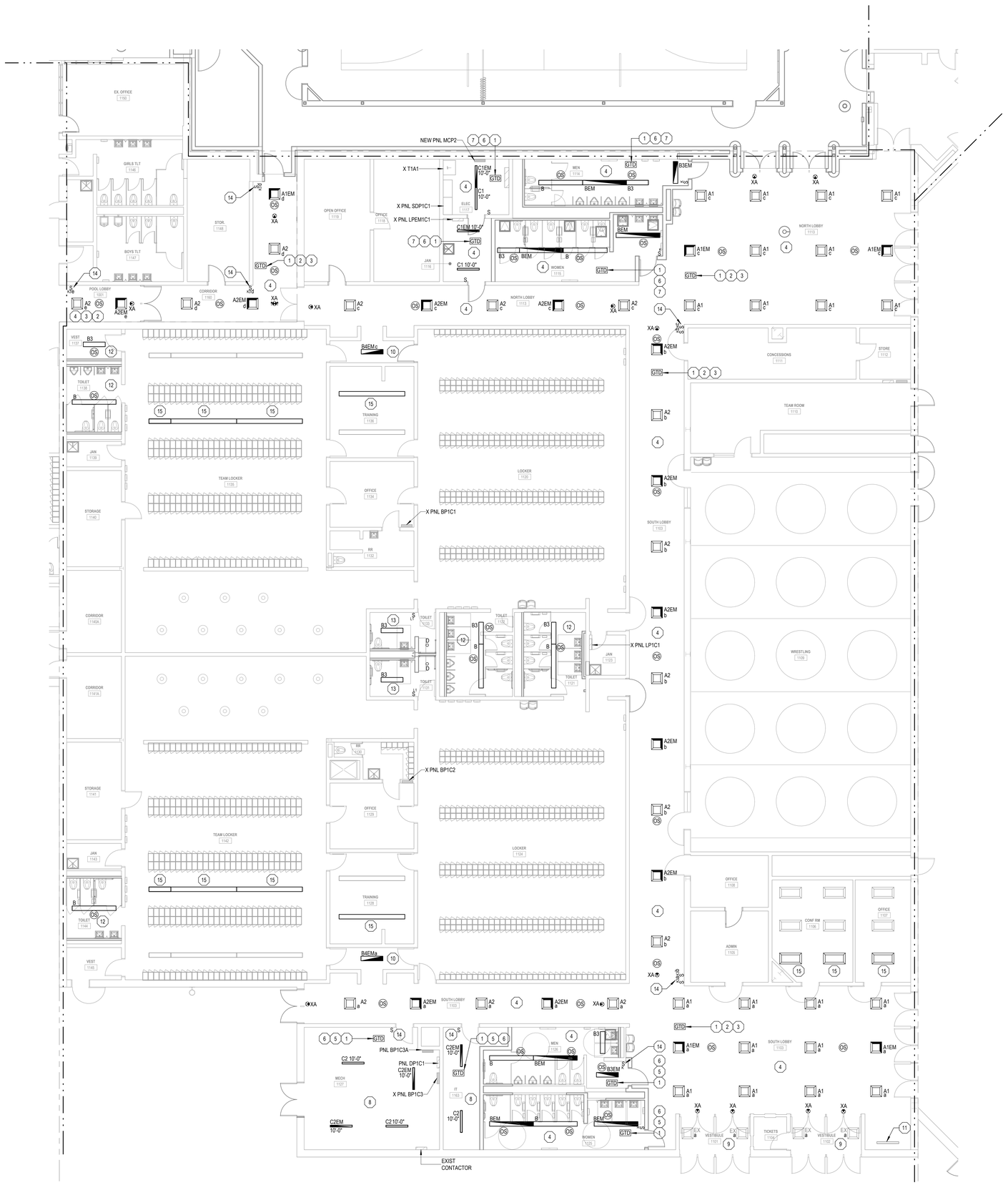

1 E311.b **FIRST FLOOR LIGHTING PLAN - UNIT 1100**

SCALE = 1/8" = 1'-0"

KEYNOTES:

1. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED ABOVE AN ACCESSIBLE CEILING SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.
2. CONNECT LIGHT FIXTURES DESIGNATED AS EMERGENCY TO EXISTING EMERGENCY CIRCUIT LOCATED IN THE CEILING SPACE ABOVE. EMERGENCY CIRCUIT SHALL BE ROUTED THROUGH A NEW GTD NOTED ON THE LIGHTING PLAN.
3. CONNECT LIGHT FIXTURES DESIGNATED AS NORMAL LIGHTING SOURCES TO AN EXISTING NON-EMERGENCY LIGHTING CIRCUIT LOCATED IN THE CEILING SPACE ABOVE. CIRCUIT SHALL BE ROUTED THROUGH GTD SHOWN ON THE LIGHTING PLAN.
4. LIGHTING CONTROLS LOCATED WITH IN THE SPACE ARE STAND ALONE CONTROLS AND SHALL BE PROGRAMMED AS NOTED IN THE SEQUENCE OF OPERATIONS.
5. CONNECT LIGHT FIXTURES DESIGNATED AS EMERGENCY TO EXISTING EMERGENCY CIRCUIT LOCATED ABOVE SOUTH LOBBY 1103 CEILING. EMERGENCY CIRCUIT SHALL BE ROUTED THROUGH A NEW GTD NOTED ON THE LIGHTING PLAN.
6. CONNECT LIGHT FIXTURES DESIGNATED AS NORMAL LIGHTING SOURCES TO AN EXISTING NON-EMERGENCY LIGHTING CIRCUIT LOCATED IN THE CEILING SPACE ABOVE. CIRCUIT SHALL BE ROUTED THROUGH GTD SHOWN ON THE LIGHTING PLAN.
7. CONNECT LIGHT FIXTURES DESIGNATED AS EMERGENCY TO EXISTING EMERGENCY CIRCUIT LOCATED ABOVE NORTH LOBBY 1113 CEILING. EMERGENCY CIRCUIT SHALL BE ROUTED THROUGH A NEW GTD NOTED ON THE LIGHTING PLAN.
8. FIXTURE MOUNTING HEIGHTS ARE NOTED ADJACENT TO THE FIXTURE. FINAL MOUNTING HEIGHTS WILL NEED TO BE COORDINATED IN THE FIELD TO ACCOMMODATE ANY EXISTING MECHANICAL SYSTEMS, PIPING, CONDUIT LOCATED IN THE CEILING SPACE. PROVIDE ALL NECESSARY UNISTRUT, THREADED ROD AND ADDITIONAL MOUNTING HARDWARE FOR INSTALLATION OF LIGHT FIXTURES. FIXTURES ARE INTENDED TO BE MOUNTED INTENDPENDANTLY FROM ALL OTHER SYSTEM INSTALLED WITHIN THE SPACE. LIGHT FIXTURE MOUNTING SHALL BE SUPPORTED FROM THE ROOF JOISTS ABOVE AND NOT FROM THE ROOF DECKING.
9. EXISTING LIGHTS SHALL REMAIN CONNECTED TO EXISTING LIGHTING CIRCUITS. LIGHTS WILL SERVE AS NIGHT LIGHTS.
10. LIGHT FIXTURE IS INTENDED TO BE TIED IN WITH THE CORRIDOR LIGHTING AND CONTROL.
11. EXISTING DISPLAY CASE INTEGRAL LIGHTING SHALL BE CONNECTED TO NEW LOBBY LIGHTING AND CONTROLS.
12. CONTRACTOR SHALL INTERCEPT EXISTING CONTROLLED NORMAL LIGHTING CIRCUIT LOCATED ABOVE THE CEILING FOR CONNECTION TO NEW LIGHTING.
13. CONNECT LIGHT FIXTURES DESIGNATED AS NORMAL LIGHTING SOURCES TO AN EXISTING NON-EMERGENCY LIGHTING CIRCUIT LOCATED IN THE CEILING SPACE ABOVE.
14. MOUNT NEW LIGHT SWITCHES IN EXISTING LIGHT SWITCH JUNCTION BOX LEFT IN PLACE AFTER COMPLETION OF DEMOLITION WORK.
15. INSTALL EXISTING LIGHT FIXTURES SALVAGED DURING DEMOLITION WORK. REWORK AND EXTEND EXISTING BRANCH CIRCUIT WIRING AS NECESSARY TO RECONNECT EXISTING LIGHT FIXTURE AFTER COMPLETION OF CEILING WORK.

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HOWELL
PUBLIC SCHOOLS

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SHEET TITLE

FIRST FLOOR LIGHTING PLAN - UNIT 1100

SHEET NO.

E311.b

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KEYNOTES:

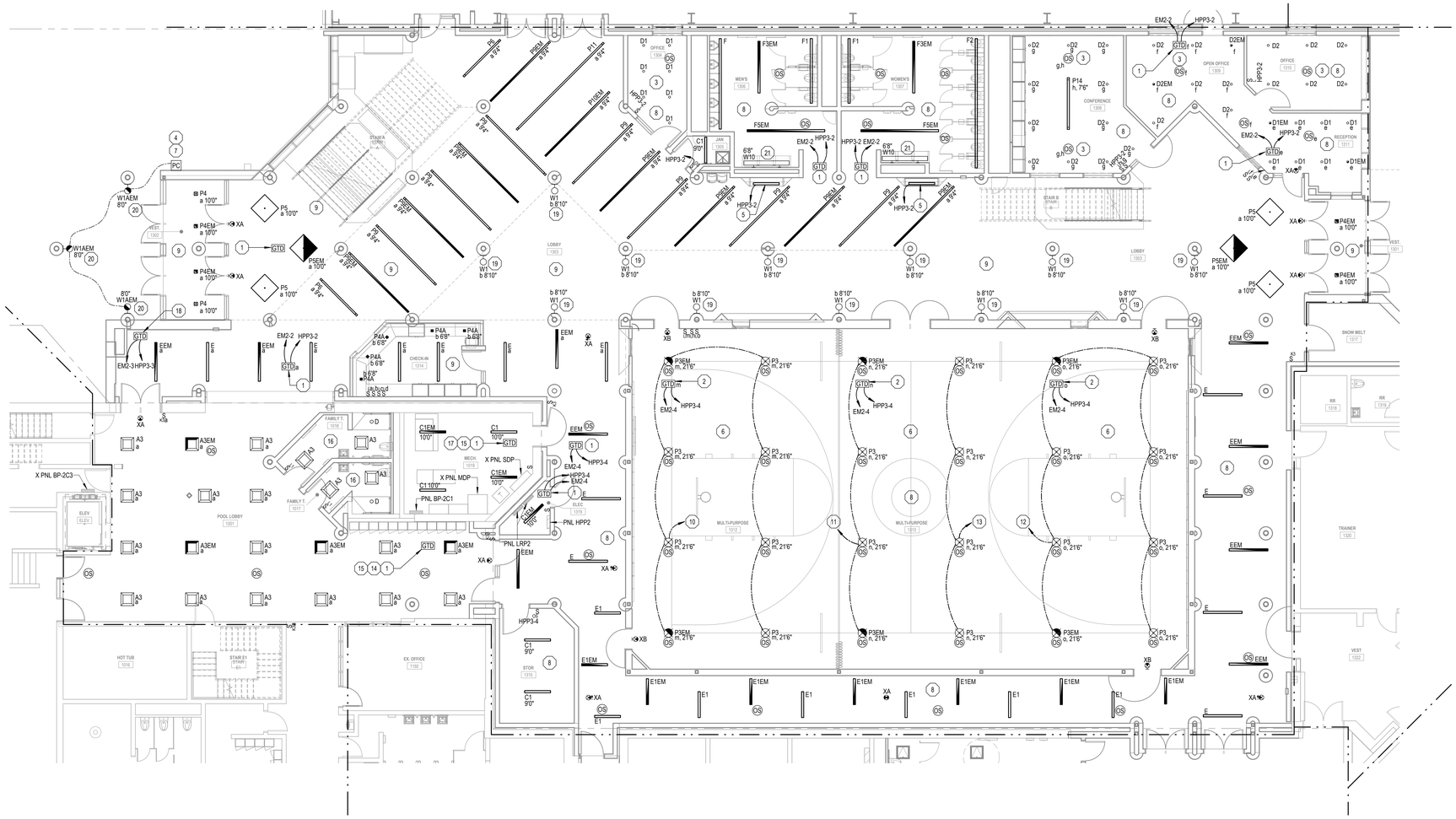
1. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED ABOVE AN ACCESSIBLE CEILING SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.
2. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED IN OPEN CEILING SPACE ABOVE SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.
3. CEILING MOUNTED OCCUPANCY SENSOR SHALL CONTROL LIGHTING AS WELL AS NEW RECEPTACLES OUTLETS INSTALLED WITHIN THE SPACE. PROVIDE THE CORRECT QUANTITY OF POWER PACKS TO CONTOL BOTH LIGHTS AND RECEPTACLES. REFER TO KEYNOTE 1 ON SHEET E-223 FOR ADDITIONAL INFORMATION.
4. CANOPY LIGHT FIXTURES SHALL BE ROUTED THROUGH A ROOM CONTROLLER FOR TIME CLOCK FUNCTION LOCATED IN JANITOR 2306 ON THE SECOND FLOOR. REFER TO THE SEQUENCE OF OPERATIONS FOR ADDITIONAL INFORMATION.
5. CASEWORK PROVIDED WITH INTEGRAL LIGHTING FROM THE FACTORY. ROUTE DISPLAY CASE LIGHTING THROUGH A ROOM CONTROLLER FOR TIME OF DAY CONTROL. REFER TO THE SEQUENCE OF OPERATIONS FOR PROGRAMMING TO BE NOTED UNDER LOBBY SPACE.
6. OCCUPANCY SENSOR SHOWN ADJACENT TO EACH LIGHT FIXTURE IS INTEGRAL TO THE LIGHT FIXTURE FOR ALL P3, & P3EM FIXTURE TYPES.
7. EXTERIOR BUILDING MOUNTED PHOTOCELL TO CONTROL COVERED CANOPY LIGHTS.
8. LIGHTING CONTROLS LOCATED WITH IN THE SPACE ARE STAND ALONE CONTROLS AND SHALL BE PROGRAMMED AS NOTED IN THE SEQUENCE OF OPERATIONS.
9. LIGHTING CONTROLS LOCATED WITHIN THIS SPACE SHALL TIE BACK TO A MULTI CHANNEL LIGHTING ROOM CONTROLLER UNIT WITH INTEGRAL TIME CLOCK OR APPROVED EQUAL. PROGRAMMING OF FIXTURES SHALL FOLLOW AS NOTED IN THE SEQUENCE OF OPERATIONS.
10. INTEGRAL DAYLIGHT SENSOR SHALL BE PROGRAMMED TO DIM LIGHT FIXTURES BASED ON NATURAL DAYLIGHT LEVELS. LIGHT FIXTURES LOCATED IN THE PLAN WEST PRIMARY LIGHTING ZONE SHALL BE DIMMED TOGETHER. REFER TO ASHRAE 90.1-2019 SECTION 9.4.1.1e FOR DAYLIGHT HARVESTING REQUIREMENTS.
11. INTEGRAL DAYLIGHT SENSOR SHALL BE PROGRAMMED TO DIM LIGHT FIXTURES BASED ON NATURAL DAYLIGHT LEVELS. LIGHT FIXTURES LOCATED IN THE PLAN WEST SECONDARY LIGHTING ZONE SHALL BE DIMMED TOGETHER. REFER TO ASHRAE 90.1-2019 SECTION 9.4.1.1e FOR DAYLIGHT HARVESTING REQUIREMENTS.
12. INTEGRAL DAYLIGHT SENSOR SHALL BE PROGRAMMED TO DIM LIGHT FIXTURES BASED ON NATURAL DAYLIGHT LEVELS. LIGHT FIXTURES LOCATED IN THE PLAN EAST PRIMARY LIGHTING ZONE SHALL BE DIMMED TOGETHER. REFER TO ASHRAE 90.1-2019 SECTION 9.4.1.1e FOR DAYLIGHT HARVESTING REQUIREMENTS.

KEYNOTES:

13. INTEGRAL DAYLIGHT SENSOR SHALL BE PROGRAMMED TO DIM LIGHT FIXTURES BASED ON NATURAL DAYLIGHT LEVELS. LIGHT FIXTURES LOCATED IN THE PLAN EAST SECONDARY LIGHTING ZONE SHALL BE DIMMED TOGETHER. REFER TO ASHRAE 90.1-2019 SECTION 9.4.1.1e FOR DAYLIGHT HARVESTING REQUIREMENTS.
14. CONNECT LIGHT FIXTURES DESIGNATED AS EMERGENCY TO EXISTING EMERGENCY CIRCUIT LOCATED IN THE CEILING SPACE ABOVE. EMERGENCY CIRCUIT SHALL BE ROUTED THROUGH A NEW GTD NOTED ON THE LIGHTING PLAN.
15. CONNECT LIGHT FIXTURES DESIGNATED AS NORMAL LIGHTING SOURCES TO AN EXISTING NON-EMERGENCY LIGHTING CIRCUIT LOCATED IN THE CEILING SPACE ABOVE. CIRCUIT SHALL BE ROUTED THROUGH GTD SHOWN ON THE LIGHTING PLAN.
16. CONNECT LIGHT FIXTURES TO AN EXISTING NORMAL LIGHTING CIRCUIT LOCATED IN THE CEILING SPACE ABOVE.
17. CONNECT LIGHT FIXTURES DESIGNATED AS EMERGENCY TO EXISTING EMERGENCY CIRCUIT LOCATED IN THE CEILING SPACE ABOVE POOL LOBBY 1001. EMERGENCY CIRCUIT SHALL BE ROUTED THROUGH A NEW GTD NOTED ON THE LIGHTING PLAN.
18. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED ABOVE AN ACCESSIBLE CEILING SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL. GTD TO SERVE EXTERIOR SCONCE CANOPY FIXTURE W1AEM.
19. FIXTURE MOUNTING HEIGHT NOTED IS TO THE CENTER OF THE WALL SCONCE TYPE W1 TO ALIGN WITH RECEPTION DESK CEILING HEIGHT. FINAL MOUNTING HEIGHT MUST BE COORDINATED WITH ARCHITECT PRIOR TO ROUGHIN.
20. FIXTURE MOUNTING HEIGHT NOTED IS TO THE BOTTOM OF THE LIGHT FIXTURE.
21. FIXTURE MOUNTING HEIGHT NOTED IS TO THE UNDERSIDE OF THE FIXTURE. LIGHT FIXTURE SHALL BE CENTERED OVER WALL MOUNTED MIRRORS.

CONDUIT ROUTING NOTE

THE MAXIMUM SIZE CONDUIT ALLOWED TO BE ROUTED ABOVE LOBBY 1303 STRUCTURAL ROOF CEILING IS A 1" CONDUIT. ANYTHING LARGER THAN A 1" CONDUIT WILL NEED TO BE ROUTED BELOW GRADE. PRIOR TO ROUTING ANY CONDUIT PATHWAYS ABOVE THE LOBBY 1303 STRUCTURAL ROOF CEILING FINAL APPROVAL MUST BE OBTAINED FROM THE ARCHITECT AND GC PRIOR TO THE START OF CONSTRUCTIONS.



1 E311.d **FIRST FLOOR LIGHTING PLAN - UNIT 1300A**
SCALE = 1/8" = 1'-0"

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FIRST FLOOR LIGHTING PLAN - UNIT 1300A

SHEET NO.
E311.d

STATE OF MICHIGAN
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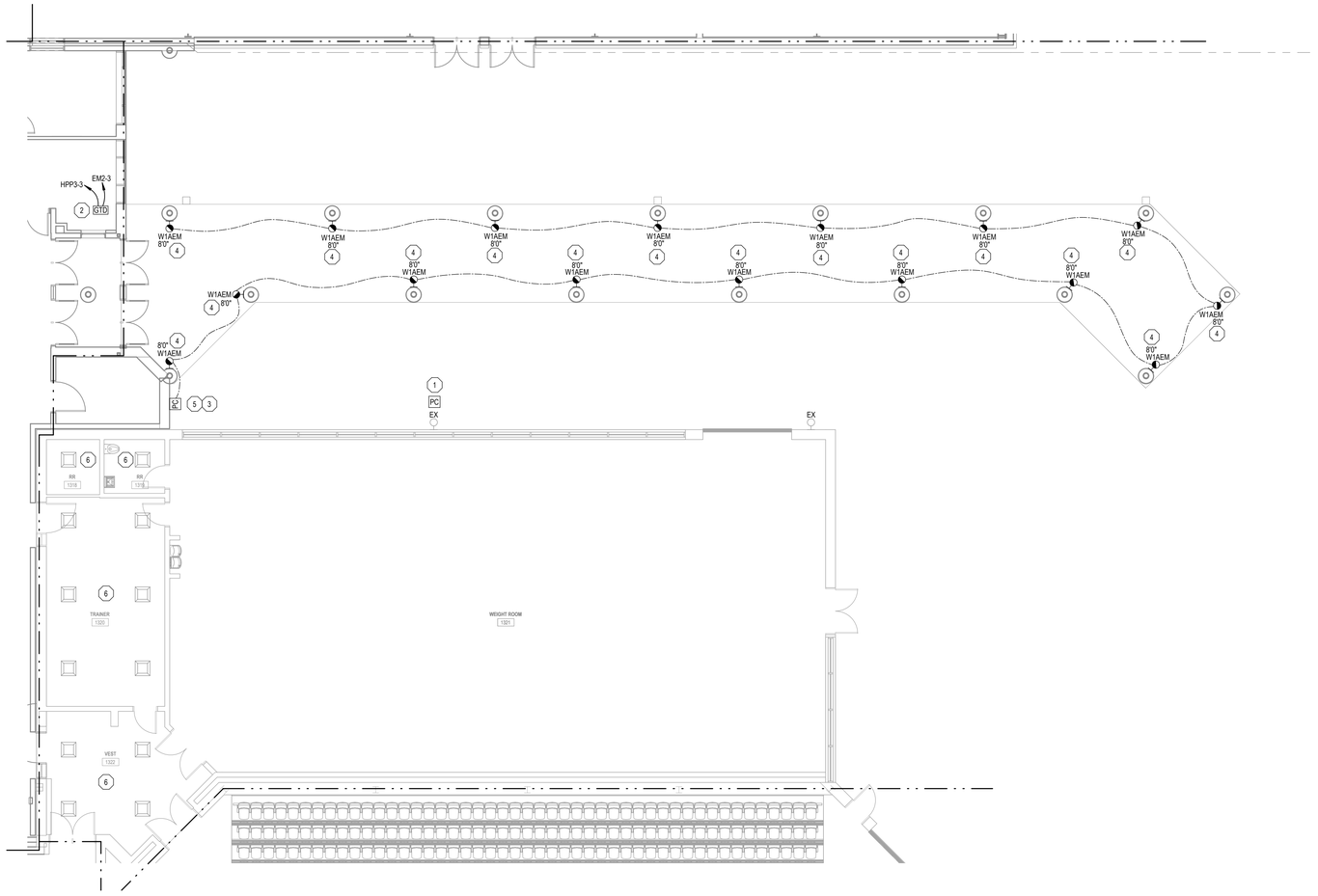

2 **FIRST FLOOR LIGHTING PLAN - UNIT 1300B**
E311.e SCALE = 1/8" = 1'-0"

KEYNOTES:

1. PROVIDE A NEW EXTERIOR BUILDING MOUNTED PHOTOCELL FOR CONTROL OF EXISTING EXTERIOR LIGHT FIXTURES SCHEDULED TO REMAIN. PHOTOCELL SHALL BE MOUNTED ABOVE EXISTING LIGHT FIXTURE SIMILAR TO THE EXISTING INSTALLATION SCHEDULED TO BE DEMOED. REWORK EXISTING BRANCH CIRCUIT WIRING, CONTROL WIRING TO CONNECT REMAINING EXTERIOR BUILDING MOUNTED LIGHT FIXTURES TO NEW PHOTOCELL.
2. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED ABOVE AN ACCESSIBLE CEILING SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL. GTD TO SERVE EXTERIOR SCONCE CANOPY FIXTURE W1AEM.
3. CANOPY LIGHT FIXTURES SHALL BE ROUTED THROUGH A ROOM CONTROLLER FOR TIME CLOCK FUNCTION LOCATED IN JANITOR 2306 ON THE SECOND FLOOR. REFER TO THE SEQUENCE OF OPERATIONS FOR ADDITIONAL INFORMATION.
4. FIXTURE MOUNTING HEIGHT NOTED IS TO THE BOTTOM OF THE LIGHT FIXTURE.
5. EXTERIOR BUILDING MOUNTED PHOTOCELL TO CONTROL COVERED CANOPY LIGHTS.
6. PROVIDE PRICE PER UNIT COST TO TEMPORARLY DISCONNECT, REMOVE AND REINSTALL EXISTING LIGHTING TO ACCOMMODATE POTENTIAL REMOVAL OF THE EXISTING CEILING TO ALLOW FOR INSTALLATION OF NEW FIRE PROTECTION PIPING. EXISTING BRANCH CIRCUIT WIRING WILL NEED TO BE REWORKED AS NECESSARY TO RECONNECT LIGHT FIXTURES.

COMMUNITY CENTER GENERAL NOTE:
NEW POLE MOUNTED LIGHT FIXTURES SHALL BE SUPPLIED WITH INTEGRAL WIRELESS CONTROLS WITH MOTION, TIME OF DAY CONTROL AND BE PROGRAMMED AS FOLLOWS. PROGRAM ALL NEW LIGHT FIXTURES TO OPERATE TOGETHER AND COME ON AT DUSK AND SHUTOFF AT DAWN. WHEN NO MOTION IS DETECTED AFTER 20 MINUTES FIXTURES SHALL DIM DOWN TO 50% AND UPON MOTION DETECTED LIGHTS GO TO FULL OUTPUT. PEDESTRIAN SCALE POLES SHALL OPERATE AS A STANDALONE ZONE.

PEDESTRIAN SCALE GENERAL NOTE:
NEW POLE MTD LIGHT FIXTURES SHALL BE SUPPLIED WITH INTEGRAL WIRELESS CONTROLS WITH MOTION. TIME OF DAY CONTROL AND BE PROGRAMMED AS FOLLOWS. PROGRAM NEW POLE MOUNTED LIGHT FIXTURES TO OPERATE TOGETHER AND COME ON AT DUSK AND SHUTOFF AT DAWN. WHEN NO MOTION IS DETECTED AFTER 20 MINUTES FIXTURES SHALL DIM DOWN TO 50% AND UPON MOTION DETECTED LIGHTS GO TO FULL OUTPUT.

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SHEET TITLE
FIRST FLOOR LIGHTING PLAN - UNIT 1300B

SHEET NO.
E311.e

STATE OF MICHIGAN
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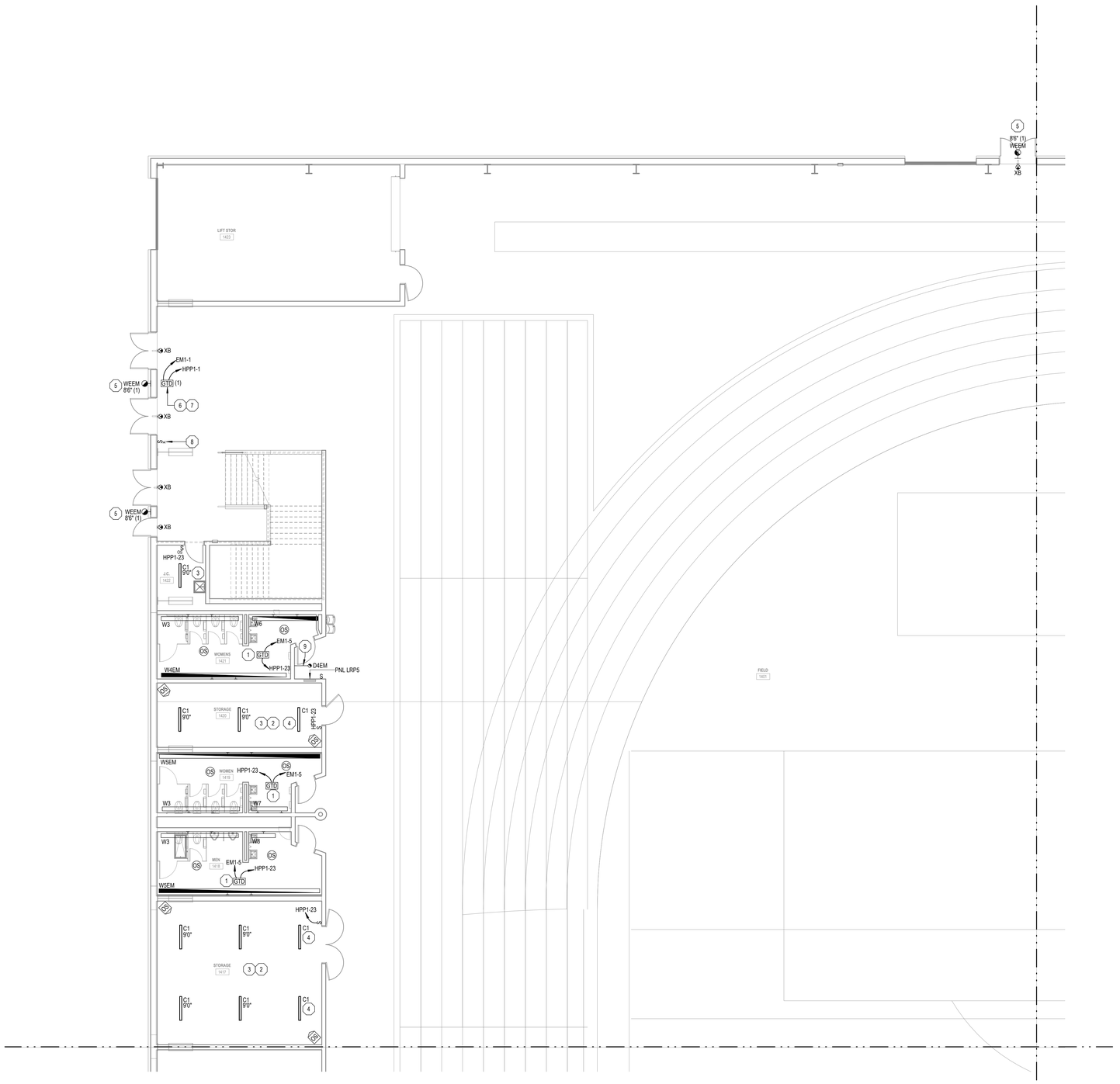

1 E311.f **FIRST FLOOR LIGHTING PLAN - UNIT 1400A**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED ABOVE AN ACCESSIBLE CEILING SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.
2. LIGHTING CONTROLS LOCATED WITH IN THE SPACE ARE STAND ALONE CONTROLS AND SHALL BE PROGRAMMED AS NOTED IN THE SEQUENCE OF OPERATIONS.
3. FIXTURE MOUNTING HEIGHTS ARE NOTED ADJACENT TO THE FIXTURE. FINAL MOUNTING HEIGHTS WILL NEED TO BE COORDINATED IN THE FIELD TO ACCOMMODATE NEW MECHANICAL SYSTEMS, PIPING, CONDUIT LOCATED IN THE CEILING SPACE. PROVIDE ALL NECESSARY UNISTRUT, THREADED ROD AND ADDITIONAL MOUNTING HARDWARE FOR INSTALLATION OF LIGHT FIXTURES. FIXTURES ARE INTENDED TO BE MOUNTED INTENDPENDANTLY FROM ALL OTHER SYSTEM INSTALLED WITHIN THE SPACE. LIGHT FIXTURE MOUNTING SHALL BE SUPPORTED FROM THE STRUCTURAL SLAB ABOVE SUPPORTING PEDESTRIAN SEATING ABOVE.
4. FIXTURE SURFACE MOUNTED TO UNDERSIDE OF STRUCTURAL DECK ABOVE.
5. FIXTURE MOUNTING HEIGHT NOTED IS TO THE CENTER OF THE LIGHT FIXTURE. LIGHT FIXTURE SHALL MOUNT TO A FLAT PLATE FOR FLUSH MOUNTING OF LIGHT FIXTURE. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
6. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL. MOUNT GTD IN ACCESSIBLE WALL FRAMING TUCKED NEAR SOME VERTICAL WALL FRAMING TO PREVENT DAMAGE BUT STILL BE ACCESSIBLE PER CODE.
7. NUMBER NOTED IN PARENTHESES ADJACENT TO THE GTD CORRELATES WITH WHICH EXTERIOR LIGHT FIXTURES ARE TIED TO THE GTD.
8. N-LIGHT WALL MOUNTED TURN STYLE KEYED LOW VOLTAGE LIGHT SWITCH FOR ON/OFF CONTROL FOR ALL HIGHBAY FIXTURES DESIGNATED AS P1, P1EM, P2, & P2EM. SWITCH SHALL TIE BACK TO THE NLIGHT ECLIPSE LIGHTING CONTROL PROCESSOR LOCATED IN ELECTRICAL 1412. LIGHT SWITCH IS INTENDED TO ONLY TURN LIGHTS ON AND OFF. REFER TO THE SEQUENCE OF OPEARTIONS FOR ADDITIONAL PROGRAMMING INFORMATION.
9. PROVIDE LEGRAND SURFACE MOUNTED FIXTURE JUNCTION BOX FROM THE 700 SERIES SINGLE CHANNEL RACEWAY SYSTEM TO SUPPORT SURFACE MOUNTED DOWN LIGHT. ROUTE 700 SERIES SURFACE MOUNTED RACEWAY FROM DOWN LIGHT ALONG THE CEILING TO THE WALL FACE AND TRANSITION TO A STANDARD JUNCTION BOX AND CONDUIT RACEWAY RECESSED WITHIN THE WALL. CONTINUE CONDUIT TO CONSTROLS AND CIRCUITS AS NOTED ON THE DRAWINGS. SURFACE MOUNTED SINGLE CHANNEL RACEWAY FINISH MUST BE CORRDINATED WITH THE ARCHITECT PRIOR TO THE START OF CONSTRUCTION.

GENERAL NOTE:
PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF LIGHT FIXTURES, CONDUIT, AND JUNCTION BOXES CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC. HORIZONTAL RUNS OF CONDUIT IN PRECAST SEATING PLANK SYSTEM ARE NOT PERMITTED. CONDUITS SHALL BE MOUNTED BELOW THE PRECAST PLANK SYSTEM AND PENETRATE THROUGH FITTINGS PROVIDED WHERE NECESSARY, SUBJECT TO APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

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FIRST FLOOR LIGHTING PLAN - UNIT 1400A

SHEET NO.
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STATE OF MICHIGAN
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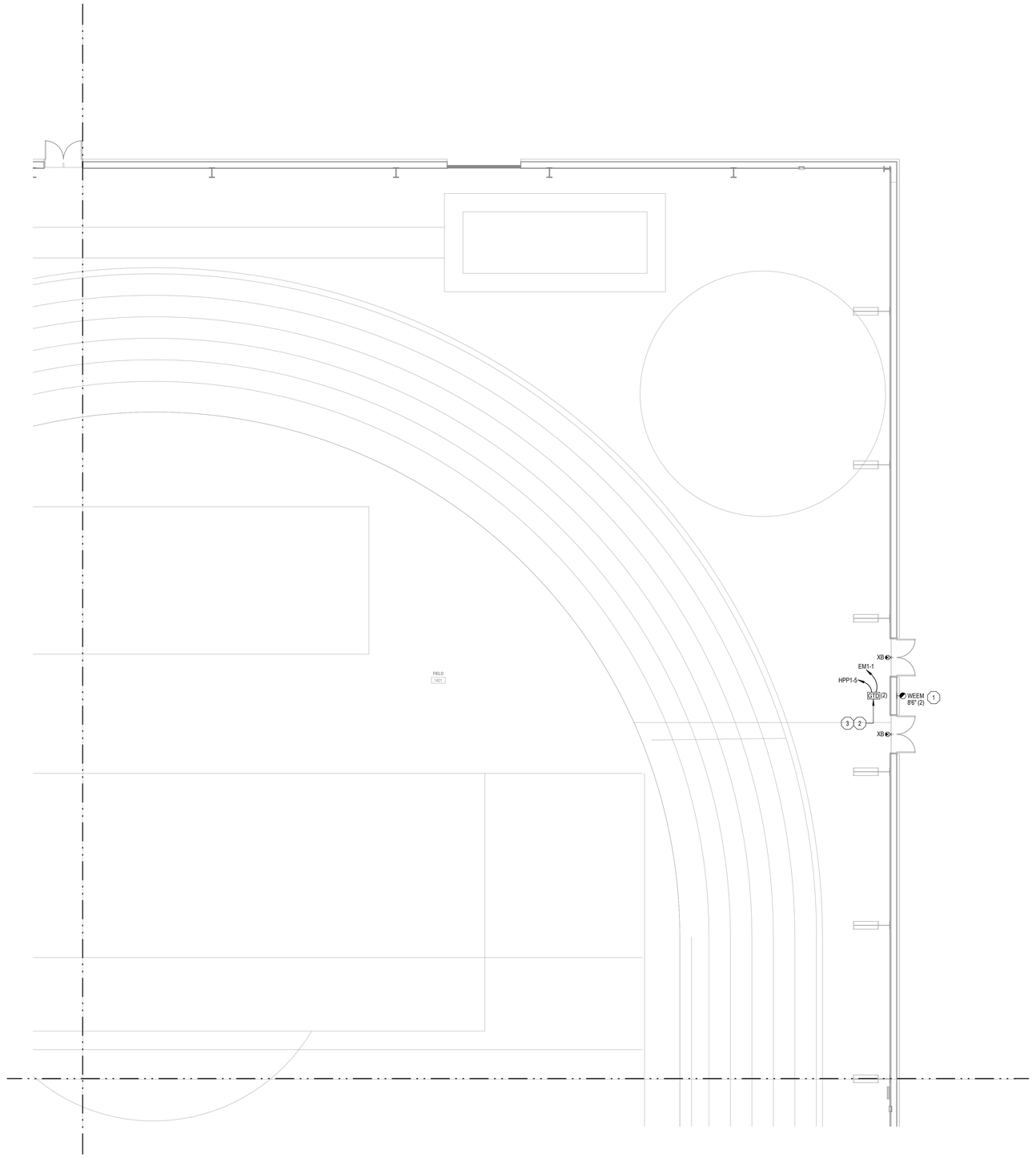

1 E311.g **FIRST FLOOR LIGHTING PLAN - UNIT 1400B**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. FIXTURE MOUNTING HEIGHT NOTED IS TO THE CENTER OF THE LIGHT FIXTURE. LIGHT FIXTURE SHALL MOUNT TO A FLAT PLATE FOR FLUSH MOUNTING OF LIGHT FIXTURE. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL. MOUNT GTD IN ACCESSIBLE WALL FRAMING TUCKED NEAR SOME VERTICAL WALL FRAMING TO PREVENT DAMAGE BUT STILL BE ACCESSIBLE PER CODE.
3. NUMBER NOTED IN PARENTHESES ADJACENT TO THE GTD CORRELATES WITH WHICH EXTERIOR LIGHT FIXTURES ARE TIED TO THE GTD.

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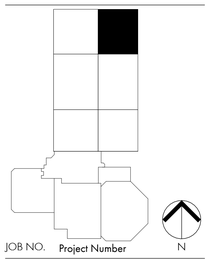

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FIRST FLOOR LIGHTING PLAN - UNIT 1400B

SHEET NO.

E311.g

STATE OF MICHIGAN
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1 E311.h **FIRST FLOOR LIGHTING PLAN - UNIT 1400C**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED ABOVE AN ACCESSIBLE CEILING SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.
2. LIGHTING CONTROLS LOCATED WITH IN THE SPACE ARE STAND ALONE CONTROLS AND SHALL BE PROGRAMMED AS NOTED IN THE SEQUENCE OF OPERATIONS.
3. FIXTURE MOUNTING HEIGHTS ARE NOTED ADJACENT TO THE FIXTURE. FINAL MOUNTING HEIGHTS WILL NEED TO BE COORDINATED IN THE FIELD TO ACCOMMODATE NEW MECHANICAL SYSTEMS, PIPING, CONDUIT LOCATED IN THE CEILING SPACE. PROVIDE ALL NECESSARY UNISTRUT, THREADED ROD AND ADDITIONAL MOUNTING HARDWARE FOR INSTALLATION OF LIGHT FIXTURES. FIXTURES ARE INTENDED TO BE MOUNTED INTENDPENDANTLY FROM ALL OTHER SYSTEM INSTALLED WITHIN THE SPACE. LIGHT FIXTURE MOUNTING SHALL BE SUPPORTED FROM THE STRUCTURAL SLAB ABOVE SUPPORTING PEDESTRIAN SEATING ABOVE.
4. FIXTURE SURFACE MOUNTED TO UNDERSIDE OF STRUCTURAL DECK ABOVE.
5. FIXTURE MOUNTING HEIGHT NOTED IS TO THE CENTER OF THE LIGHT FIXTURE. LIGHT FIXTURE SHALL MOUNT TO A FLAT PLATE FOR FLUSH MOUNTING OF LIGHT FIXTURE. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
6. NLIGHT ECLIPSE LIGHTING PROCESSOR WITH ASTRONOMICAL TIME CLOCK TO PROVIDE SCHEDULE PROGRAMMING TO ALL P1, P1EM, P2, AND P2EM LIGHT FIXTURES. REFER TO SEQUENCE OF OPERATION FOR ADDITIONAL PROGRAMMING DETAILS
7. NLIGHT NTS 7" TOUCHSCREEN WALL SWITCH THAT WILL TIE BACK TO THE NLIGHT ECLIPSE LIGHTING CONTROL PROCESSOR. TOUCH SCREEN TO PROVIDE CONTROL OF THE MULTIPLE LIGHTING ZONES LOCATED IN FIELD 1401. REFER TO THE SEQUENCE OF OPERATION FOR ADDITIONAL INFORMATION. VERIFY FINAL LOCATION FOR TOUCH SCREEN WITH OWNER PRIOR TO THE START OF CONSTRUCTION.
8. NLIGHT LOW VOLTAGE MULTI BUTTON SWITCH FOR ON/OFF MANUAL OVERRIDE OF EXTERIOR BUILDING MOUNTED LIGHT FIXTURES LOCATED ON THE PLAN NORTH SIDE OF THE PEMB LOCATED ABOVE THE MECHANICAL DOAS UNITS. REFER TO SEQUENCE OF OPERATIONS FOR ADDITIONAL PROGRAMMING INFORMATION. VERIFY FINAL SWITCH LOCATION WITH THE OWNER PRIOR TO THE START OF CONSTRUCTION.

GENERAL NOTE:
PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF LIGHT FIXTURES, CONDUIT, AND JUNCTION BOXES CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC. HORIZONTAL RUNS OF CONDUIT IN PRECAST SEATING PLANK SYSTEM ARE NOT PERMITTED. CONDUITS SHALL BE MOUNTED BELOW THE PRECAST PLANK SYSTEM AND PENETRATE THROUGH FITTINGS PROVIDED WHERE NECESSARY, SUBJECT TO APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

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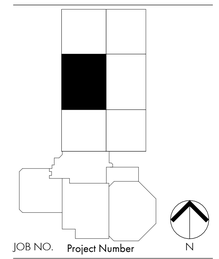

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SHEET TITLE
FIRST FLOOR LIGHTING PLAN - UNIT 1400C

SHEET NO.
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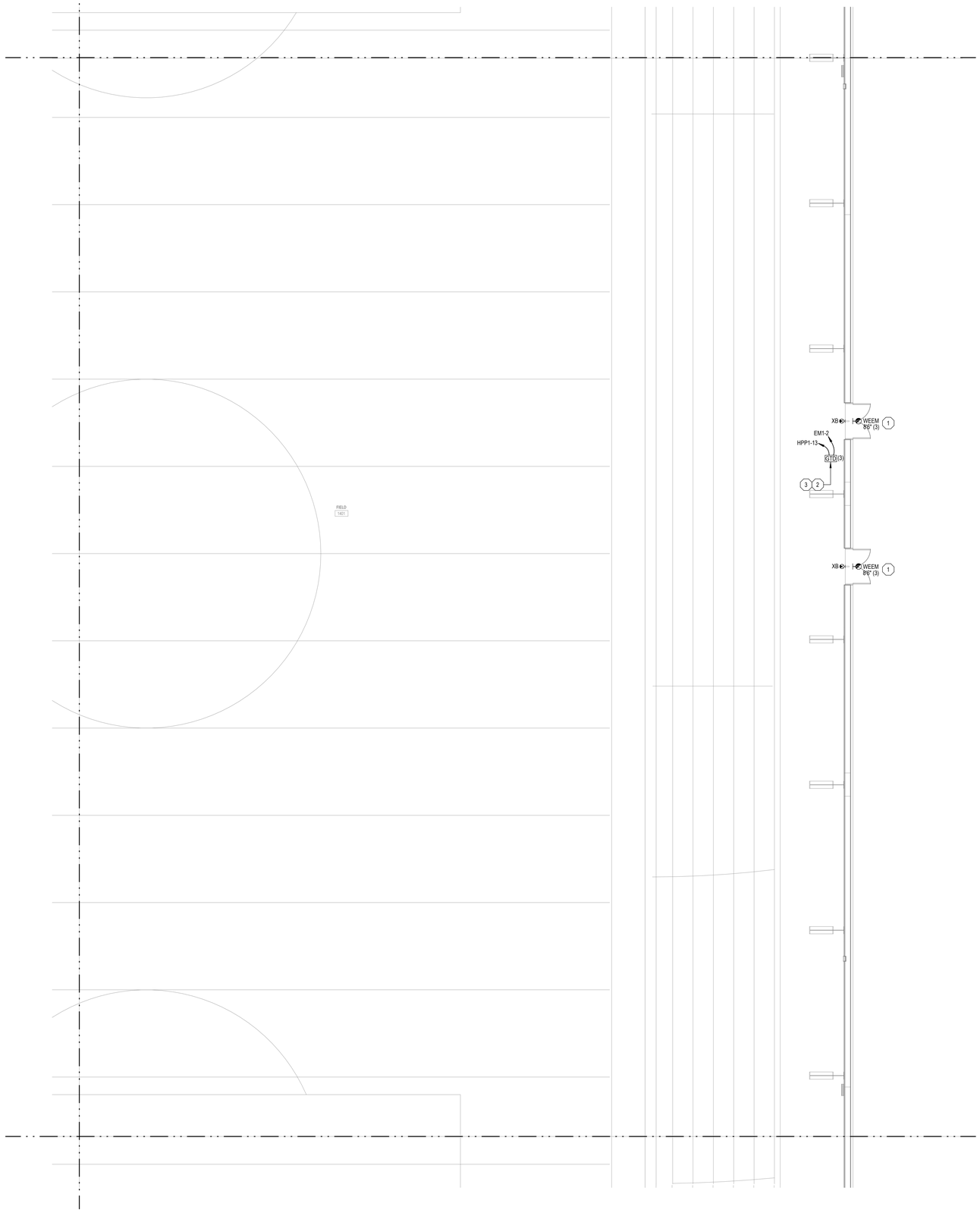

1 E311.j **FIRST FLOOR LIGHTING PLAN - UNIT 1400D**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. FIXTURE MOUNTING HEIGHT NOTED IS TO THE CENTER OF THE LIGHT FIXTURE. LIGHT FIXTURE SHALL MOUNT TO A FLAT PLATE FOR FLUSH MOUNTING OF LIGHT FIXTURE. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL. MOUNT GTD IN ACCESSIBLE WALL FRAMING TUCKED NEAR SOME VERTICAL WALL FRAMING TO PREVENT DAMAGE BUT STILL BE ACCESSIBLE PER CODE.
3. NUMBER NOTED IN PARENTHESES ADJACENT TO THE GTD CORRELATES WITH WHICH EXTERIOR LIGHT FIXTURES ARE TIED TO THE GTD.

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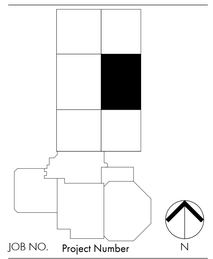

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SHEET TITLE
FIRST FLOOR LIGHTING PLAN - UNIT 1400D

SHEET NO.
E311.j

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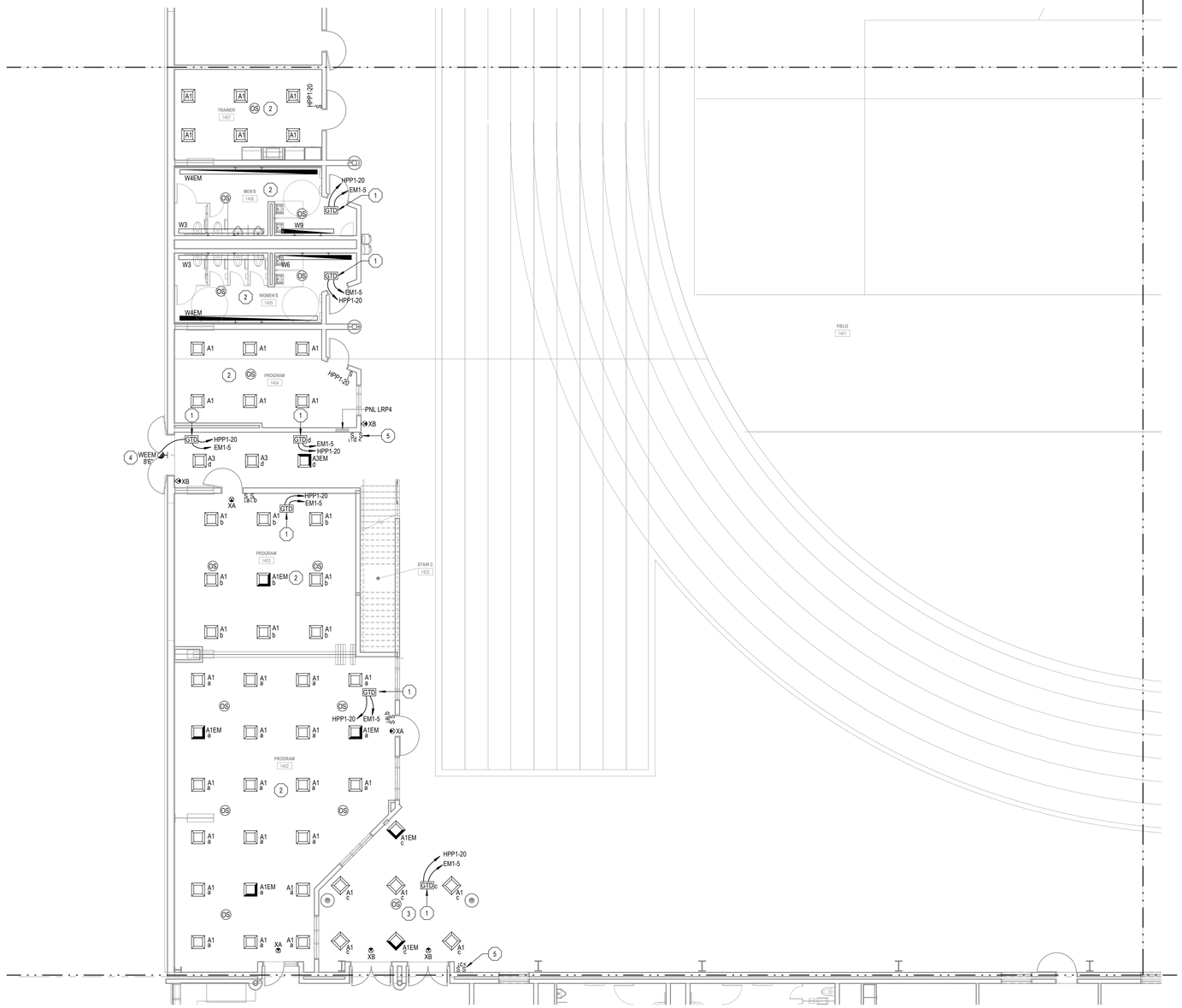

1 E311.k **FIRST FLOOR LIGHTING PLAN - UNIT 1400E**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED ABOVE AN ACCESSIBLE CEILING SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.
2. LIGHTING CONTROLS LOCATED WITH IN THE SPACE ARE STAND ALONE CONTROLS AND SHALL BE PROGRAMMED AS NOTED IN THE SEQUENCE OF OPERATIONS.
3. LIGHTING CONTROLS LOCATED WITH IN THE COVERED ENTRY INTO TRACK 1401 ARE STAND ALONE CONTROLS AND SHALL BE PROGRAMMED AS NOTED IN THE SEQUENCE OF OPERATIONS.
4. FIXTURE MOUNTING HEIGHT NOTED IS TO THE CENTER OF THE LIGHT FIXTURE. LIGHT FIXTURE SHALL MOUNT TO A FLAT PLATE FOR FLUSH MOUNTING OF LIGHT FIXTURE. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
5. N-LIGHT WALL MOUNTED TURN STYLE KEYED LOW VOLTAGE LIGHT SWITCH FOR ON/OFF CONTROL FOR ALL HIGHBAY FIXTURES DESIGNATED AS P1, P1EM, P2, & P2EM. SWITCH SHALL TIE BACK TO THE NLIGHT ECLIPSE LIGHTING CONTROL PROCESSOR LOCATED IN ELECTRICAL 1412. LIGHT SWITCH IS INTENDED TO ONLY TURN LIGHTS ON AND OFF. REFER TO THE SEQUENCE OF OPEARTIONS FOR ADDITIONAL PROGRAMMING INFORMATION.

GENERAL NOTE:
PRIOR TO DRILLING INTO SECOND LEVEL SPECTATOR PRECAST SEATING PLANK SYSTEM FOR MOUNTING OF LIGHT FIXTURES, CONDUIT, AND JUNCTION BOXES CONTRACTOR SHALL SCAN STRUCTURAL SUPPORT SYSTEM TO LOCATE ANY POST TENSION CABLES, REBAR, ETC.. HORIZONTAL RUNS OF CONDUIT IN PRECAST SEATING PLANK SYSTEM ARE NOT PERMITTED. CONDUITS SHALL BE MOUNTED BELOW THE PRECAST PLANK SYSTEM AND PENETRATE THROUGH FITTINGS PROVIDED WHERE NECESSARY, SUBJECT TO APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD. CONFIRM ALL SCANS OF PRECAST PLANK SEATING SYSTEM WITH STRUCTURAL DRAWINGS AND ENGINEER FOR COMMUNITY CENTER PRIOR TO START OF CONSTRUCTION.

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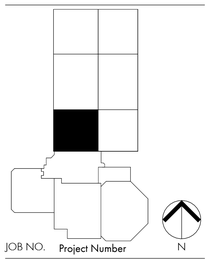

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FIRST FLOOR LIGHTING PLAN - UNIT 1400E

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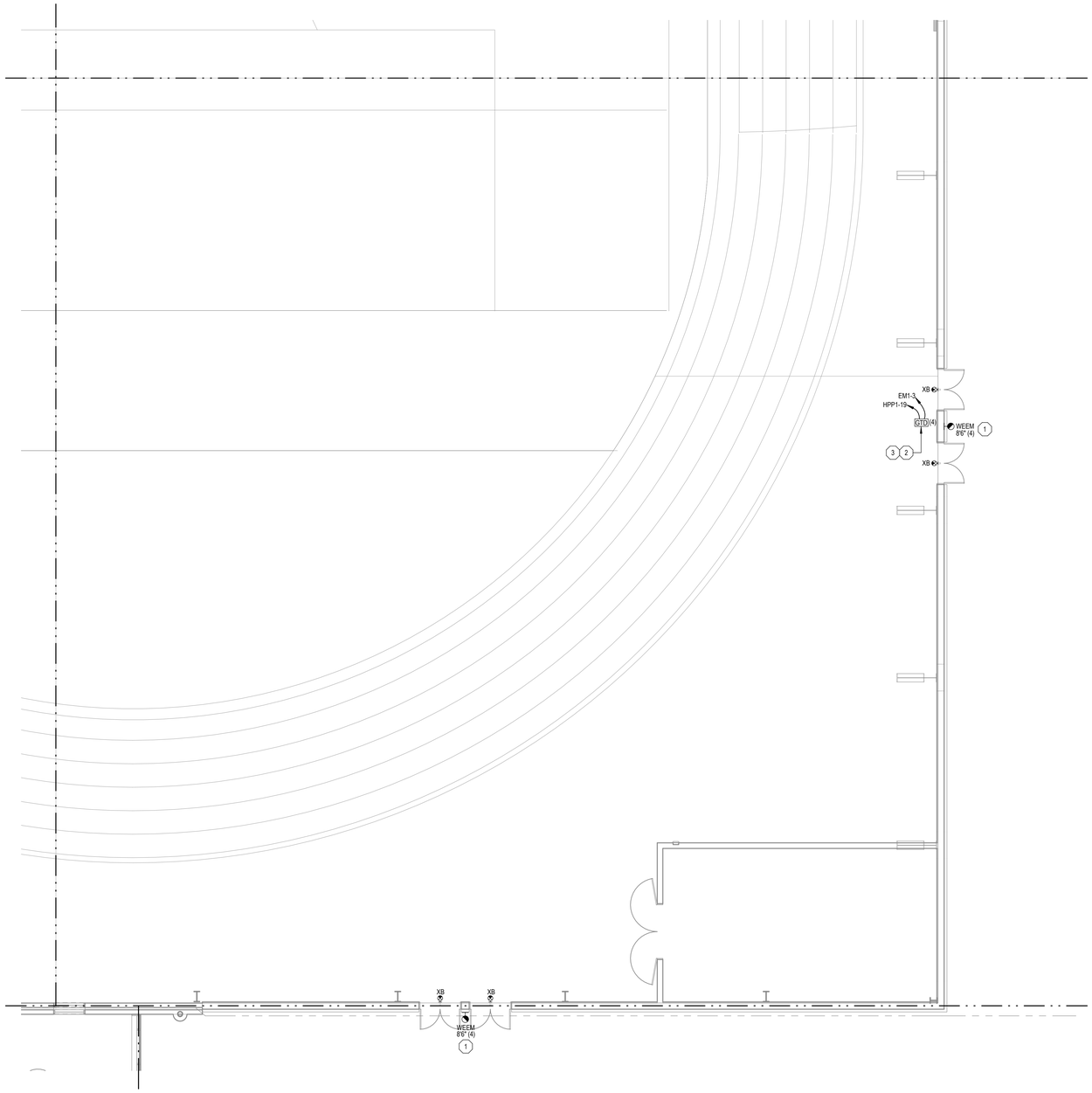

1 E311.m **FIRST FLOOR LIGHTING PLAN - UNIT 1400F**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. FIXTURE MOUNTING HEIGHT NOTED IS TO THE CENTER OF THE LIGHT FIXTURE. LIGHT FIXTURE SHALL MOUNT TO A FLAT PLATE FOR FLUSH MOUNTING OF LIGHT FIXTURE. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
2. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL. MOUNT GTD IN ACCESSIBLE WALL FRAMING TUCKED NEAR SOME VERTICAL WALL FRAMING TO PREVENT DAMAGE BUT STILL BE ACCESSIBLE PER CODE.
3. NUMBER NOTED IN PARENTHESES ADJACENT TO THE GTD CORRELATES WITH WHICH EXTERIOR LIGHT FIXTURES ARE TIED TO THE GTD.

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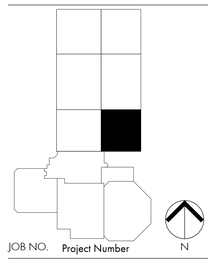

JOB NO. Project Number

SHEET TITLE
FIRST FLOOR LIGHTING PLAN - UNIT 1400F

SHEET NO.
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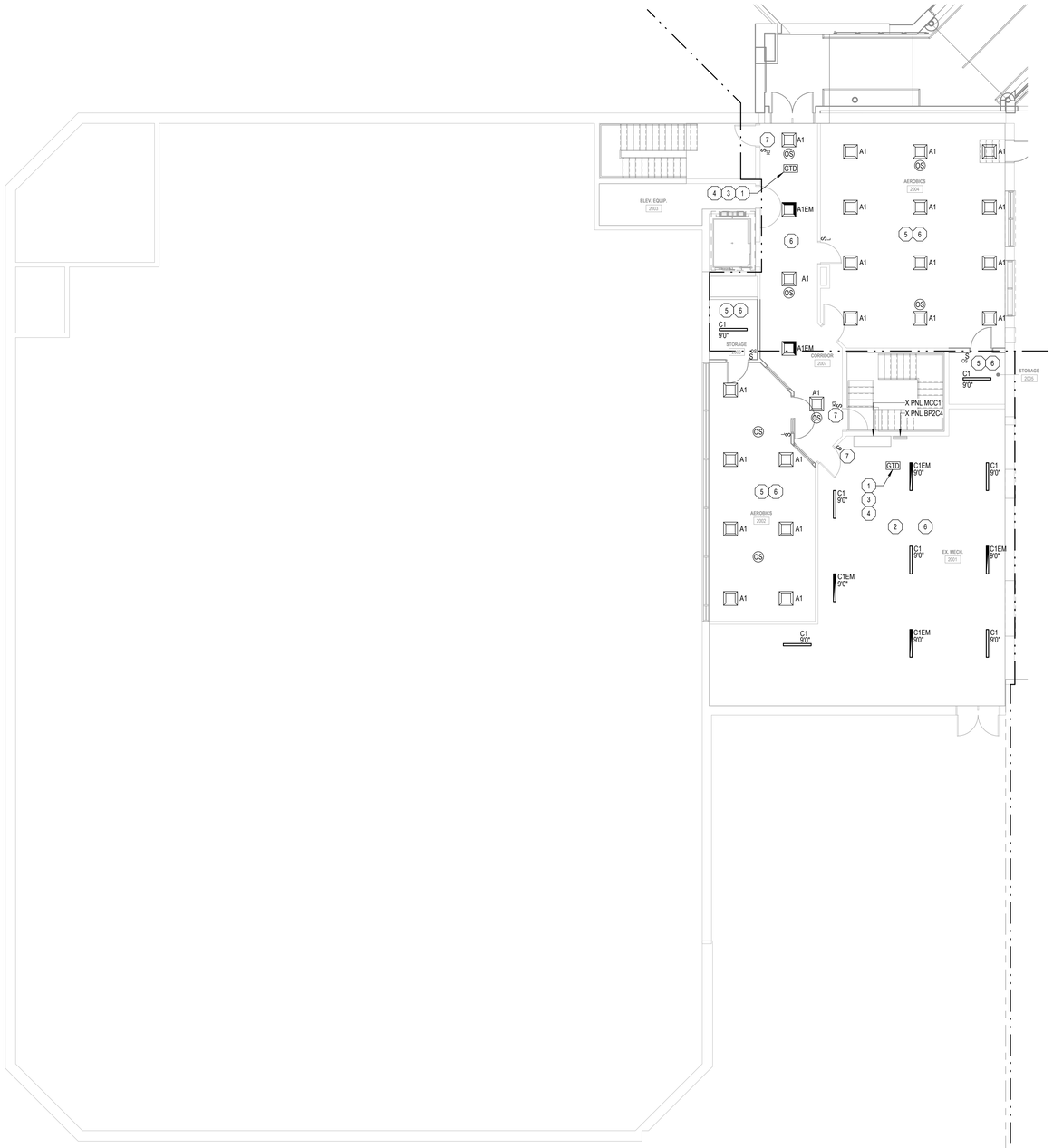

1 E321.a **SECOND FLOOR LIGHTING PLAN - UNIT 2000**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED ABOVE AN ACCESSIBLE CEILING SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.
2. FIXTURE MOUNTING HEIGHTS ARE NOTED ADJACENT TO THE FIXTURE. FINAL MOUNTING HEIGHTS WILL NEED TO BE COORDINATED IN THE FIELD TO ACCOMMODATE ANY EXISTING MECHANICAL SYSTEMS, PIPING, CONDUIT LOCATED IN THE CEILING SPACE. PROVIDE ALL NECESSARY UNISTRUT, THREADED ROD AND ADDITIONAL MOUNTING HARDWARE FOR INSTALLATION OF LIGHT FIXTURES. FIXTURES ARE INTENDED TO BE MOUNTED INTENDPENDANTLY FROM ALL OTHER SYSTEM INSTALLED WITHIN THE SPACE. LIGHT FIXTURE MOUNTING SHALL BE SUPPORTED FROM THE ROOF JOISTS ABOVE AND NOT FROM THE ROOF DECKING.
3. CONNECT LIGHT FIXTURES DESIGNATED AS EMERGENCY TO EXISTING EMERGENCY CIRCUIT LOCATED OUTSIDE OF THE EXISTING MECHANICAL ROOM ABOVE THE NEW CEILING LOCATED CORRIDOR 2007. EMERGENCY CIRCUIT SHALL BE ROUTED THROUGH A NEW GTD NOTED ON THE LIGHTING PLAN.
4. CONNECT LIGHT FIXTURES DESIGNATED AS NORMAL LIGHTING SOURCES TO AN EXISTING NON-EMERGENCY LIGHTING CIRCUIT LOCATED IN THE CEILING SPACE ABOVE. CIRCUIT SHALL BE ROUTED THROUGH GTD SHOWN ON THE LIGHTING PLAN.
5. CONNECT LIGHT FIXTURES DESIGNATED AS NORMAL LIGHTING SOURCE TO AN EXISTING NON-EMERGENCY LIGHTING CIRCUIT LOCATED IN THE CEILING SPACE ABOVE.
6. LIGHTING CONTROLS LOCATED WITH IN THE SPACE ARE STAND ALONE CONTROLS AND SHALL BE PROGRAMMED AS NOTED IN THE SEQUENCE OF OPERATIONS.
7. MOUNT NEW LIGHT SWITCHES IN EXISTING LIGHT SWITCH JUNCTION BOX LEFT IN PLACE AFTER COMPLETION OF DEMOLITION WORK.

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SHEET TITLE
SECOND FLOOR LIGHTING PLAN - UNIT 2000

SHEET NO.
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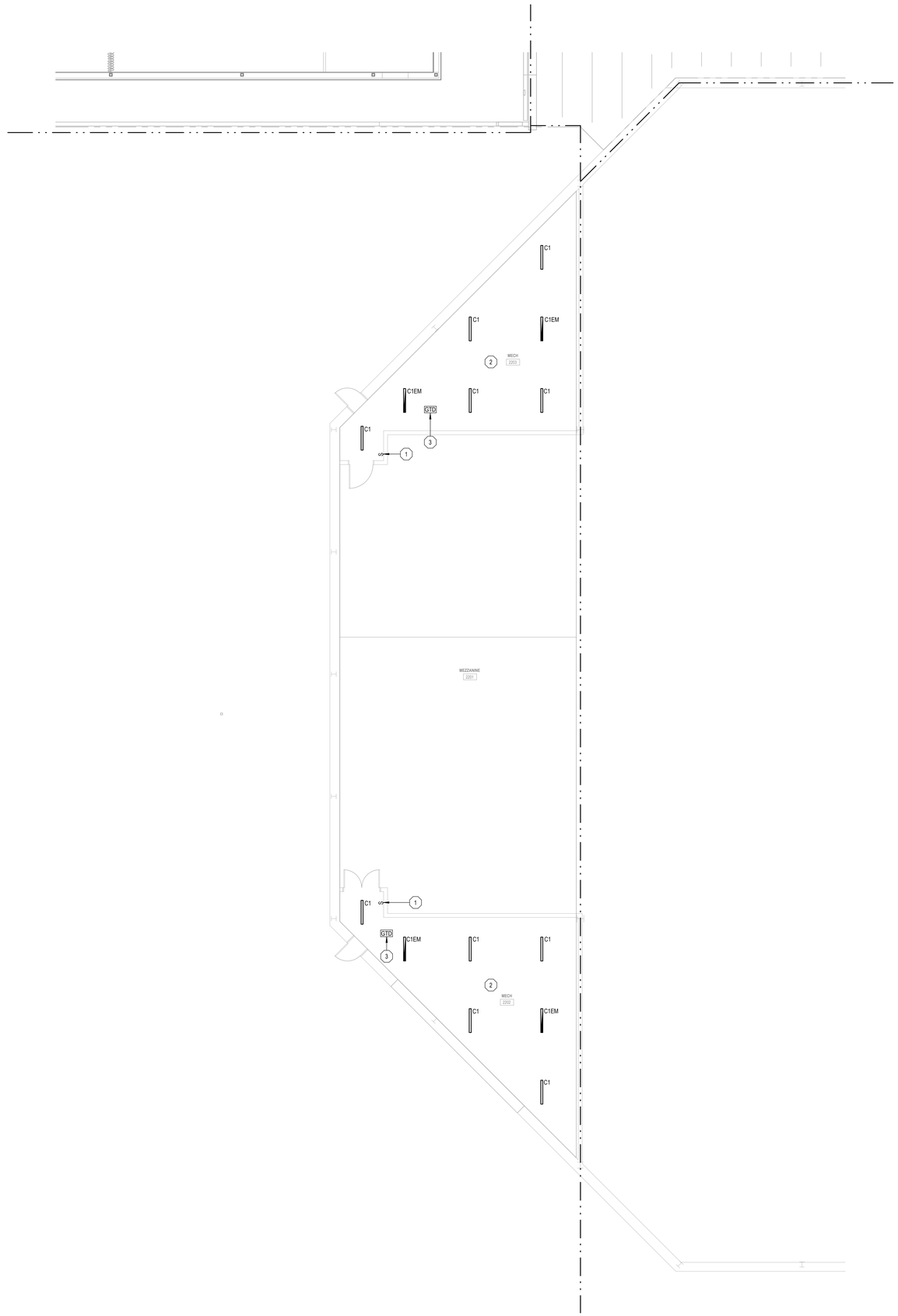

1 E321.b **SECOND FLOOR LIGHTING PLAN - UNIT 2100**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. MOUNT NEW SWITCH IN EXISTING SWITCH JUNCTION BOX LEFT IN PLACE AFTER COMPLETION OF DEMOLITION WORK.
2. CONTRACTOR SHALL PROVIDE ALL NECESSARY UNISTRUT AND THREADED ROD TO MOUNT LIGHT FIXTURES BELOW DUCTWORK AND MECHANICAL EQUIPMENT. LIGHT FIXTURE SHALL BE INDEPENDANTLY SUPPORTED FROM ANY DUCTWORK AND OR MECHANICAL EQUIPMENT.
3. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.

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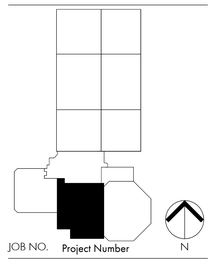

JOB NO. Project Number

SHEET TITLE
SECOND FLOOR LIGHTING PLAN - UNIT 2100

SHEET NO.
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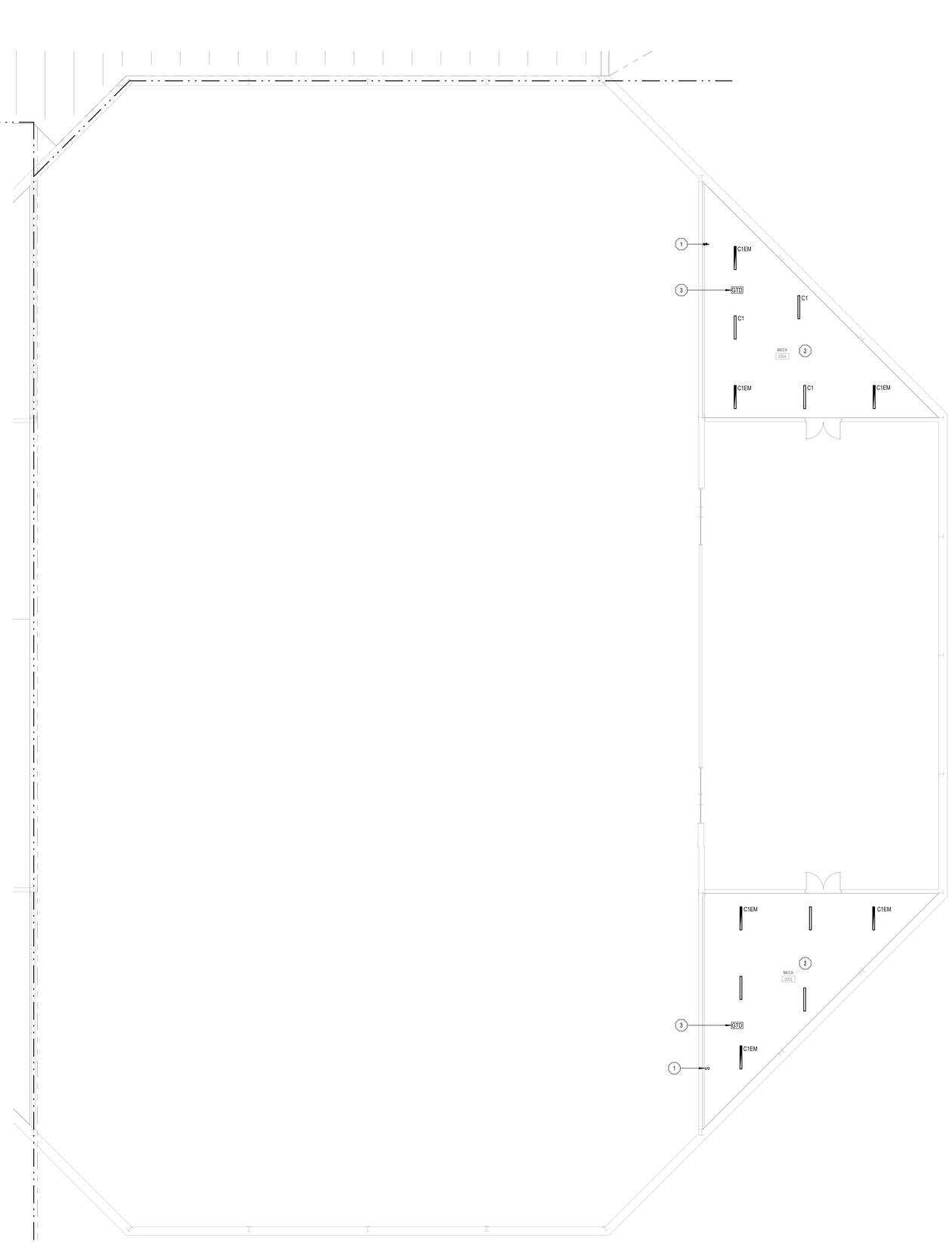

1 E321.c **SECOND FLOOR LIGHTING PLAN - UNIT 2200**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. MOUNT NEW SWITCH IN EXISTING SWITCH JUNCTION BOX LEFT IN PLACE AFTER COMPLETION OF DEMOLITION WORK.
2. CONTRACTOR SHALL PROVIDE ALL NECESSARY UNISTRUT AND THREADED ROD TO MOUNT LIGHT FIXTURES BELOW DUCTWORK AND MECHANICAL EQUIPMENT. LIGHT FIXTURE SHALL BE INDEPENDANTLY SUPPORTED FROM ANY DUCTWORK AND OR MECHANICAL EQUIPMENT.
3. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.

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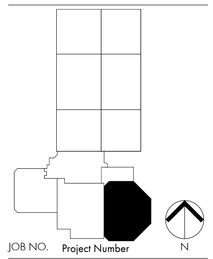

JOB NO. Project Number

SHEET TITLE
SECOND FLOOR LIGHTING PLAN - UNIT 2200

SHEET NO.
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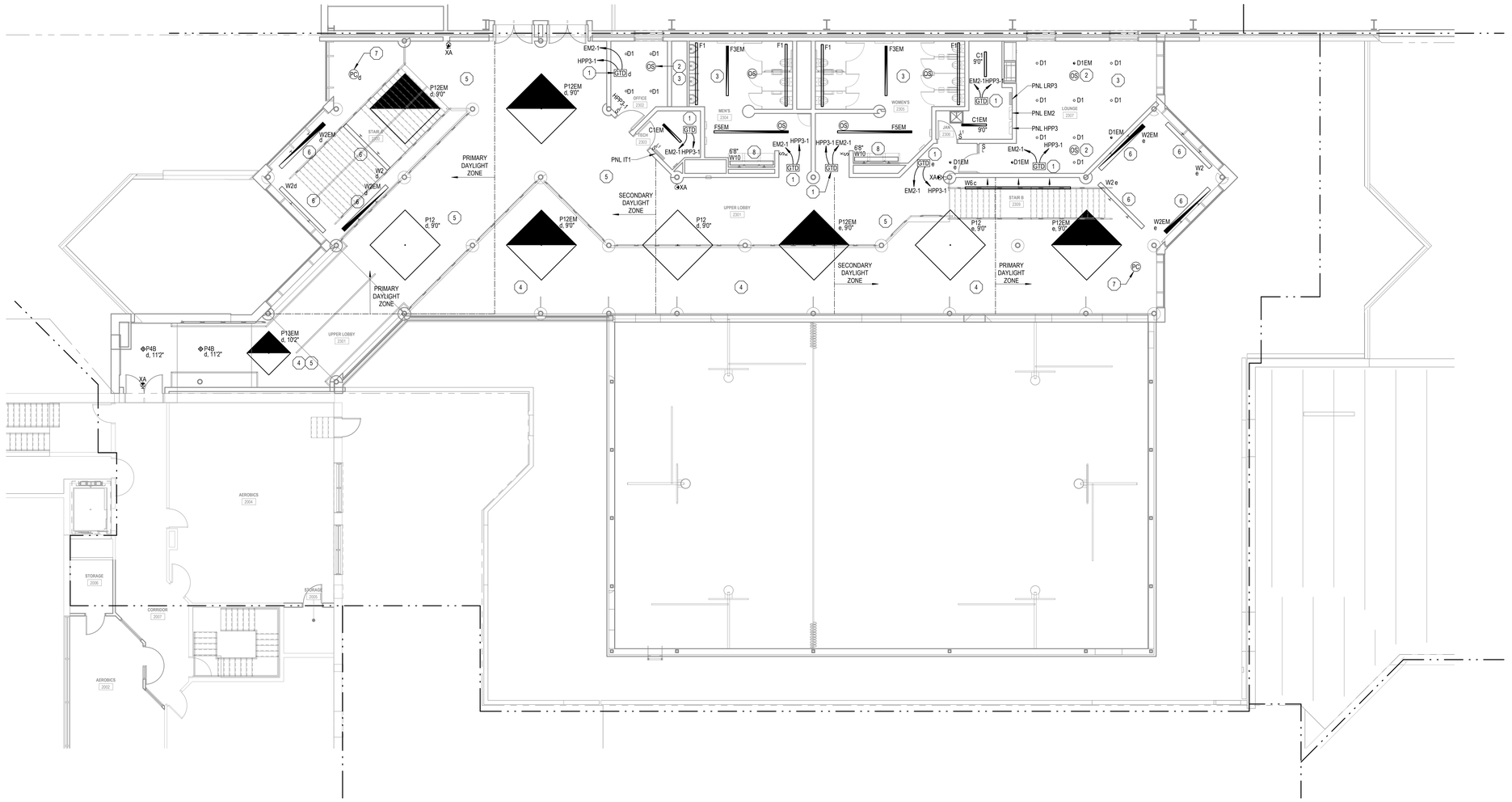
KEYNOTES:

1. PROVIDE A GENERATOR TRANSFER DEVICE (GTD) MOUNTED ABOVE AN ACCESSIBLE CEILING SIMILAR TO A BODINE GTD-20A OR APPROVED EQUAL.
2. CEILING MOUNTED OCCUPANCY SENSOR SHALL CONTROL LIGHTING AS WELL AS NEW RECEPTACLES OUTLETS INSTALLED WITHIN THE SPACE. PROVIDE THE CORRECT QUANTITY OF POWER PACKS TO CONTOL BOTH LIGHTS AND RECEPTACLES. REFER TO KEYNOTE 1 ON SHEET E-223 FOR ADDITIONAL INFORMATION.
3. LIGHTING CONTROLS LOCATED WITHIN THE SPACE ARE STAND ALONE CONTROLS AND SHALL BE PROGRAMMED AS NOTED IN THE SEQUENCE OF OPERATIONS.
4. LIGHTING CONTROLS LOCATED WITHIN THIS SPACE SHALL TIE BACK TO A MULTIPLE MULTI CHANNEL LIGHTING ROOM CONTROLLER UNITS WITH INTEGRAL TIME CLOCK OR APPROVED EQUAL LOCATED IN JAN 2306. PROGRAMMING OF FIXTURES SHALL FOLLOW AS NOTED IN THE SEQUENCE OF OPERATIONS.
5. MOUNTING HEIGHTS NOTED ARE ABOVE THE FINISH FLOOR OF THE SECOND FLOOR. THE INTENT IS TO HAVE ALL PENDANT MOUNTED LIGHT FIXTURES SUSPENDED AT THE SAME HEIGHT FOR THE SECOND FLOOR.
6. FIXTURE TYPE W2, W2EM SHALL BE MOUNTED SO THE BOTTOM OF THE LIGHT FIXTURE IS AT THE SAME HEIGHT AS THE TOP OF THE CLT STURTURAL DECK. APPROXIMATE MOUNTING HEIGHT IS 12' 2" A.F.F. OF THE SECOND FLOOR TO THE BOTTOM SIDE OF THE LIGHT FIXTURE. FIXTURE MOUNTING BRACKET IS INTENDED TO BE LOCATED ON THE SAME VERTICAL PLANE AS THE INSIDE FACE OF THE STRUCTURAL GLUELAM BEAM. COORDINATE FINAL LIGHT FIXTURE PLACEMENT WITH THE ARCHITECT, STRUCTURAL ENGINEER AND GC PRIOR TO THE START OF CONSTRUCTION. CONDUIT ROUTING SHALL BE CONCEALED WITH INSIDE WALL FRAMING CAVITY. SURFACE MOUNTED CONDUIT WILL NOT BE ALLOWED UNLESS NOTED OTHERWISE.
7. PROVIDE A CEILING MOUNTED DAYLIGHT PHOTOCELL FOR DAYLIGHT HARVESTING OF LIGHTS LOCATED IN THE PRIMARY AND SECONDARY LIGHTING ZONES.
8. FIXTURE MOUNTING HEIGHT NOTED IS TO THE UNDERSIDE OF THE FIXTURE. LIGHT FIXTURE SHALL BE CENTERED OVER WALL MOUNTED MIRRORS.

CONDUIT ROUTING NOTE

THE MAXIMUM SIZE CONDUIT ALLOWED TO BE ROUTED ABOVE LOBBY 1303 STRUCTURAL ROOF CEILING IS A 1" CONDUIT. ANYTHING LARGER THAN A 1" CONDUIT WILL NEED TO BE ROUTED BELOW GRADE. PRIOR TO ROUTING ANY CONDUIT PATHWAYS ABOVE THE LOBBY 1303 STRUCTURAL ROOF CEILING FINAL APPROVAL MUST BE OBTAINED FROM THE ARCHITECT AND GC PRIOR TO THE START OF CONSTRUCTIONS.



1 E321.d **SECOND FLOOR LIGHTING PLAN - UNIT 2300A**
SCALE = 1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE

SECOND FLOOR LIGHTING PLAN - UNIT 2300A

SHEET NO.

E321.d

STATE OF MICHIGAN
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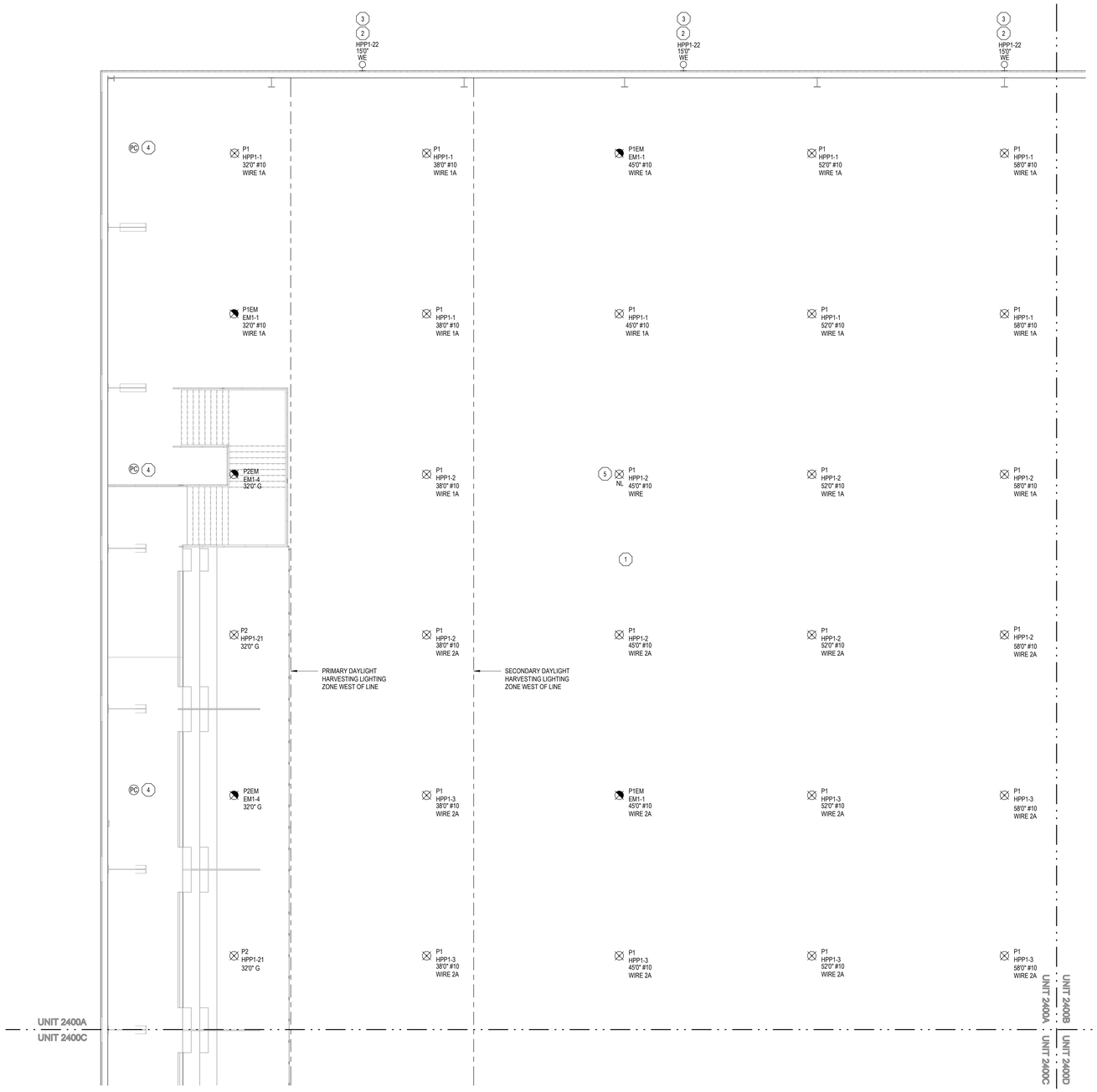

1 E321.f **SECOND FLOOR LIGHTING PLAN - UNIT 2400A**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. ALL HIGHBAY LIGHTING IN THE TRACK AREA SHALL BE CONTROLLED VIA WIRELESS SYSTEM BASED ON TIME OF DAY AND LOCAL OVERRIDES.
2. MOUNTING HEIGHT NOTED WITH LIGHT FIXTURES IS TO THE BOTTOM OF THE LIGHT FIXURE.
3. EXTERIOR BUILDING MOUNTED LIGHT FIXTURE SHALL BE TIED INTO A TIME CLOCK LOCATED IN ELECTRICAL 1412.
4. PROVIDE N-LIGHT AIR DAYLIGHT PHOTOCELL FOR DAYLIGHT HARVESTING. PHOTOCELL SHALL BE RIGID SUSPENDED AT 32'-0" ABOVE THE FIRST FLOOR TO THE BOTTOM OF THE SENSOR.
5. LIGHT FIXTURE WILL SERVE AS A NIGHT LIGHT AND NOT BE CONTROLLED VIA THE LIGHTING CONTROL PROCESSOR.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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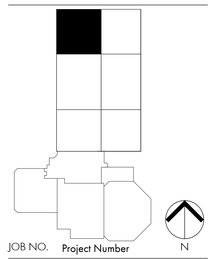

JOB NO. Project Number

SHEET TITLE
SECOND FLOOR LIGHTING PLAN - UNIT 2400A

SHEET NO.
E321.f

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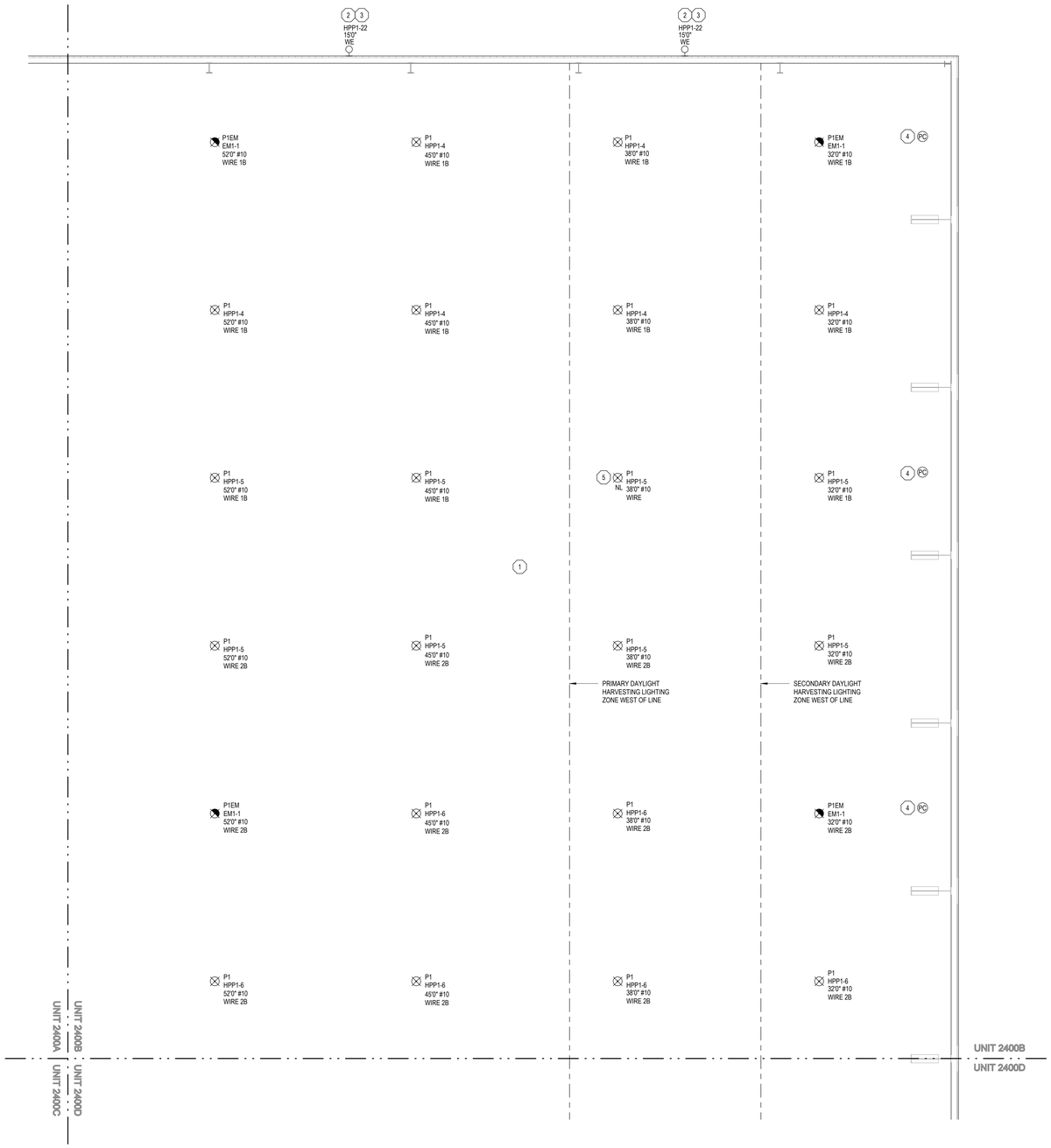

1 E321.g **SECOND FLOOR LIGHTING PLAN - UNIT 2400B**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. ALL HIGHBAY LIGHTING IN THE TRACK AREA SHALL BE CONTROLLED VIA WIRELESS SYSTEM BASED ON TIME OF DAY AND LOCAL OVERRIDES.
2. MOUNTING HEIGHT NOTED WITH LIGHT FIXTURES IS TO THE BOTTOM OF THE LIGHT FIXURE.
3. EXTERIOR BUILDING MOUNTED LIGHT FIXTURE SHALL BE TIED INTO A TIME CLOCK LOCATED IN ELECTRICAL 1412.
4. PROVIDE N-LIGHT AIR DAYLIGHT PHOTOCELL FOR DAYLIGHT HARVESTING. PHOTOCELL SHALL BE RIGID SUSPENDED AT 32'-0" ABOVE THE FIRST FLOOR TO THE BOTTOM OF THE SENSOR.
5. LIGHT FIXTURE WILL SERVE AS A NIGHT LIGHT AND NOT BE CONTROLLED VIA THE LIGHTING CONTROL PROCESSOR.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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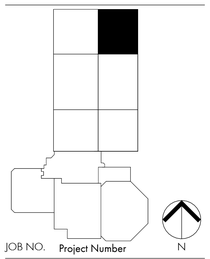

JOB NO. Project Number

SHEET TITLE
SECOND FLOOR LIGHTING PLAN - UNIT 2400B

SHEET NO.
E321.g

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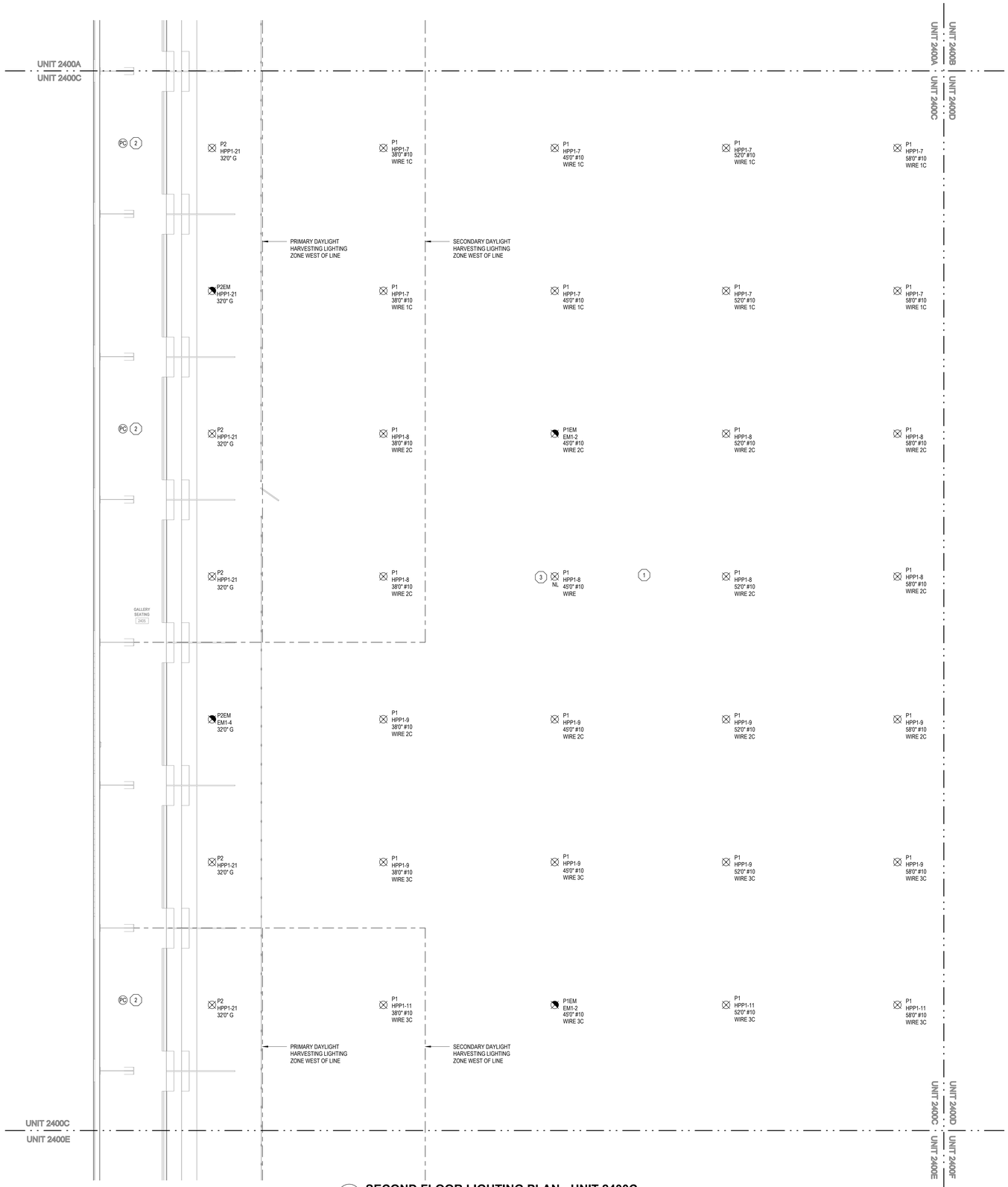

1 E321.h **SECOND FLOOR LIGHTING PLAN - UNIT 2400C**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. ALL HIGHBAY LIGHTING IN THE TRACK AREA SHALL BE CONTROLLED VIA WIRELESS SYSTEM BASED ON TIME OF DAY AND LOCAL OVERRIDES.
2. PROVIDE N-LIGHT AIR DAYLIGHT PHOTOCELL FOR DAYLIGHT HARVESTING. PHOTOCELL SHALL BE RIGID SUSPENDED AT 32'-0" ABOVE THE FIRST FLOOR TO THE BOTTOM OF THE SENSOR.
3. LIGHT FIXTURE WILL SERVE AS A NIGHT LIGHT AND NOT BE CONTROLLED VIA THE LIGHTING CONTROL PROCESSOR.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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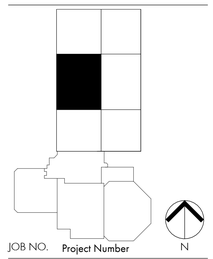

JOB NO. Project Number

SHEET TITLE
SECOND FLOOR LIGHTING PLAN - UNIT 2400C

SHEET NO.
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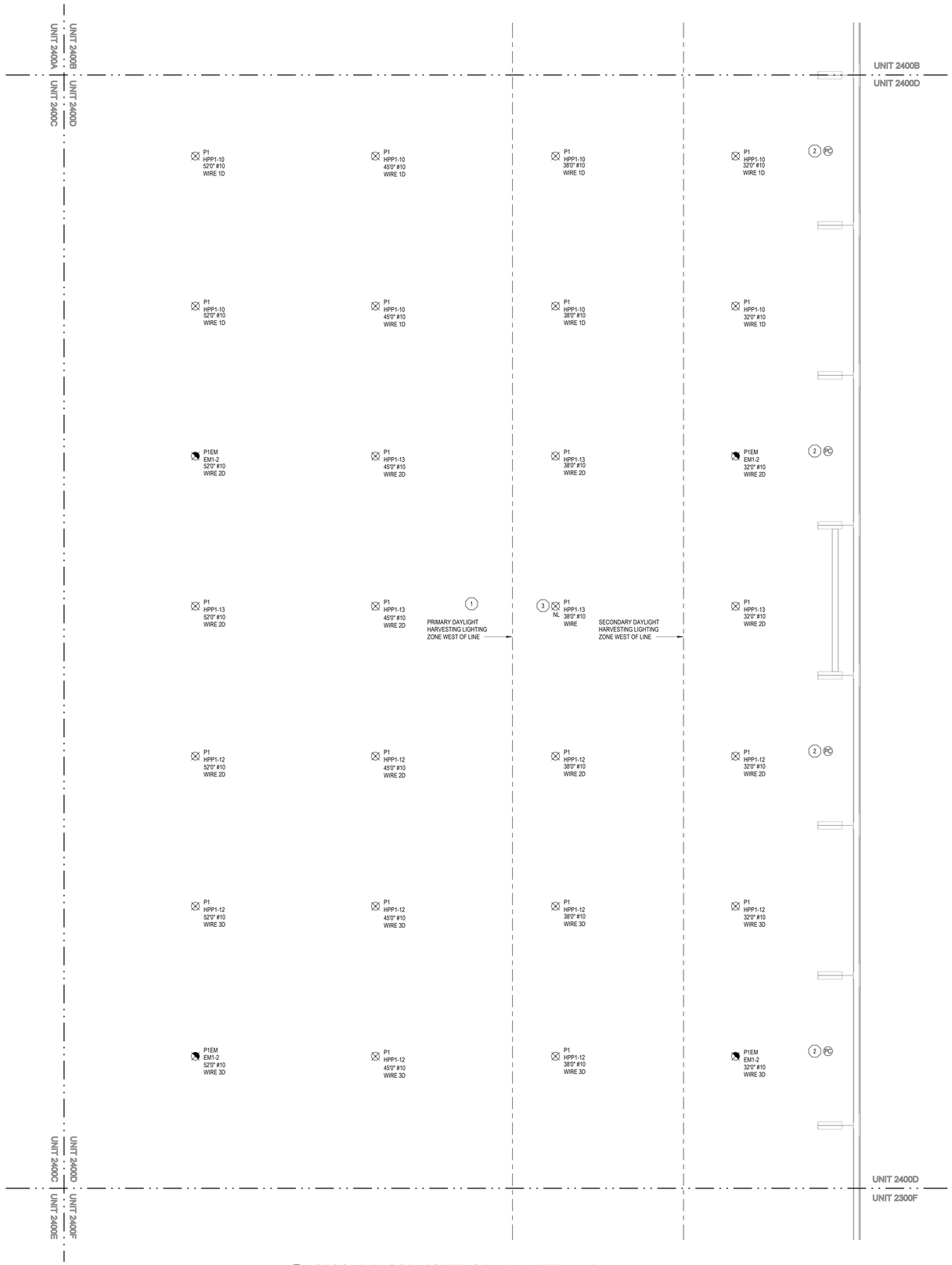

1 E321.j **SECOND FLOOR LIGHTING PLAN - UNIT 2400D**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. ALL HIGHBAY LIGHTING IN THE TRACK AREA SHALL BE CONTROLLED VIA WIRELESS SYSTEM BASED ON TIME OF DAY AND LOCAL OVERRIDES.
2. PROVIDE N-LIGHT AIR DAYLIGHT PHOTOCELL FOR DAYLIGHT HARVESTING. PHOTOCELL SHALL BE RIGID SUSPENDED AT 32'-0" ABOVE THE FIRST FLOOR TO THE BOTTOM OF THE SENSOR.
3. LIGHT FIXTURE WILL SERVE AS A NIGHT LIGHT AND NOT BE CONTROLLED VIA THE LIGHTING CONTROL PROCESSOR.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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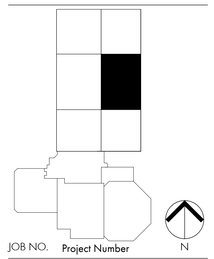

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SHEET TITLE
SECOND FLOOR LIGHTING PLAN - UNIT 2400D

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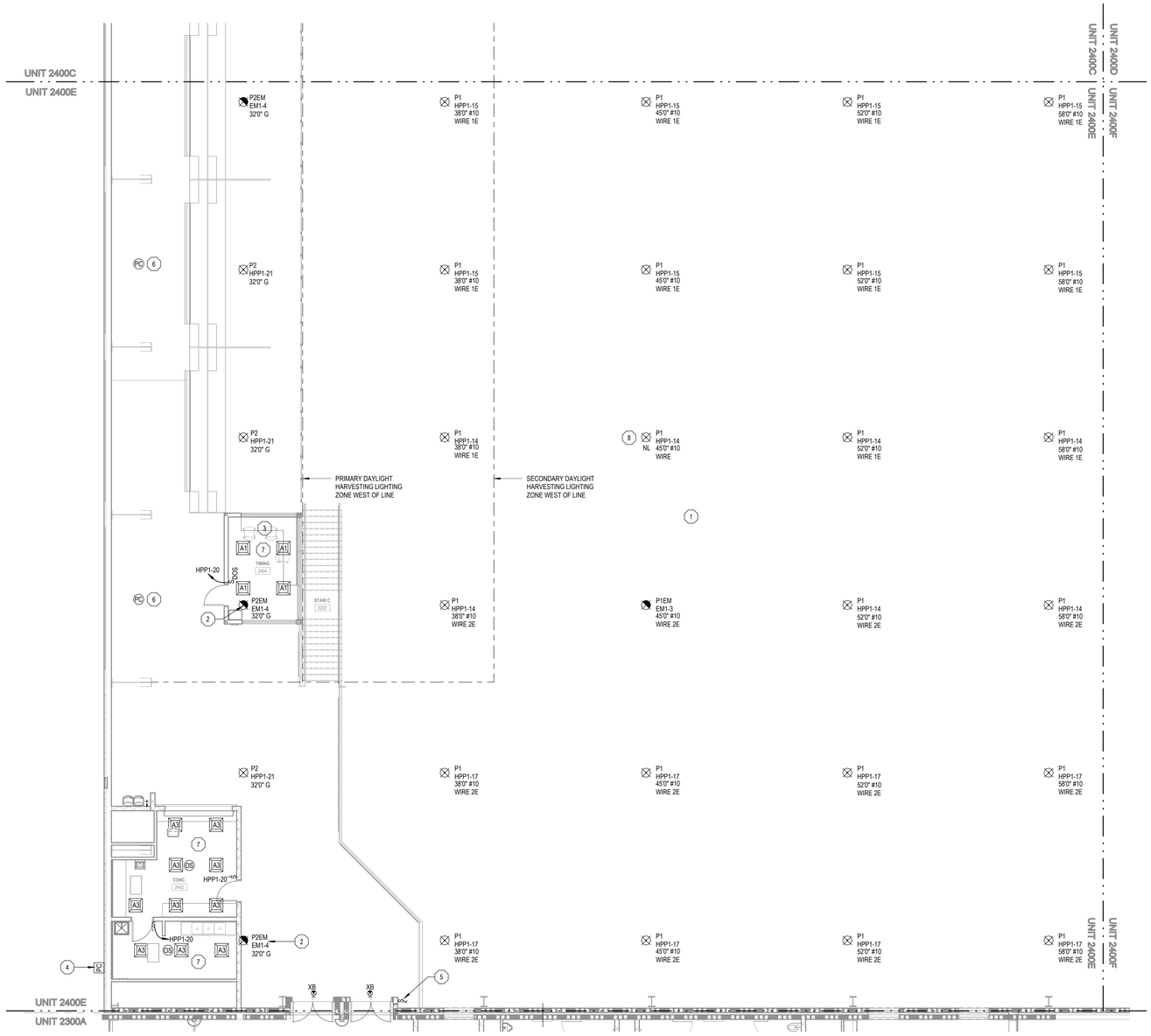

1 E321.k **SECOND FLOOR LIGHTING PLAN - UNIT 2400E**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. ALL HIGHBAY LIGHTING IN THE TRACK AREA SHALL BE CONTROLLED VIA WIRELESS SYSTEM BASED ON TIME OF DAY AND LOCAL OVERRIDES.
2. FIXTURE IS LOCATED ABOVE SPACE.
3. FIXTURES SURFACE MOUNTED WITHIN TIMING BOOTH. PROVIDE SURFACE MOUNT KIT FOR 2X2 LIGHT FIXTURES.
4. EXTERIOR PHOTOCELL FOR CONTROL OF BUILDING MOUNTED SIGN. REFER TO DETAIL 2 ON SHEET E421.k FOR ADDITIONAL INFORMATION.
5. N-LIGHT WALL MOUNTED KEYED LOW VOLTAGE SWITCH FOR ON/OFF CONTROL FOR ALL HIGHBAY FIXTURES DESIGNATED AS P1, P1EM, P2, & P2EM. SWITCH SHALL TIE BACK TO THE NLIGHT ECLIPSE LIGHTING CONTROL PROCESSOR LOCATED IN ELECTRICAL 1412. LIGHT SWITCH IS INTENDED TO ONLY TURN LIGHTS ON AND OFF. REFER TO THE SEQUENCE OF OPEARTIONS FOR ADDITIONAL PROGRAMMING INFORMATION.
6. PROVIDE N-LIGHT AIR DAYLIGHT PHOTOCELL FOR DAYLIGHT HARVESTING. PHOTOCELL SHALL BE RIGID SUSPENDED AT 32'-0" ABOVE THE FIRST FLOOR TO THE BOTTOM OF THE SENSOR.
7. LIGHT FIXTURES ARE NOT INTENDED TO BE INCLUDED IN THE DAYLIGHT HARVESTING.
8. LIGHT FIXTURE WILL SERVE AS A NIGHT LIGHT AND NOT BE CONTROLLED VIA THE LIGHTING CONTROL PROCESSOR.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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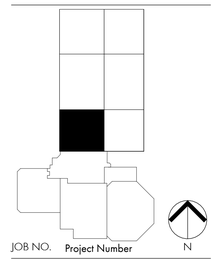

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SHEET TITLE
SECOND FLOOR LIGHTING PLAN - UNIT 2400E

SHEET NO.
E321.k

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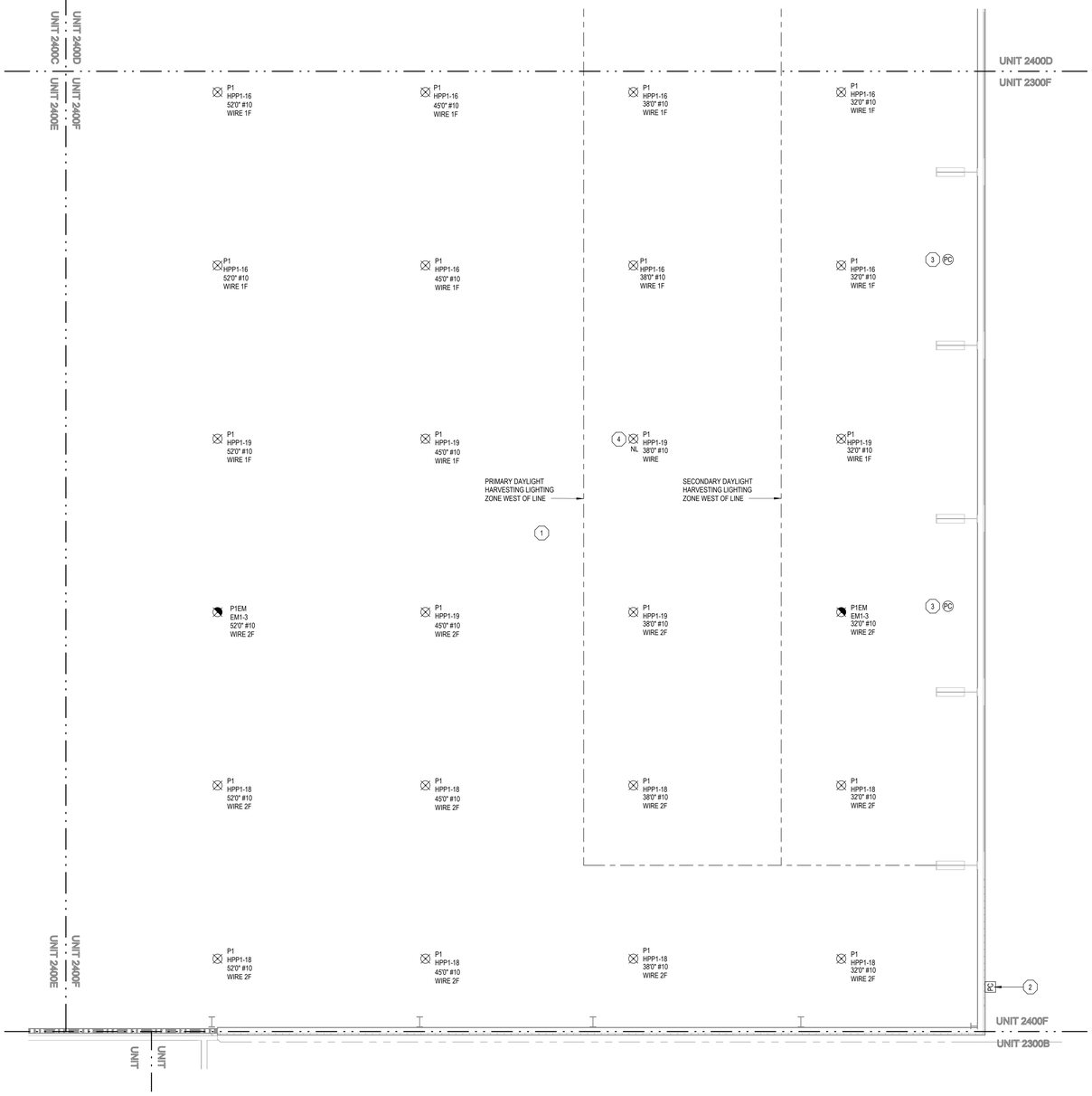

1 E321.m **SECOND FLOOR LIGHTING PLAN - UNIT 2400F**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. ALL HIGHBAY LIGHTING IN THE TRACK AREA SHALL BE CONTROLLED VIA WIRELESS SYSTEM BASED ON TIME OF DAY AND LOCAL OVERRIDES.
2. EXTERIOR PHOTOCELL FOR CONTROL OF BUILDING MOUNTED SIGN. REFER TO DETAIL 2 ON SHEET E421.k FOR ADDITIONAL INFORMATION.
3. PROVIDE N-LIGHT AIR DAYLIGHT PHOTOCELL FOR DAYLIGHT HARVESTING. PHOTOCELL SHALL BE RIGID SUSPENDED AT 32'-0" ABOVE THE FIRST FLOOR TO THE BOTTOM OF THE SENSOR.
4. LIGHT FIXTURE WILL SERVE AS A NIGHT LIGHT AND NOT BE CONTROLLED VIA THE LIGHTING CONTROL PROCESSOR.

ELECTRICAL CONNECTION NOTE:
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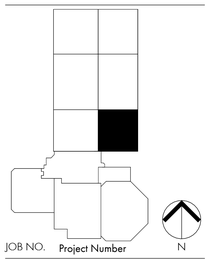

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SHEET NO.
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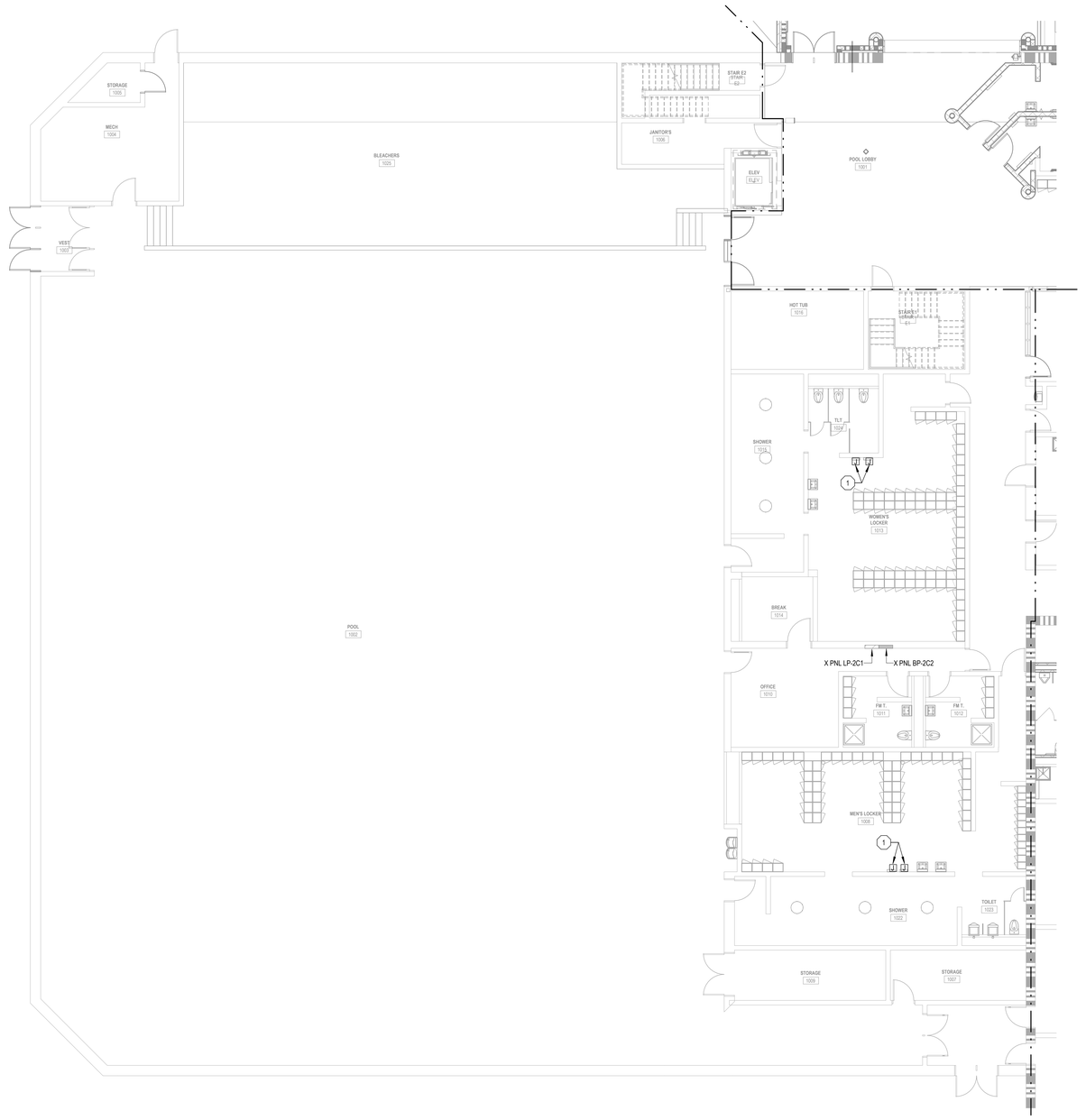

1 E411.a **FIRST FLOOR ELECTRICAL PLAN - UNIT 1000**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 CONNECT EXISTING HAIR/HAND DRYER CIRCUIT TO NEW DRYER. REWORK AND EXTEND BRANCH CIRCUIT WIRING AS NECESSARY FOR CONNECTION TO NEW DRYER.

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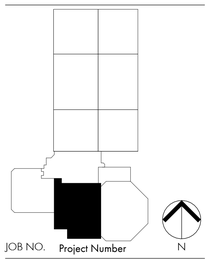

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SHEET TITLE
FIRST FLOOR ELECTRICAL PLAN - UNIT 1000

SHEET NO.
E411.a

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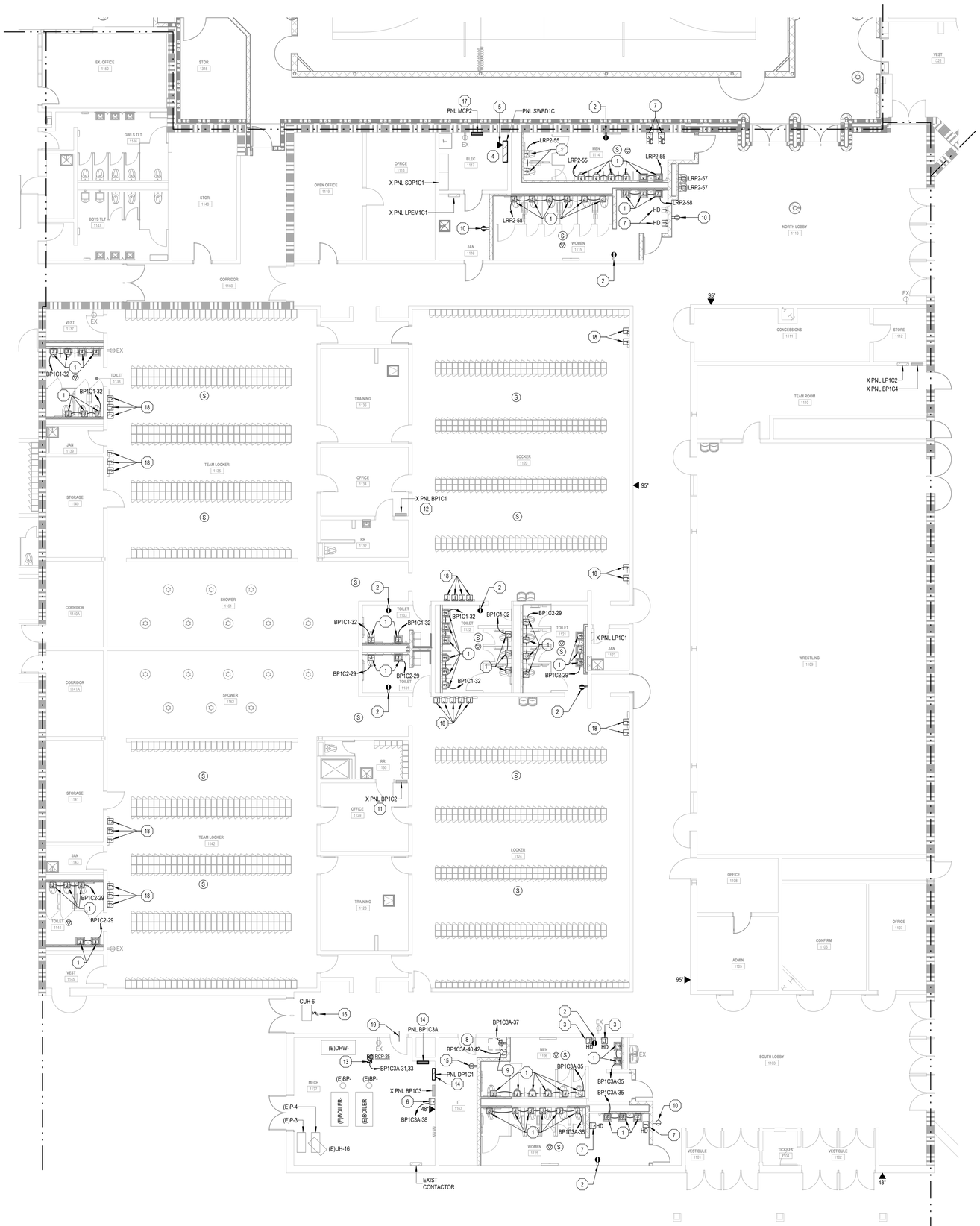

1 E411.b **FIRST FLOOR ELECTRICAL PLAN - UNIT 1100**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. PROVIDE CONNECTION TO PLUMBING VALVE FIXTURES. COORDINATE ALL NECESSARY CONNECTIONS, WIRES, BOXES, AND ALL OTHER ELECTRICAL APPURTENANCES FOR A COMPLETE INSTALLATION OF POWERED VALVES.
2. MOUNT NEW GFCI OUTLET IN EXISTING JUNCTION BOX LEFT IN PLACE. CONNECT NEW GFCI RECEPTACLE TO THE EXISTING CIRCUIT.
3. PROVIDE CONNECTION TO NEW HAND DRYER FROM EXISTING HAND DRYER CIRCUIT.
4. PROVIDE NEW PANEL. REWORK AND EXTEND EXISTING WIRES TO RETERMINATE TO NEW PANEL SWBD1C. VERIFY ALL EXISTING FUSES PRIOR TO DEMOLITION FOR COORDINATION OF NEW BREAKERS.
5. PROVIDE 1" EMPTY CONDUIT PATHWAY STUBBED UP TO CEILING SPACE ABOVE FROM PANEL METER FOR PHASE LOSS MONITORING. COORDINATE FINAL CONDUIT ROUTING AND MOUNTING HEIGHT THE OWNER, LV CONSULTANT AND ARCHITECT PRIOR TO ROUGH-IN. PANEL SHALL TIE BACK TO THE BMS FOR PHASE LOSS MONITORING.
6. POWER TO MECHANICAL CONTROL PANELS.
7. EXISTING HAND DRYER CIRCUIT LEFT IN PLACE AFTER REMOVAL OF EXISTING HAND DRYER SHALL BE REWORKED AND EXTENDED TO THE NEW HAND DRYER LOCATION.
8. EXISTING MDF RACK LOCATION TO REMAIN. (2) NEW 3" EMPTY CONDUITS TO LAND AT RACK LOCATION ROUTED FROM OUTSIDE OF THE BUILDING. REFER TO KEYNOTE 11 ON SHEET E112 AND 9 ON SHEET E421.d FOR ADDITIONAL INFORMATION. COORDINATE FINAL ROUTING WITH OWNER, GC AND CIVIL TRADES PRIOR TO START OF CONSTRUCTION.
9. 30A 208V-1PH OUTLET FOR UPS. PROVIDE 2#6, #6G, 1"C. WIRE SHALL BE TYPE XHHW. BRANCH CIRCUIT FEED WILL BE ROUTED ALONG THE ROOF IN A STRAIGHT AND PARRALLEL FASHION WITH EXTERIOR WALLS AND ROOF LINES. CONDUIT SHALL SIT IN MIRRO CONDUIT SUPPORTS. REFER TO DETAIL 13 ON SHEET E811 FOR ADDITIONAL INFORMATION.
10. CONNECT NEW OUTLET TO EXISTING RECEPTACLE CIRCUIT THAT WAS PULLED BACK TO ABOVE THE FINISH CEILING DURING DEMOLITION.
11. PROVIDE 2 NEW 20A -1P BREAKERS TO BE INSTALLED IN POLE POSITION 29 AND 30. CIRCUITS SHALL SERVE NEW AUTOMATIC FLUSH VALVES AND FAUCETS LOCATED IN TOILET 1121, 1131, AND 1144.
12. PROVIDE A NEW 20A -1P BREAKERS TO BE INSTALLED IN POLE POSITION 32 AND 34. CIRCUIT SHALL SERVE NEW AUTOMATIC FLUSH VALVES AND FAUCETS LOCATED IN TOILET 1121, 1131, AND 1144.
13. PROVIDE A FUSIBLE DISCONNECT SWITCH 30/15/2 FOR NEW RECIRCULATION PUMP.
14. RECONNECT ALL EXISTING BRANCH CIRCUIT LOADS SCHEDULED TO REMAIN TO NEW PANEL. REWORK AND EXTEND EXISTING WIRING AS NECESSARY FOR CONNECTION TO NEW PANEL. REFER TO PANEL SCHEDULE FOR ADDITIONAL INFORMATION.
15. CONNECT NEW OUTLET TO EXISTING 120V CIRCUIT SERVING EXISTING CORRIDOR AND RESTROOM 1125, 1126 GENERAL RECEPTACKLES.
16. DISCONNECT SWITCH INTEGRAL TO THE EQUIPMENT FROM THE FACTORY. REWORK AND EXTEND EXISTING CUH BRANCH CIRCUIT AND CONNECT TO NEW UNIT.
17. FINAL PANEL LOCATION MAYBE ADJUSTED TO MAINTAIN ALL CODE REQUIRED WORKING CLEARANCES AROUND NEW AND EXISTING ELECTRICAL EQUIPMENT.
18. CONNECT EXISTING HAIR/HAND DRYER CIRCUIT TO NEW DRYER. REWORK AND EXTEND BRANCH CIRCUIT WIRING AS NECESSARY FOR CONNECTION TO NEW DRYER.
19. PROVIDE A HILTI FIRE SLEEVE FOR LOW VOLTAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-S. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS). PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

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MATRIX CONSULTING ENGINEERS, INC

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

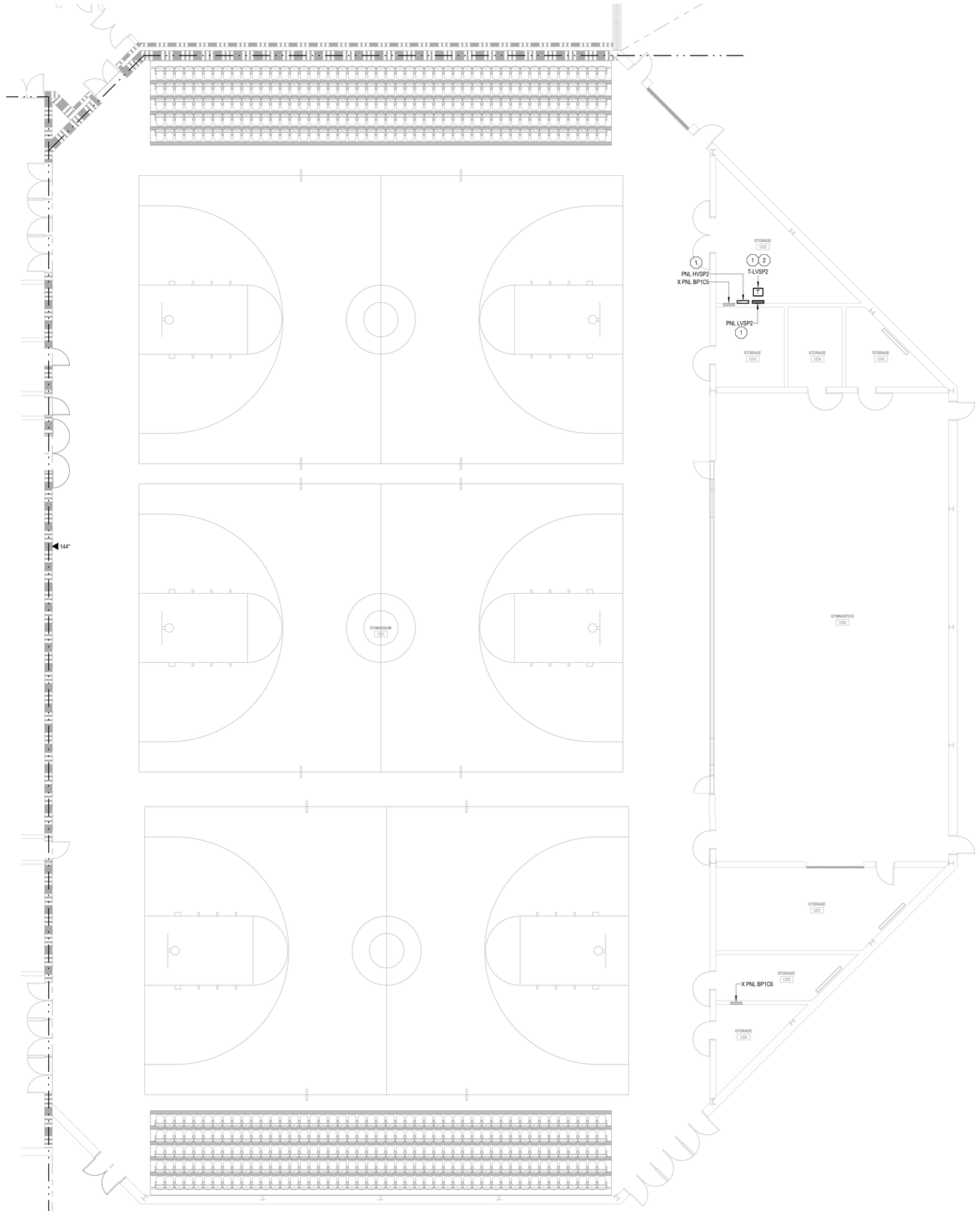
JOB NO. Project Number

N

SHEET TITLE
FIRST FLOOR ELECTRICAL PLAN - UNIT 1100

SHEET NO.
E411.b

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
LICENSED PROFESSIONAL ENGINEER
07/30/26



1 E411.c **FIRST FLOOR ELECTRICAL PLAN - UNIT 1200**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 REFER TO ONE-LINE DIAGRAM ON SHEET E612 FOR ADDITIONAL INFORMATION.

2 TRANSFORMER SHALL BE SUSPENDED FROM STRUCTURE ABOVE. MAINTAIN ALL CODE REQUIRED CLEARANCES FROM MECHANICAL AND PLUMBING SYSTEMS. MINIMUM MOUNTING HEIGHT TO THE BOTTOM OF THE TRANSFORMER SHALL BE 9'-0". REFER TO STRUCTURAL DRAWING 1/S1.14 FOR ADDITIONAL INFORMATION.

GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS). PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

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Howell Public Schools

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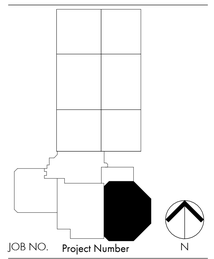
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. Project Number

N

SHEET TITLE
FIRST FLOOR ELECTRICAL PLAN - UNIT 1200

SHEET NO.
E411.c

STATE OF MICHIGAN
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KEYNOTES:

1 PROVIDE CONNECTION TO PLUMBING VALVE FIXTURES. COORDINATE ALL NECESSARY CONNECTIONS, WIRES, BOXES, AND ALL OTHER ELECTRICAL APPURTENANCES FOR A COMPLETE INSTALLATION OF POWERED VALVES.

2 PROVIDE MANUFACTURER RECOMMENDED SWITCHES FOR SWITCHES a,b,c,d,e, and f FOR CONTROL OF BASKETBALL HOOPS. COORDINATE FINAL SWITCH LOCATIONS WITH OWNER, GC AND ARCHITECT PRIOR TO ROUGH-IN.

3 PROVIDE MANUFACTURER RECOMMENDED KEYED SWITCH FOR CONTOL OF MULTI-PURPOSE GYM DIVIDER CURTAIN. JUNCTION BOX IS NOTED WITH A LOWER-CASE LETTER g THAT ALIGNS WITH THE KEYED SWITCH SHOWING THE SAME LOWER-CASE LETTER FOR CONTROL OF DIVIDER CURTAIN. COORDINATE FINAL SWITCH LOCATION WITH OWNER, GC AND ARCHITECT PRIOR TO ROUGH-IN.

4 PROVIDE 120V POWER CONNECTION TO BASKETBALL HOOP. TIE BASKETBALL HOOP MOTOR INTO WALL MOUNTED SWITCH FOR CONTROL OF HOOP. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO START OF CONSTRUCTION. REFER TO KEYNOTE 2 THIS SHEET FOR ADDITIONAL INFORMATION.

5 PROVIDE POWER CONNECTION TO CEILING MOUNTED FAN. STARTER/DISCONNECT PROVIDED BY THE MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. PROVIDE L16-20R TWIST LOCK RECEPTACLE AT FAN LOCATION. FAN WILL BE CONTROLLED BY A CONTROL PANEL SUPPLIED FROM THE FAN MANUFACTURER. PROVIDE ALL NECESSARY 120V POWER TO FAN CONTROL PANEL. FINAL CONTROL PANEL LOCATION SHALL BE COORDINATED WITH THE OWNER AND EQUIPMENT VENDOR PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY UNISTRUT, MOUNTING HARDWARE, AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL CEILING FAN SYSTEM.

6 PROVIDE 120V POWER CONNECTION TO DIVIDER CURTAIN. TIE CURTAIN MOTOR TO WALL MOUNTED SWITCH FOR CONTROL OF DIVIDER CURTAIN. COORDINATE ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO START OF CONSTRUCTION. REFER TO KEYNOTE 3 THIS SHEET FOR ADDITIONAL INFORMATION.

7 PROVIDE CONNECTION TO HAND DRYER.

8 PROVIDE POWER TO MOTORIZED FIRE DOOR. CONNECT TO WALL MOUNTED CONTROLS. REFER TO KEYNOTE 9 FOR ADDITIONAL INFORMATION.

9 INSTALL WALL MOUNTED CONTROLS FOR THE OVERHEAD FIRE DOOR. PROVIDE ALL MATERIAL FOR A COMPLETE INSTALLATION. SEE KEYNOTE 8 FOR ADDITIONAL INFORMATION.

10 POWER TO FP DRY PIPE AIR COMPRESSOR.

11 POWER TO IRRIGATION CONTROL PANEL. VERIFY FINAL LOCATION AND MOUNTHING HEIGHT WITH IRRIGATION CONTRACTOR PRIOR TO ROUGH-IN.

12 POWER TO MECHANICAL CONTROL PANEL.

13 MAINTAIN ALL CODE REQUIRED PANEL WORKING CLEARANCES.

14 QUAD OUTLET SHALL BE MOUNTED ADJACENT TO AV JACKS. REFER TO AV DRAWINGS SHEET TA201D FOR ADDITIONAL INFORMATION.

15 EXISTING SWITCHBOARD IS A WESTINGHOUSE POW-R-LINE C.

16 NEW OUTLETS SHALL BE WIRED AS FOLLOWS WITH THE TOP OUTLET CONNECT TO THE CEILING MOUNTED OCCUPANCY SENSOR FOR AUTOMATIC CONTROL AND THE BOTTOM OUTLET HAVING CONTINOUS POWER BY BREAKING THE TAB TO SEPARATE THE TWO RECEPTACLES IN A DUPLEX OUTLET. OUTLETS SHALL BE CONTROLLED PER ASHRAE 90.1-2019 SECTION 8.4.2. REFER TO DETAIL 2 ON SHEET E811 FOR ADDITIONAL INFORMATION.

17 COMBINATION VFD'S/DISCONNECTS FOR SKID MOUNTED SNOWMELT SYSTEM PROVIDED BY MECHANICAL AND INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR.

18 PROVIDE (2) NEW 60 AMP SWITCHES IN PANEL MDP FOR (2) NEW RTUS AND (1) NEW ACCU. RTU-1 TO BE FUSED AT 60 AMPS. RTU-3 TO BE FUSED AT 35 AMPS. ACCU-2 TO BE FUSED AT 40 AMPS. REFER TO DRAWING E421.b FOR ADDITIONAL INFORMATION.

KEYNOTES:

19 PROVIDE 1" EMPTY CONDUIT PATHWAY STUBBED UP TO CEILING SPACE ABOVE FOR ELECTRICAL ENERGY MONITORING PER ASHRAE 90.1-2019 SECTION 8.4.3. COORDINATE FINAL CONDUIT ROUTING AND MOUNTING HEIGHT THE OWNER, LV CONSULTANT AND ARCHITECT PRIOR TO ROUGH-IN. PANEL SHALL TIE BACK TO THE BMS FOR PANEL MONITORING AND DATA STORAGE.

20 DISCONNECT SWITCH INTEGRAL TO THE EQUIPMENT FROM THE FACTORY.

21 PROVIDE NEW DISCONNECT SWITCH FOR EXISTING BOILER PUMP P-1. REWORK EXISTING BRANCH CIRCUIT TO NEW CONNECT TO NEW DISCONNECT SWITCH. EXISTING BRANCH CIRCUIT WIRING SHALL EXTEND TO EXISTING PUMP.

22 ADA DOOR OPERATOR PUSH BUTTON TO BE LOCATED ON COLUMN. COORDINATE ALL REQUIREMENTS WITH ARCHITECT AND GC PRIOR TO ROUGH-IN.

23 PROVIDE POWER TO ADA DOOR OPENER MOTOR. MOUNT EMPTY DOUBLE GANG JUNCTION BOX WITH 1" CONDUITS STUBBED UP DOUBLE DOOR HOLLOW FRAME FOR ROUTING OF LOW VOLTAGE CONTROL WIRING TO ADA DOOR OPENER. VERIFY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION.

24 ADA DOOR OPERATOR PUSH BUTTON TO BE LOCATED ON DOOR MULLION. COORDINATE ALL REQUIREMENTS WITH ARCHITECT AND GC PRIOR TO ROUGH-IN.

25 ADA DOOR OPERATOR PUSH BUTTON. COORDINATE ALL REQUIREMENTS WITH ARCHITECT AND GC PRIOR TO ROUGH-IN.

26 PROVIDE 120V POWER TO MOTORIZED SMOKE DAMPER. DAMPER SHALL BE TIED INTO BUILDING FIRE ALARM SYSTEM VIA DUCT SMOKE DETECTORS.

27 PROVIDE DOUBLE GANG BOX WITH (1) 1" EMPTY DATA ROUTED CONCEALED BACK TO THE NEAREST ACCESSIBLE CEILING SPACE. COORDINATE FINAL ROUTING WITH LOW VOLTAGE CONTRACTOR, ARCHITECT AND GC PRIOR TO ROUGH-IN.

28 PROVIDE RIGID STEM MOUNTED DOUBLE GANG BOX SUSPENDED FLUSH WITH THE BOTTOM OF THE ARCHITECTURAL ACCOUSTICAL PANELS. VERIFY FINAL MOUNTING WITH LOW VOLTAGE CONTRACTOR, ARCHITECT AND GC PRIOR TO ROUGH-IN.

29 PROVIDE A HILTI FIRE SLEEVE FOR LOW VOTLAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-S. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

30 PROVIDE A 1 1/4" CONDUIT SLEEVE MOUNTED ABOVE CEILING FOR ROUTING OF LOW VOLTAGE CABLING. VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

31 PROVIDE A 1 1/4" CONDUIT SLEEVE THAT WILL ROUTE FROM THE OPEN CEILING LOCATED IN THE MULTI-PURPOSE GYM 1312 DOWN IN THE WALL CAVITY TO ABOVE THE CORRIDOR CEILING LOCATED WEST OF THE MULTI-PURPOSE GYM 1312 FOR ROUTING OF LOW VOLTAGE CABLING. VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

32 PROVIDE A HILTI FIRE SLEEVE FOR LOW VOTLAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-L. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

33 PROVIDE A 2" CONDUIT SLEEVE MOUNTED ABOVE CEILING FOR ROUTING OF LOW VOLTAGE CABLING. VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

34 PROVIDE A 2 1/2" CONDUIT SLEEVE MOUNTED ABOVE CEILING FOR ROUTING OF LOW VOLTAGE CABLING. VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

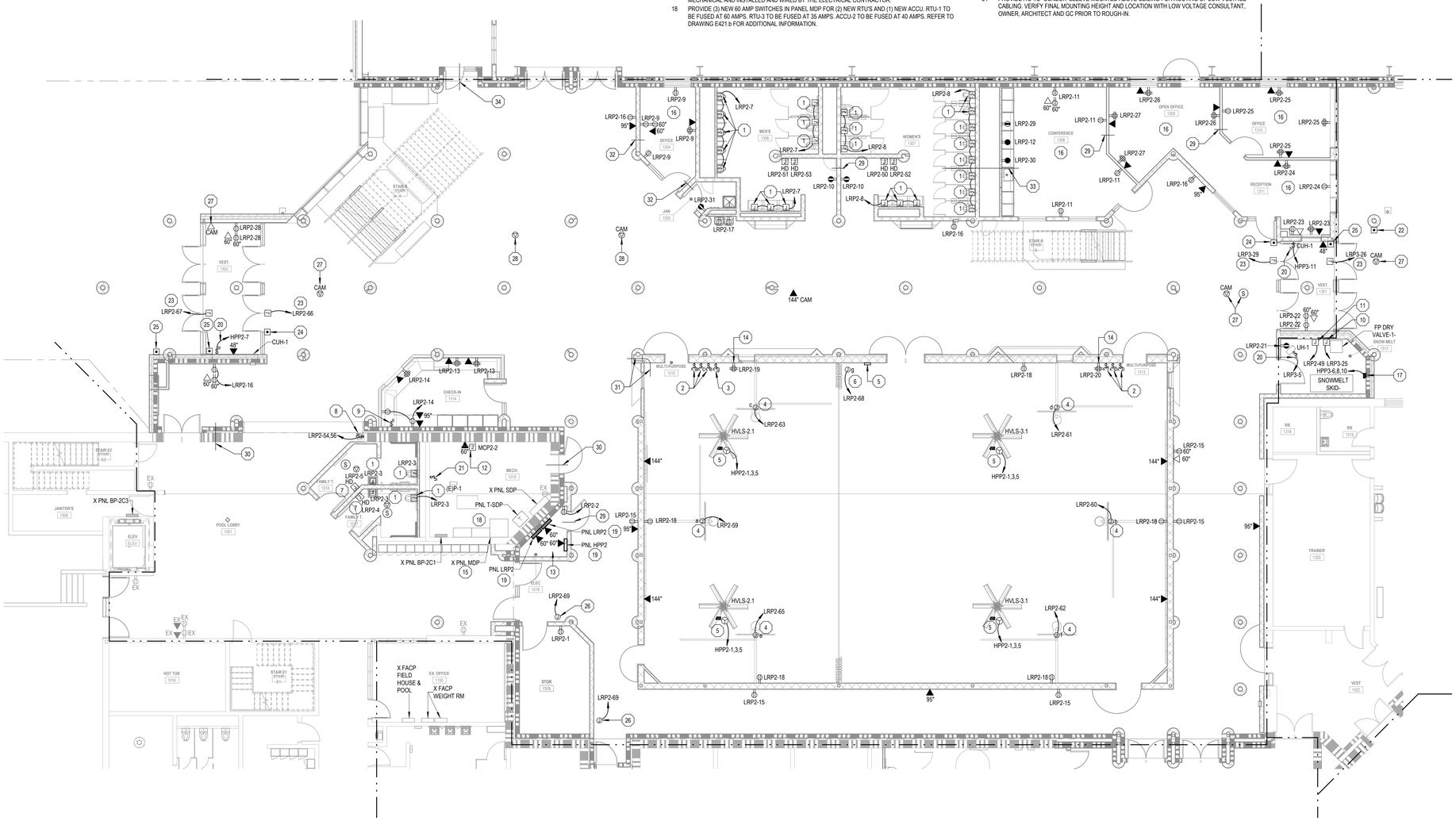
GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS). PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

CONDUIT ROUTING NOTE
THE MAXIMUM SIZE CONDUIT ALLOWED TO BE ROUTED ABOVE LOBBY 1303 STRUCTURAL ROOF CEILING IS A 1" CONDUIT. ANYTHING LARGER THAN A 1" CONDUIT WILL NEED TO BE ROUTED BELOW GRADE. PRIOR TO ROUTING ANY CONDUIT PATHWAYS ABOVE THE LOBBY 1303 STRUCTURAL ROOF CEILING FINAL APPROVAL MUST BE OBTAINED FROM THE ARCHITECT AND GC PRIOR TO THE START OF CONSTRUCTIONS.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).



1 E411.d **FIRST FLOOR PLAN UNIT 1300A - ELECTRICAL**
SCALE = 1/8" = 1'-0"

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Howell Community Center

Howell Public Schools

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

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SHEET TITLE
FIRST FLOOR ELECTRICAL PLAN - UNIT 1300A

SHEET NO.
E411.d

STATE OF MICHIGAN
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07/30/26

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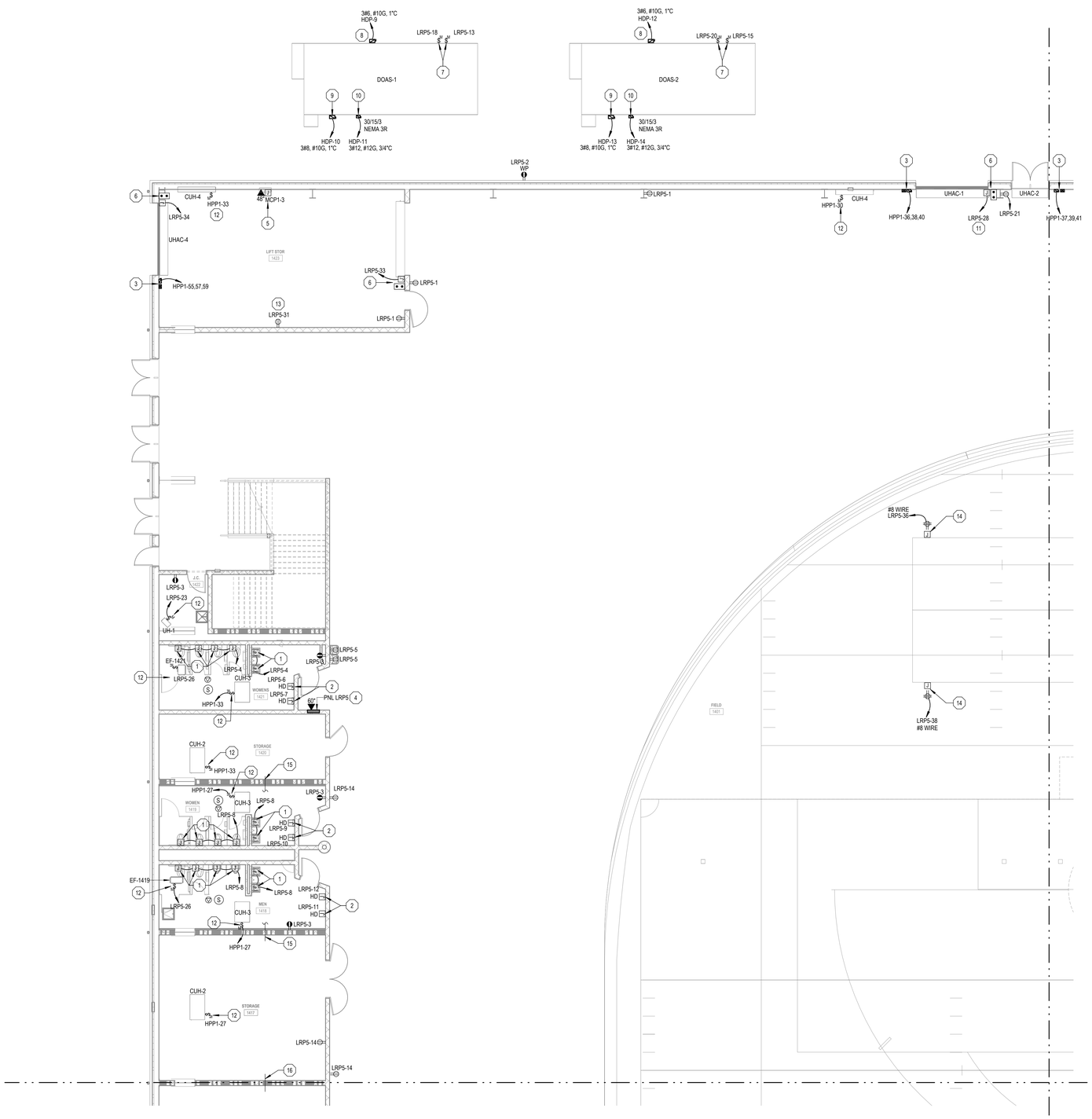

FIRST FLOOR ELECTRICAL PLAN - UNIT 1400A

1 E411.f SCALE = 1/8" = 1'-0"

KEYNOTES:

1. PROVIDE CONNECTION TO PLUMBING VALVE FIXTURES. COORDINATE ALL NECESSARY CONNECTIONS, WIRES, BOXES, AND ALL OTHER ELECTRICAL APPURTENANCES FOR A COMPLETE INSTALLATION OF POWERED VALVES.
2. PROVIDE CONNECTION TO HAND DRYER.
3. DISCONNECT SWITCH, HAND-OFF-AUTO/STARTER PROVIDED BY THE MECHANICAL EQUIPMENT MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION.
4. PROVIDE 1" EMPTY CONDUIT PATHWAY STUBBED UP ABOVE INTO AN ACCESSIBLE CEILING SPACE IN STORAGE 1420 FOR ELECTRICAL ENERGY MONITORING PER ASHRAE 90.1-2019 SECTION 8.4.3. COORDINATE FINAL CONDUIT ROUTING AND MOUNTING HEIGHT THE OWNER, LV CONSULTANT AND ARCHITECT PRIOR TO ROUGH-IN.
5. POWER TO BUILDING MANAGEMENT SYSTEM PANELS. PROVIDE 120V TOGGLE TYPE DISCONNECT SWITCH ON THE LINE SIDE OF THE BMS PANEL. VERIFY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION. PROVIDE #10 WIRE FOR HOMERUN FEED ROUTED BELOW GRADE BACK TO PANEL DESIGNATED.
6. POWER TO OVER HEAD DOOR. INSTALL DOOR OPERATOR AND ALL ACCESSORIES FOR A COMPLETE INSTALLATION. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH DOOR VENDOR PRIOR TO START OF CONSTRUCTION.
7. PROVIDE 120V POWER CONNECTION FOR GAS BURNERS. DISCONNECTS SHALL BE IN A NEMA 3R RATED ENCLOSURE. PROVIDE #10 WIRE FOR HOMERUN BELOW GRADE BACK TO DESIGNATED PANEL.
8. FUSED DISCONNECT SWITCH INTEGRAL TO THE MECHANCIAL EQUIPMENT FROM THE FACTORY FOR INTERNAL SUPPLY FAN.
9. FUSED DISCONNECT SWITCH INTEGRAL TO THE MECHANCIAL EQUIPMENT FROM THE FACTORY FOR INTERNAL EXHAUST FAN.
10. PROVIDE POWER TO ENERGY WHEEL INTERNAL TO THE MECHANICAL EQUIPMENT.
11. PROVIDE #8 WIRE WITH REDUCING LUGS DOWN TO #12 WIRE.
12. DISCONNECT SWITCH INTEGRAL TO THE EQUIPMENT FROM THE FACTORY.
13. POWER OUTLET FOR ELECTRIC LIFT CHARGING. FINAL ELECTRICAL CONNECTION REQUIREMENTS WILL NEED TO BE VERIFIED WITH THE FINAL LIFT SELECTION PRIOR START OF ROUGH IN. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION.
14. QUAD OUTLET AT BATTING CAGE POWERED FROM CORD REAL MOUNTED TO STRUCTURAL SUPPORT FRAMING ABOVE. REFER TO DETAIL 10 ON SHEET E811 FOR ADDITIONAL INFORMATION. FINAL MOUNTING HEIGHTS, LOCATIONS, LENGTHS FOR THE CORD REEL, QUAD OUTLET WHIP LENGTH, SHALL ALL BE COORDINATED WITH THE BATTING CAGE INSTALLER, OWNER, ARCHITECT AND GENERAL CONTRACTOR PRIOR TO START OF CONSTRUCTION. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION.
15. PROVIDE A 1 1/4" CONDUIT PATHWAY ROUTED OVERHEAD OF MENS 1418 AND WOMENS 1419 TOILET ROOMS FOR LOW VOLTAGE CABLE ROUTING. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.
16. PROVIDE A HILTI FIRE SLEEVE FOR LOW VOTLAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-S. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

GENERAL AV NOTE:
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GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

SHEET TITLE
FIRST FLOOR ELECTRICAL PLAN - UNIT 1400A

SHEET NO.
E411.f

STATE OF MICHIGAN
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License No. 6201055057
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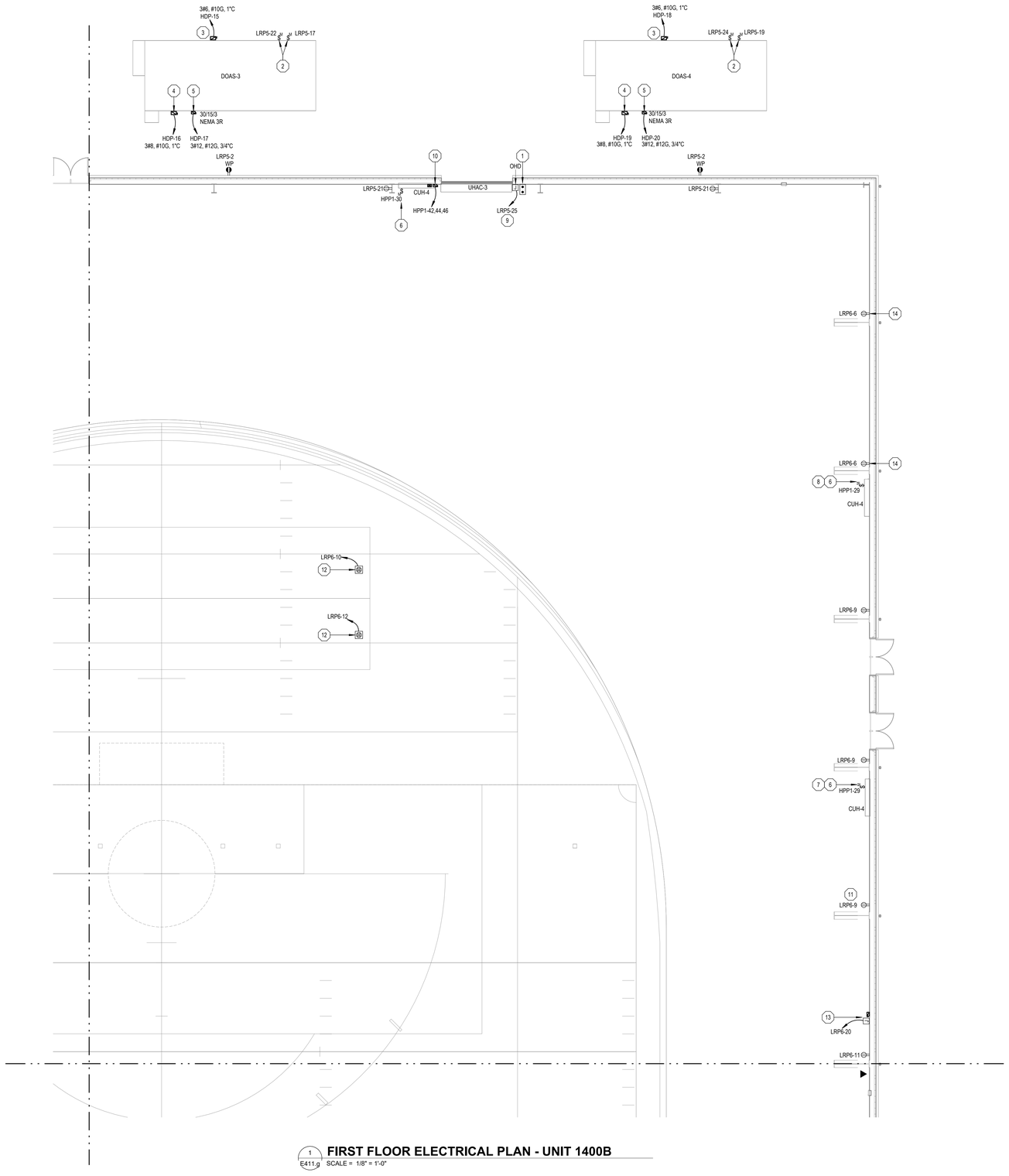

1 **FIRST FLOOR ELECTRICAL PLAN - UNIT 1400B**
E411.g SCALE = 1/8" = 1'-0"

KEYNOTES:

1. POWER TO OVER HEAD DOOR. INSTALL DOOR OPERATOR AND ALL ACCESSORIES FOR A COMPLETE INSTALLATION. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH DOOR VENDOR PRIOR TO START OF CONSTRUCTION.
2. PROVIDE 120V POWER CONNECTION FOR GAS BURNERS. DISCONNECTS SHALL BE IN A NEMA 3R RATED ENCLOSURE. PROVIDE #8 WIRE FOR HOMERUN BELOW GRADE BACK TO DESIGNATED PANEL. PROVIDE REDUCING LUGS DOWN TO #12 FOR FINAL CONNECTION.
3. FUSED DISCONNECT SWITCH INTEGRAL TO THE MECHANCIAL EQUIPMENT FROM THE FACTORY FOR INTERNAL SUPPLY FAN.
4. FUSED DISCONNECT SWITCH INTEGRAL TO THE MECHANCIAL EQUIPMENT FROM THE FACTORY FOR INTERNAL EXHAUST FAN.
5. PROVIDE POWER TO ENERGY WHEEL INTERNAL TO THE MECHANICAL EQUIPMENT.
6. DISCONNECT SWITCH INTEGRAL TO THE EQUIPMENT FROM THE FACTORY.
7. PROVIDE #10 WIRE FOR HOMERUN FEED ROUTED BELOW GRADE BACK TO PANEL DESIGNATED.
8. PROVIDE #10 WIRE ROUTED BETWEEN CUH CONNECTED TO THE SAME CIRCUIT.
9. PROVIDE #6 WIRE WITH REDUCING LUGS DOWN TO #12 WIRE.
10. DISCONNECT SWITCH, HAND-OFF-AUTO/STARTER PROVIDED BY THE MECHANICAL EQUIPMENT MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION. REFER TO MANUFACTURERS INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION.
11. PROVIDE #10 WIRE FOR THE MAIN HOMERUN FEED ROUTED BELOW GRADE BACK TO DESIGNATED PANEL. ROUTE #10 WIRE TO OUTLETS ON THE SAME CIRCUIT.
12. LEGRAND WIREMOLD INGRADE BOX XB814 SERIES WITH (2) DUPLEX RECEPTACLES. CONNECT TO CIRCUIT DESIGNATED. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION. TURF TO BE INSTALLED ON LID OF INGRADE WITH OPENING CUT FOR THE HANDLE. FINAL LOCATION MUST BE COORDINATED WITH THE OWNER, FORESITE, ARCHITECT AND FINAL BATTING CAGE LOCATION.
13. POWER TO SMALL SCOREBOARD DISPLAY. PROVIDE AND INSTALL ALL NECESSARY MATERIAL FOR A COMPLETE INSTALLATION. FIELD VERIFY FINAL LOCATION AND MOUNTING HEIGHT WITH THE OWNER, ARCHITECT, AND GC PRIOR TO ROUGH-IN.
14. COORDINATE FINAL OUTLET LOCATION WITH WALL MOUNTED PADS SCHEDULED TO BE INSTALLED IN THE AREA PRIOR TO ROUGH-IN.

GENERAL AV NOTE:
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REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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HOWELL PUBLIC SCHOOLS

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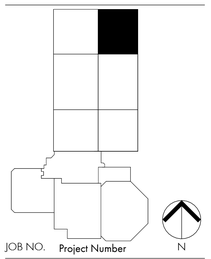

JOB NO. Project Number

N

SHEET TITLE
FIRST FLOOR ELECTRICAL PLAN - UNIT 1400B

SHEET NO.
E411.g



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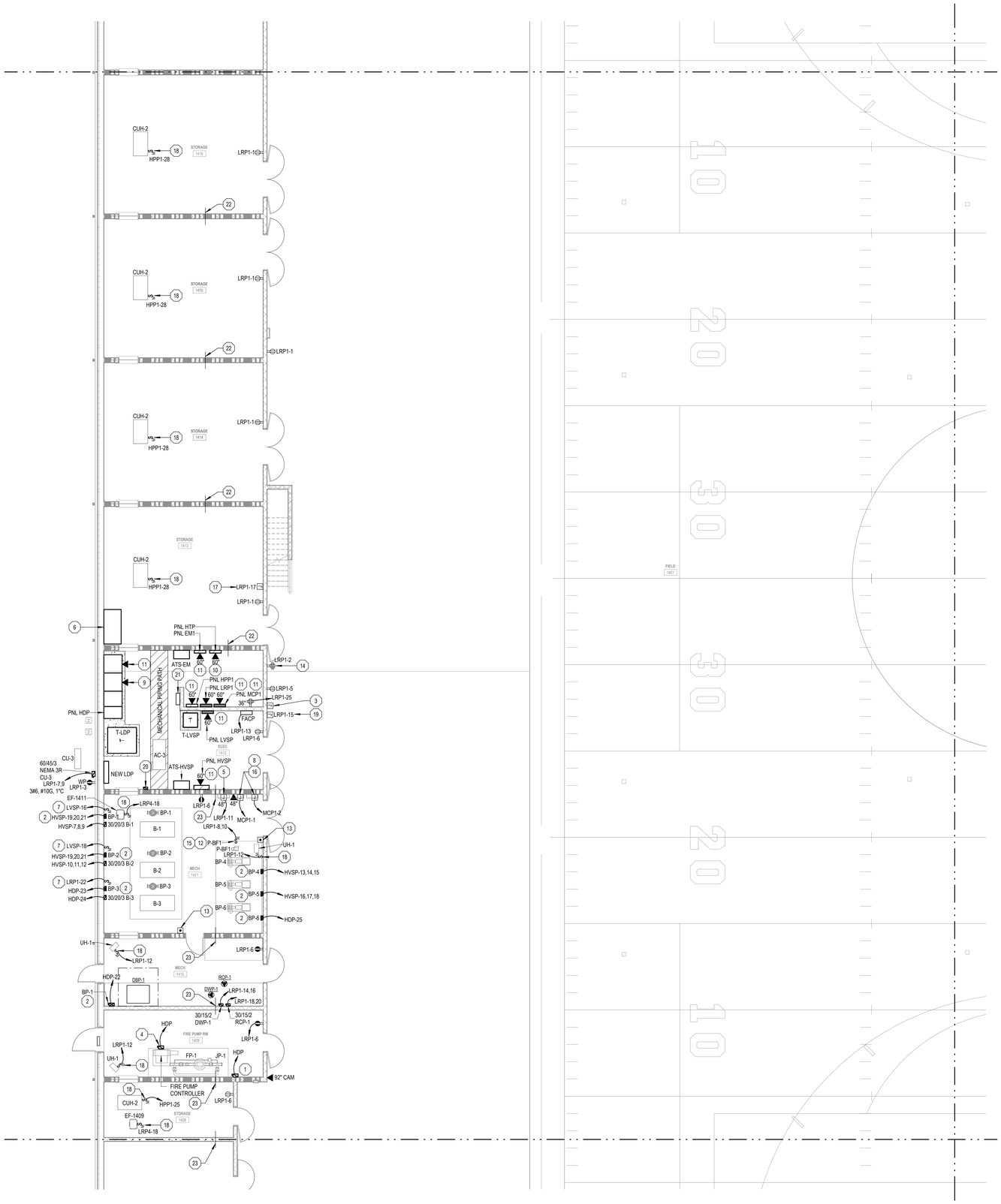

1 E411.h **FIRST FLOOR ELECTRICAL PLAN - UNIT 1400C**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. DISCONNECT SWITCH INTEGRAL TO JOCKEY PUMP CONTROLLER.
2. VFD WITH INTEGRAL DISCONNECT PROVIDE BY THE EQUIPMENT MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTACTOR.
3. APPROXIMATE LOCATION FOR TOUCH SCREEN TO CONTROL BATTING CAGE AND ATHLETIC FIELD NETS. PROVIDE ALL NECESSARY 120V POWER TO CONTROL PANEL. PANEL AND TOUCHSCREEN PROVIDED BY EQUIPMENT VENDOR AND INSTALLED BY EC. VERIFY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION.
4. DISCONNECT SWITCH IS INTEGRAL TO THE FIRE PUMP CONTROLLER.
5. POWER TO CO DETECTION PANEL. VERIFY ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO ROUGH-IN.
6. PROVIDE AT MINIMUM 3'WX6' SPACE FOR FUTURE ELECTRICAL ENERGY STORAGE SYSTEM-READY AREA PER 2021 MICHIGAN COMMERCIAL ENERGY CODE SECTION C8103.7.
7. PROVIDE DISCONNECT SWITCH FOR MOTORIZED BOILER PIPE DAMPER.
8. GENERATOR ANNUNCIATOR TO RECEIVE A COMMUNICATION WIRE FROM THE GENERATOR SHOWN ON SHEET E114. REFER TO KEYNOTE 5 ON SHEET E114 FOR ADDITIONAL INFORMATION. PROVIDE AN ADDITIONAL LOW VOLTAGE CONNECTION ROUTED FROM THE ANNUNCIATOR TO A BMS PANEL LOCATED IN MECH 1411 FOR GENERATOR MONITORING. PROVIDE ALL NECESSARY CONDUIT RACEWAYS WITH PULLSTRING STUBBED TO ACCESSIBLE CEILING SPACE ABOVE. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH GENERATOR VENDOR, BMS VENDOR, AND GC PRIOR TO START OF CONSTRUCTION.
9. PROVIDE 1" EMPTY CONDUIT PATHWAY STUBBED TO CEILING SPACE ABOVE FOR DATA DROP CONNECTION TO METER FOR PHASE LOSS MONITORING.
10. PROVIDE AN NVENT MODEL ACS-30 OR APPROVED EQUAL POWER/CONTROL PANEL FOR GUTTER AND DOWNSPOUT HEAT TRACE. PANEL SHALL HOUSE A TOTAL OF 20 277V SINGLE POLE BRANCH CIRCUITS. PANEL SHALL COMMUNICATE TO THE BMS SYSTEM FOR MONITORING.
11. PROVIDE 1" EMPTY CONDUIT PATHWAY STUBBED UP TO CEILING SPACE ABOVE FOR ELECTRICAL ENERGY MONITORING PER ASHRAE 90.1-2019 SECTION 8.4.3. COORDINATE FINAL CONDUIT ROUTING AND MOUNTING HEIGHT THE OWNER, LV CONSULTANT AND ARCHITECT PRIOR TO ROUGH-IN. PANEL SHALL TIE BACK TO THE BMS FOR PANEL MONITORING AND DATA STORAGE.
12. MOUNT DISCONNECT ON A UNISTRUT FROM SUPPORTED FROM FLOOR TO CEILING. COORDINATE CEILING ANCHOR POINTS WITH STRUCTURAL ENGINEER PRIOR TO INSTALL.
13. PROVIDE A RED MUSHROOM STYLE EMERGENCY SHUTDOWN BUTTON WITH PROTECTED COVER TO PREVENT ACCIDENTAL TRIPPING FOR BOILER SYSTEM. TIE BUTTON INTO BOILER CONTROL PANELS. PROVIDE LABEL NOTING EMERGENCY BOILER SHUTOFF. VERIFY ALL ELECTRICAL REQUIREMENTS WITH MECHANICAL TRADES.
14. QUAD OUTLET SHALL BE MOUNTED ADJAACENT TO AV JACKS. REFER TO AV DRAWINGS SHEET TA201B FOR ADDITIONAL INFORMATION.
15. PROVIDE A 30/15/2 FUSED DISCONNECT SWITCH.
16. POWER TO BUILDING MANAGEMENT SYSTEM PANELS. PROVIDE 120V TOGGLE TYPE DISCONNECT SWITCH ON THE LINE SIDE OF THE BMS PANEL. VERIFY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION.
17. APPROXIMATE LOCATION FOR MASTER CONTROL PANEL THAT INTERFACES WITH TOUCHSCREEN FOR CONTROL OF FIELD AND BATTING CAGE NETS. REFER TO KEYNOTE 3 FOR ADDITIONAL INFORMATION.
18. DISCONNECT SWITCH INTEGRAL TO THE EQUIPMENT FROM THE FACTORY.
19. CONTROL PANEL FOR CONTROL OF LARGE FANS HVLS-1.1, 1.2, 1.3, 1.4, 1.5, AND 1.6 CEILING MOUNTED. CONTROL PANEL PROVIDED BY THE CEILING FAN MANUFACTURER. FINAL CONTROL PANEL LOCATION SHALL BE COORDINATED WITH THE OWNER, GC AND ARCHITECT PRIOR TO ROUGH-IN.
20. INDOOR AC UNIT AC-3 SHALL BE POWERED FROM OUTDOOR CONDENSING UNIT CU-3. VERIFY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO ROUGH-IN. PROVIDE A 30/15/2 FUSIBLE DISCONNECT SWITCH.
21. GENERATOR ANNUNCIATOR. ANNUNCIATOR SHALL RECEIVE A LOW VOLTAGE FEED FROM THE CAMLOCK CABINET FOR MONITORING OF BREAKER POSITION IN CAMLOCK CABINET. ENSURE ANNUCIATOR HAS AUXILIARY CONTACTS TO EXCEPT MONITORING SIGNAL. REFER TO KEYNOTE 8 THIS SHEET FOR ADDITIONAL INFORMATION.
22. PROVIDE A HILTI FIRE SLEEVE FOR LOW VOTLAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-S. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.
23. PROVIDE A HILTI FIRE SLEEVE FOR LOW VOTLAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-L. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ~~ARCHITECT AND GC PRIOR TO ROUGH-IN.~~
THE INTENT IS FOR ONLY (1) BOILER, (1) BOILER PUMP, (1) SECONDARY PUMP, AND (1) BOILER MOTORIZED DAMPER TO OPERATE AT A TIME WHEN ON GENERATOR POWER. GENERATOR WILL BE SIZED ACCORDINGLY.

GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS). PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

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SHEET TITLE
FIRST FLOOR ELECTRICAL PLAN - UNIT 1400C

SHEET NO.
E411.h

STATE OF MICHIGAN
Robin Hyman
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LICENSED PROFESSIONAL ENGINEER

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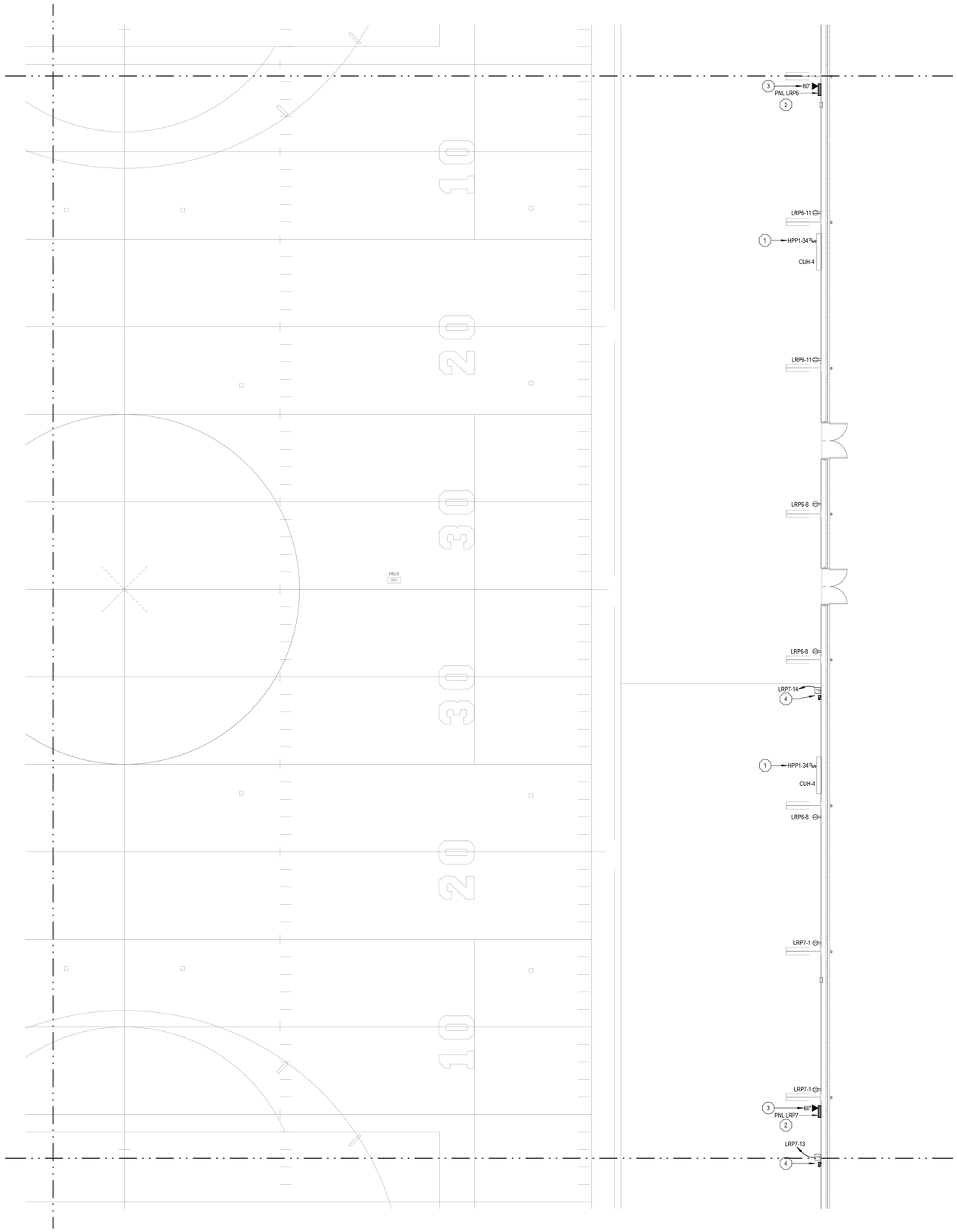

1 E411.i **FIRST FLOOR ELECTRICAL PLAN - UNIT 1400D**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 DISCONNECT SWITCH INTEGRAL TO THE EQUIPMENT FROM THE FACTORY.

2 PROVIDE ADDITIONAL UNISTRUT FRAMING FOR SUPPORT OF ELECTRICAL PANEL. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION.

3 PROVIDE 1" EMPTY CONDUIT PATHWAY STUBBED UP TO CEILING SPACE ABOVE FOR ELECTRICAL ENERGY MONITORING PER ASHRAE 90.1-2019 SECTION 8.4.3. COORDINATE FINAL CONDUIT ROUTING AND MOUNTING HEIGHT WITH THE OWNER, LV CONSULTANT AND ARCHITECT PRIOR TO ROUGH-IN.

4 POWER TO SMALL SCOREBOARD DISPLAY. PROVIDE AND INSTALL ALL NECESSARY MATERIAL FOR A COMPLETE INSTALLATION. FIELD VERIFY FINAL LOCATION AND MOUNTING HEIGHT WITH THE OWNER, ARCHITECT, AND GC PRIOR TO ROUGH-IN.

GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS). PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

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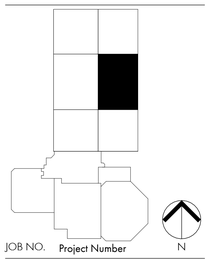

JOB NO. Project Number

SHEET TITLE
FIRST FLOOR ELECTRICAL PLAN - UNIT 1400D

SHEET NO.
E411.j

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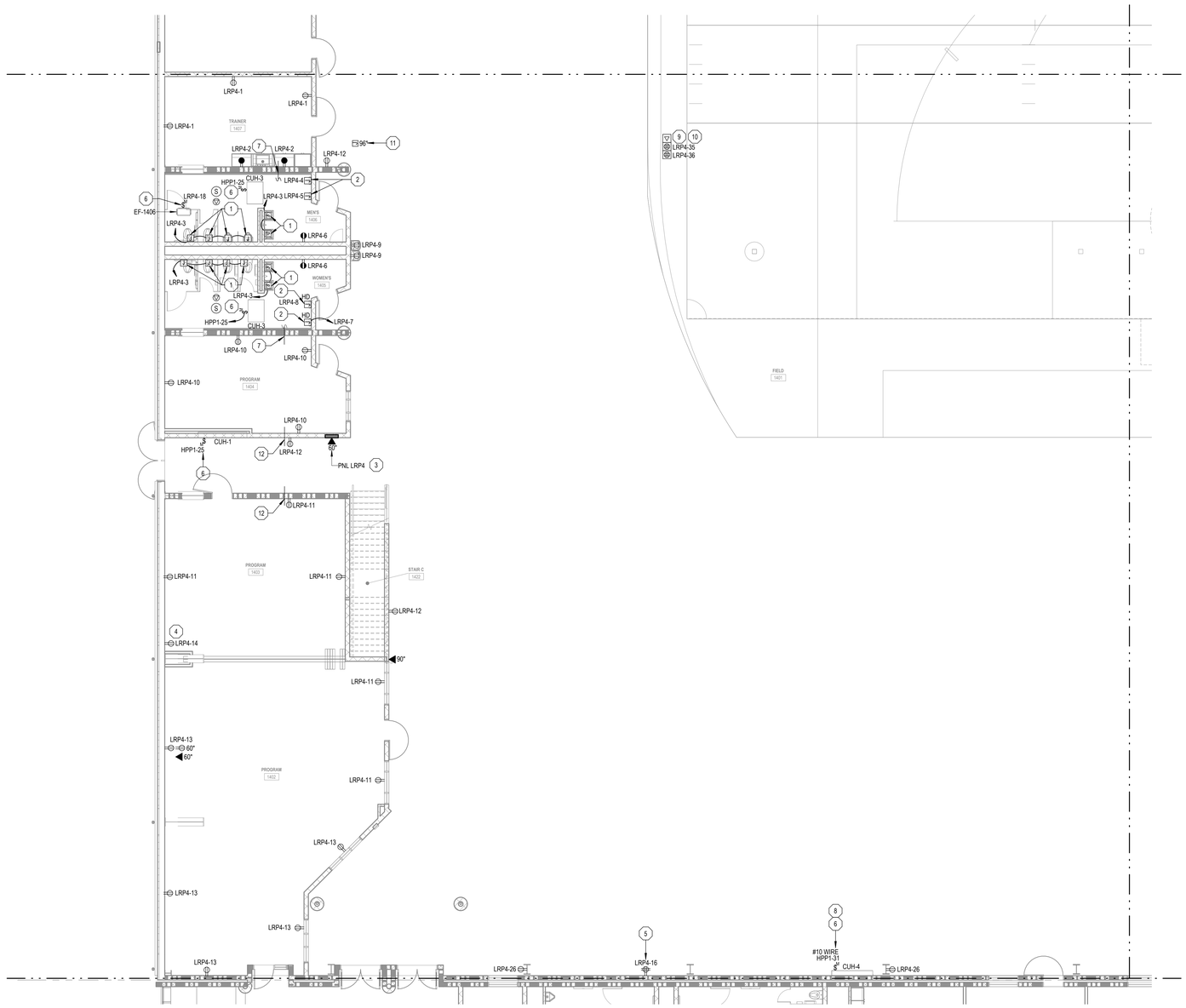

1 E411.k **FIRST FLOOR ELECTRICAL PLAN - UNIT 1400E**

SCALE = 1/8" = 1'-0"

KEYNOTES:

1 PROVIDE CONNECTION TO PLUMBING VALVE FIXTURES. COORDINATE ALL NECESSARY CONNECTIONS, WIRES, BOXES, AND ALL OTHER ELECTRICAL APPURTENANCES FOR A COMPLETE INSTALLATION OF POWERED VALVES.

2 PROVIDE CONNECTION TO HAND DRYER.

3 PROVIDE 1" EMPTY CONDUIT PATHWAY STUBBED TO ABOVE AN ACCESSIBLE CEILING SPACE LOCATED IN PROGRAM 1403 FOR ELECTRICAL ENERGY MONITORING PER ASHRAE 90.1-2019 SECTION 8.4.3. COORDINATE FINAL CONDUIT ROUTING AND MOUNTING HEIGHT THE OWNER, LV CONSULTANT AND ARCHITECT PRIOR TO ROUGH-IN.

4 POWER TO IRRIGATION CONTROL PANEL. VERIFY FINAL LOCATION AND MOUNTING HEIGHT WITH IRRIGATION CONTRACTOR PRIOR TO ROUGH-IN.

5 QUAD OUTLET SHALL BE MOUNTED ADJACENT TO AV JACKS. REFER TO AV DRAWINGS SHEET TA201C FOR ADDITIONAL INFORMATION.

6 DISCONNECT SWITCH INTEGRAL TO THE EQUIPMENT FROM THE FACTORY.

7 PROVIDE A 2 1/2" EMPTY CONDUIT WITH PULLSTRING ROUTED ABOVE CEILING FROM OPEN CEILING OF STORAGE 1408 TO THE ACCESSIBLE CEILING IN 1403 FOR LV DATA CABLING ROUTING PATH. COORDINATE FINAL CONDUIT LOCATIONS, ROUTING PATH, AND MOUNTING HEIGHT WITH THE OWNER, LV CONSULTANT, ARCHITECT AND GC PRIOR TO ROUGH-IN.

8 PROVIDE #8 WIRE FOR HOMERUN FEED ROUTED BELOW GRADE BACK TO PANEL DESIGNATED. FINAL CONNECTION MADE TO THE FIRST CUH SHALL BE REDUCED DOWN TO #12 WIRE FOR FINAL CONNECTION.

9 PROVIDE A LEGRAND CONVENTION CENTER FLOOR BOX WITH ((2) QUAD RECEPTACLES IN THE BOX ALONG WITH (2) 1 1/4" EMPTY CONDUITS WITH PULLSTRINGS ROUTED BELOW GRADE UP TO THE TIMING BOOTH 2404. CONDUITS SHALL LAND INTO A 3 GANG BOX LOCATED IN TIMING BOOTH 2404. PROVIDE CONCENTION CENTER FLOOR BOX COVER THAT WILL ACCEPT FIELD TURF MATERIAL. VERIFY FINAL INGRADE BOX LOCATION AND 3 GANG BOX LOCATION WITH ARCHITECT, OWNER AND THE GC PRIOR TO ROUGH-IN.

10 REFER TO AV DRAWINGS SHEET TA201C FOR ADDITIONAL INFORMATION.

11 JUNCTION BOX MOUNTED ON THE FRONT FACIA OF THE CONCRETE WALKING DECK ABOVE WITH A 1" EMPTY CONDUIT AND PULL STRING ROUTED BACK TO TIMING BOOTH 2404 FOR WALL MOUNTED TRACK AND FIELD FINISH LINE CAMERA. CONDUIT ROUTING SHALL BE CONCEALED BACK TO THE TIMING BOOTH. SURFACE MOUNTED CONDUIT WILL NOT BE ALLOW WITH THE FIELD AREA 1401. 1 " CONDUIT SHALL LAND INTO A DOUBLE GANG JUNCTION BOX RECESSED IN THE WALL WITHIN THE TIMING BOOTH. VERIFY ALL ELECTRICAL REQUIREMENTS FOR INSTALLATION OF CAMERA, THE FINAL MOUNTING HEIGHT, AND CONDUIT ROUTING WITH THE OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

12 PROVIDE A HILTI FIRE SLEEVE FOR LOW VOTLAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-L. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS). PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

GENERAL LV NOTE:
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REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

ELECTRICAL CONNECTION NOTE:
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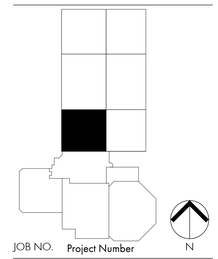

JOB NO. Project Number

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SHEET TITLE
FIRST FLOOR ELECTRICAL PLAN - UNIT 1400E

SHEET NO.
E411.k

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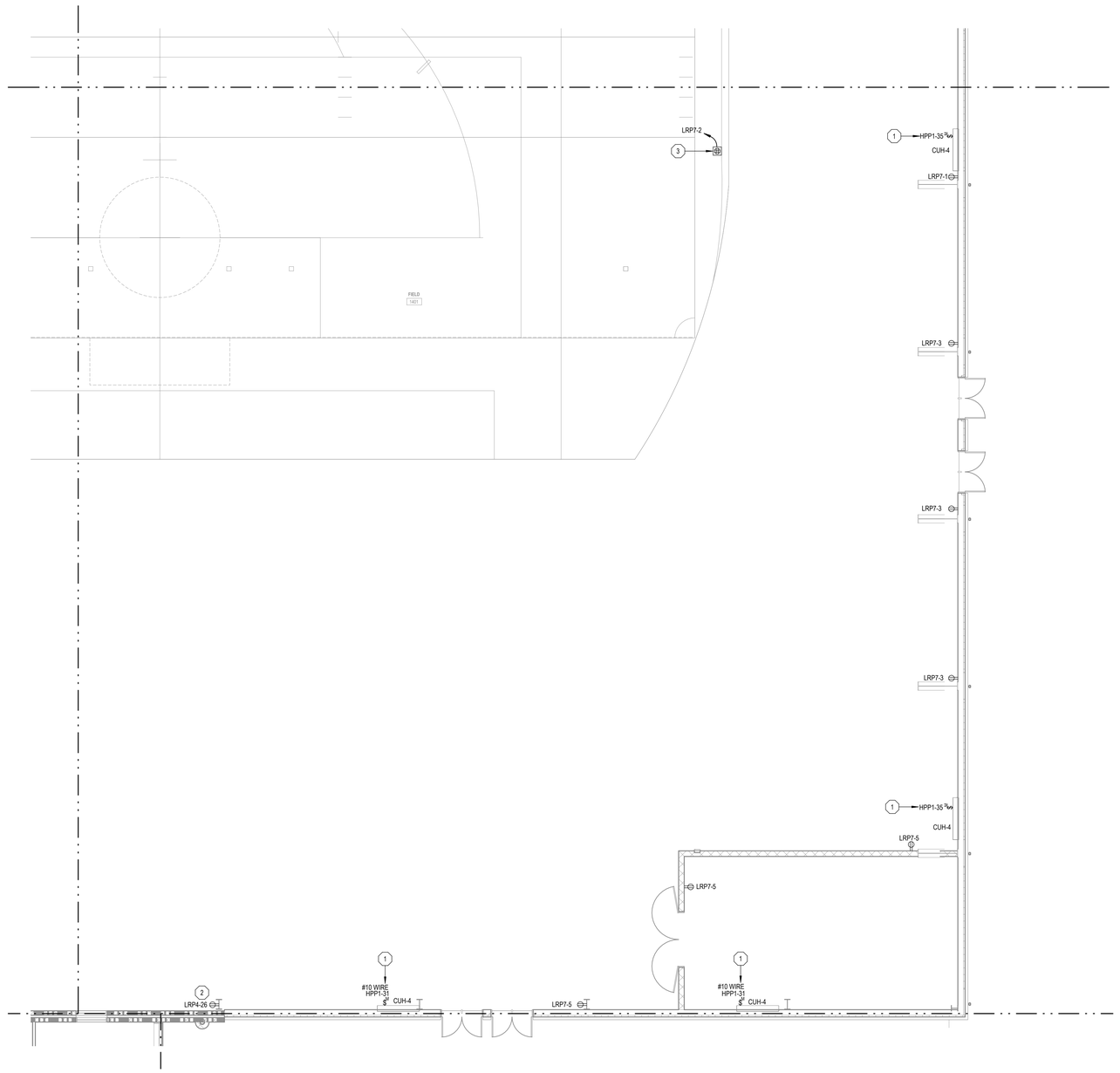

1 E411.m **FIRST FLOOR ELECTRICAL PLAN - UNIT 1400F**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 DISCONNECT SWITCH INTEGRAL TO THE EQUIPMENT FROM THE FACTORY.

2 PROVIDE #10 WIRE FOR THE MAIN HOMERUN FEED ROUTED BELOW GRADE BACK TO DESIGNATED PANEL. ROUTE #10 WIRE TO OUTLETS ON THE SAME CIRCUIT.

3 LEGRAND WIREMOLD INGRADE BOX XB814 SERIES WITH (2) DUPLEX RECEPTACLES. CONNECT TO CIRCUIT DESIGNATED. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION. TURF TO BE INSTALLED ON LID OF INGRADE WITH OPENING CUT FOR THE HANDLE. FINAL LOCATION MUST BE COORDINATED WITH THE OWNER, FORESITE, ARCHITECT AND GC PRIOR TO ROUGH-IN.

GENERAL AV NOTE:
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GENERAL LV NOTE:
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REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

ELECTRICAL CONNECTION NOTE:
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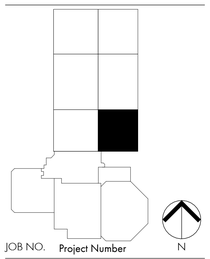

JOB NO. Project Number

SHEET TITLE
FIRST FLOOR ELECTRICAL PLAN - UNIT 1400F

SHEET NO.
E411.m

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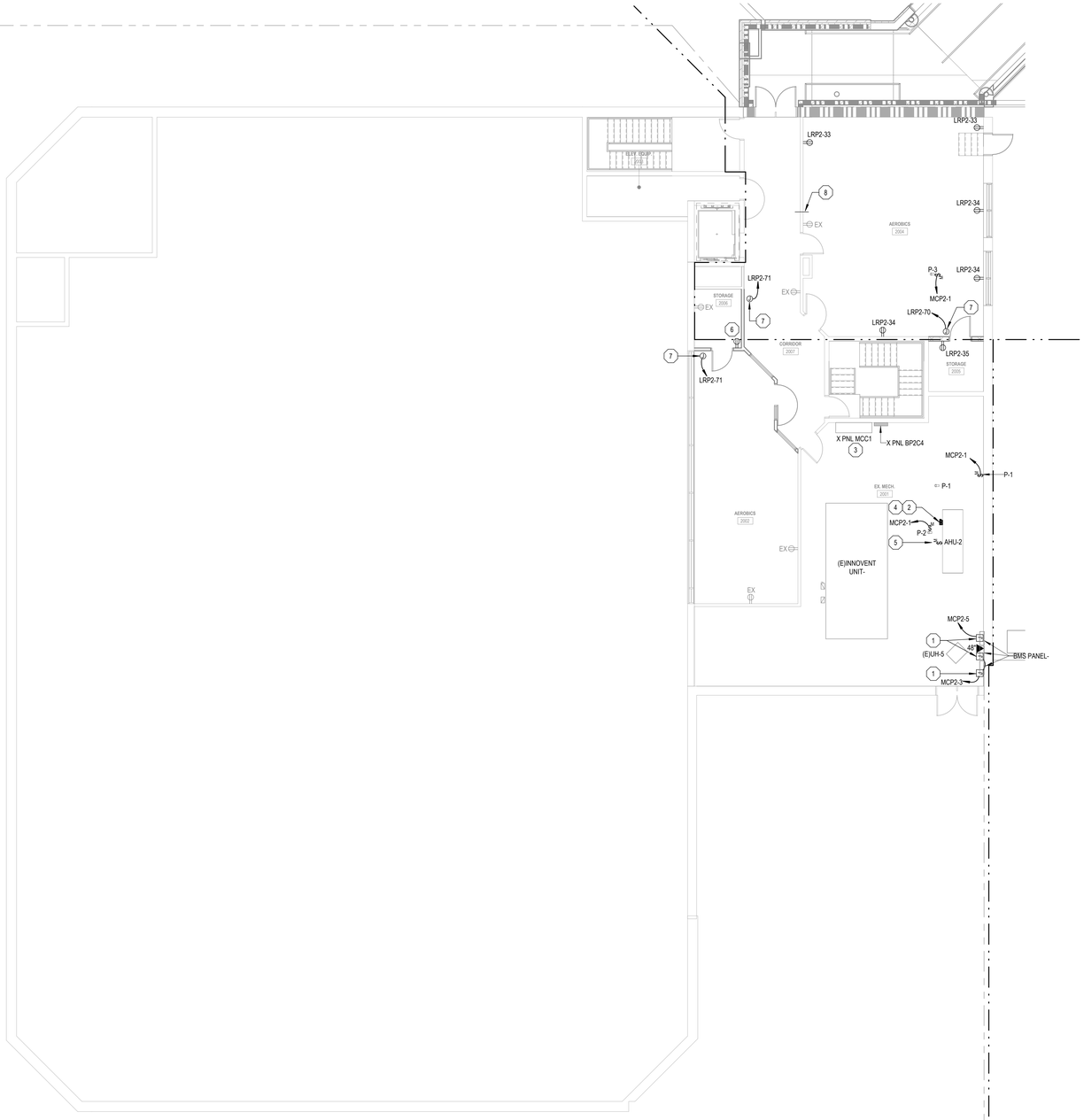

1 E421.a **SECOND FLOOR ELECTRICAL PLAN - UNIT 2000**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 POWER TO MECHANICAL CONTROL PANELS.
2 AHU-2 SHALL BE POWERED FROM EXISTING MOTOR CONTROL CENTER MCC1. CONTRACTOR TO REPLACE FUSES IN MCC1 WITH 15 AMP FUSES FOR NEW AIR HANDLING UNIT 2.
3 EXISTING MOTOR CONTROL CENTER MCC1 IS A WESTINGHOUSE 2100 SERIES.
4 FUSED DISCONNECT SWITCH PROVIDED FROM THE FACTORY.
5 PROVIDE A 120V FUSED DISCONNECT SWITCH FOR LEAK DETECTION SYSTEM. PROVIDE CONNECTION TO PANEL BP2C4 POLE POSITION 28.
6 CONNECT NEW OUTLET TO EXISTING ADJACENT 120V RECEPTACLE CIRCUIT.
7 PROVIDE 120V POWER TO MOTORIZED SMOKE DAMPER. DAMPER SHALL BE TIED INTO BUILDING FIRE ALARM SYSTEM VIA DUCT SMOKE DETECTORS.
8 PROVIDE A HILTI FIRE SLEEVE FOR LOW VOLTAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-S. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

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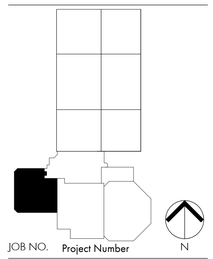
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. Project Number

SHEET TITLE
SECOND FLOOR ELECTRICAL PLAN - UNIT 2000

SHEET NO.
E421.a

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
LICENSED PROFESSIONAL ENGINEER
7/30/26

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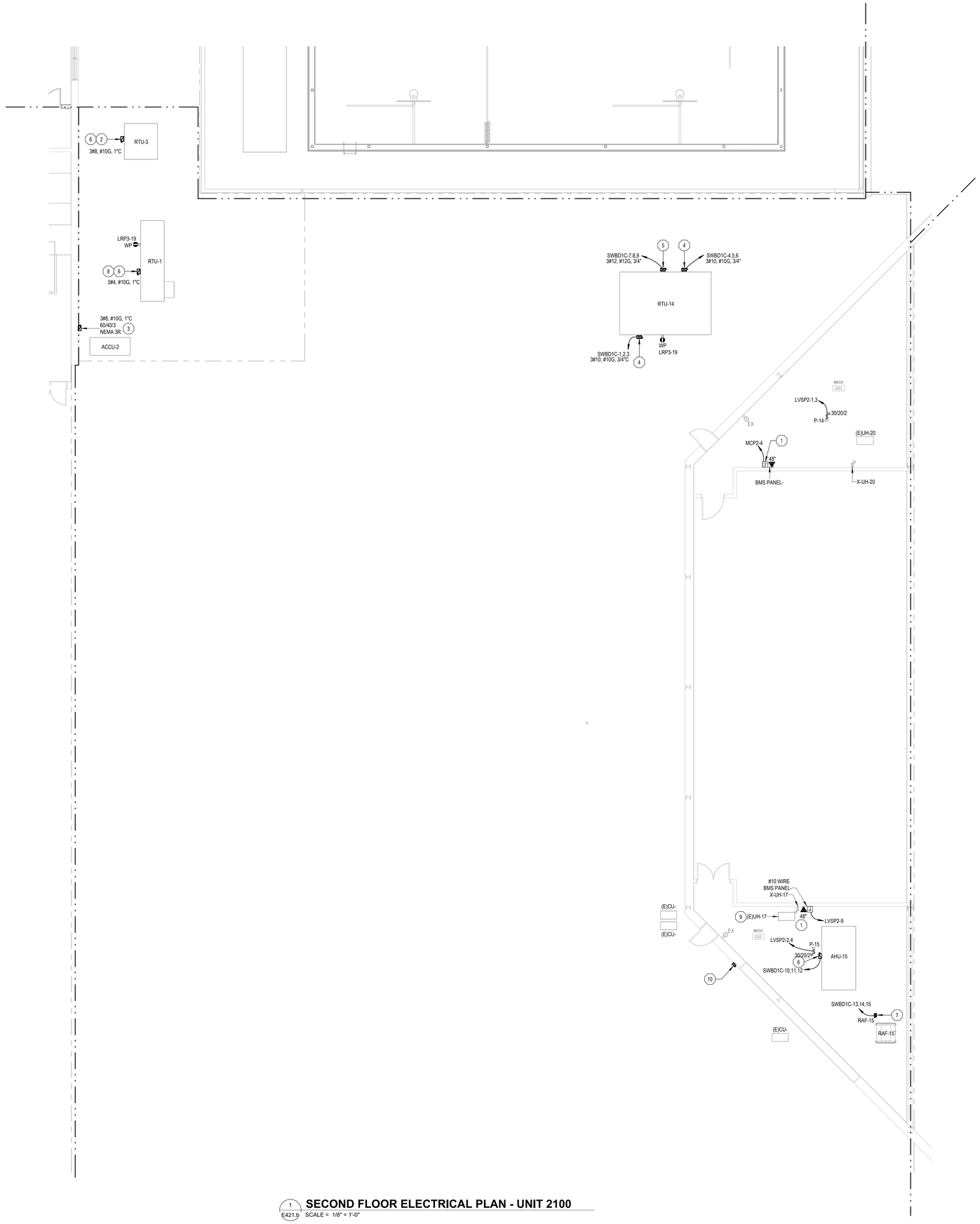

1 E421.b **SECOND FLOOR ELECTRICAL PLAN - UNIT 2100**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 POWER TO MECHANICAL CONTROL PANELS.
2 RTU-3 TO BE POWERED FROM A NEW 60A-3P FUSIBLE SWITCH TO BE INSTALLED IN EXISTING AQUATIC CENTER MDP. PROVIDE NEW 35A FUSES IN NEW FUSIBLE SWITCH. COORDINATE FINAL FUSE SIZE WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION.
3 ACCU-2 TO BE POWERED FROM A NEW 60A-3P FUSIBLE SWITCH TO BE INSTALLED IN EXISTING AQUATIC CENTER MDP. PROVIDE NEW 40A FUSES IN NEW FUSED SWITCH. COORDINATE FINAL FUSE SIZE WITH EQUIPMENT VENDOR PRIOR TO START OF CONSTRUCTION.
4 COMBINATION STARTER/FUSED DISCONNECT FACTORY INSTALLED FROM THE MANUFACTURER.
5 VFD WITH INTEGRAL DISCONNECT PROVIDED BY CONTROLS CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
6 DISCONNECT SWITCH FACTORY INSTALLED FROM THE MANUFACTURER.
7 COMBINATION VFD WITH INTEGRAL DISCONNECT SWITCH SUPPLIED BY MECHANICAL TRADES AND INSTALLED BY THE ELECTRICAL CONTRACTOR. MOUNT TO A NEW UNISTRUT FRAME SUPPORTED FROM THE FLOOR AND ROOF JOIST STRUCTURAL FRAMING ABOVE.
8 RTU-1 TO BE POWERED FROM A NEW 60A-3P FUSIBLE SWITCH TO BE INSTALLED IN EXISTING AQUATIC CENTER MDP. PROVIDE NEW 60A FUSES IN NEW FUSIBLE SWITCH. COORDINATE FINAL FUSE SIZE WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION.
9 REWORK AND EXTEND EXISTING UH CIRCUIT TO ACCOMMODATE NEW LOCATION FOR RELOCATED UH. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION.
10 INSTALL EXISTING DISCONNECT SWITCH SALVAGED DURING WALL DEMOLITION WORK. REWORK AND EXTEND EXISTING CONDENSING UNIT `CU' BRANCH CIRCUIT WIRING TO ACCOMMODATE THE RELOCATED CU DISCONNECT SWITCH THAT SERVES AN EXISTING CU LOCATED JUST SOUTHEAST NEW DISCONNECT SWITCH LOCATION. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION.

GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
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JOB NO. Project Number

N

SHEET TITLE
SECOND FLOOR ELECTRICAL PLAN - UNIT 2100

SHEET NO.
E421.b

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
LICENSED PROFESSIONAL ENGINEER
07/30/26

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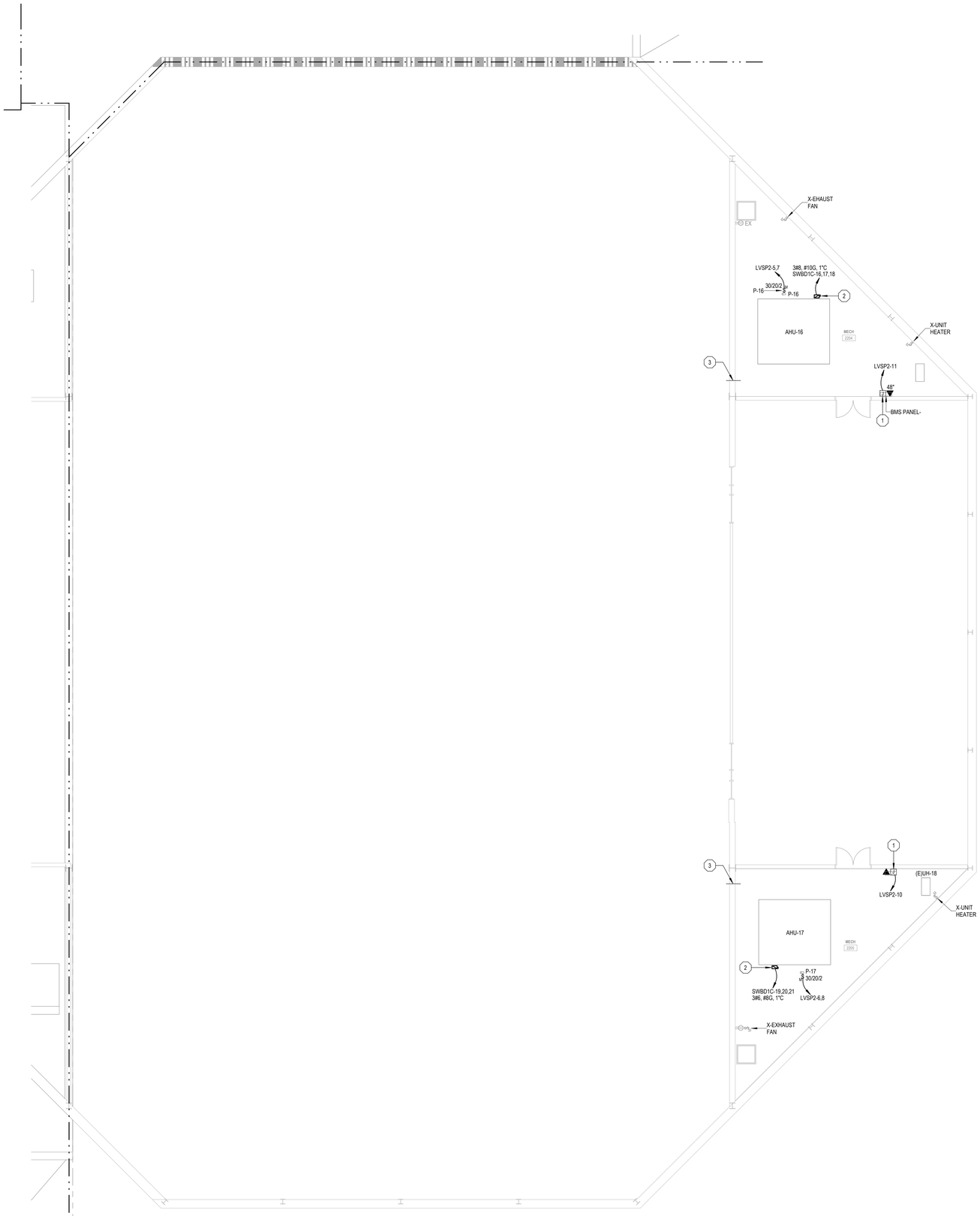

1 E421.c **SECOND FLOOR ELECTRICAL PLAN - UNIT 2200**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 POWER TO MECHANICAL CONTROL PANELS.
2 DISCONNECT BY MANUFACTURER INSTALLED FROM THE FACTORY.
3 PROVIDE A HILTI FIRE SLEEVE FOR LOW VOTLAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-S. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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HOWELL PUBLIC SCHOOLS

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JOB NO. Project Number

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SHEET TITLE
SECOND FLOOR ELECTRICAL PLAN - UNIT 2200

SHEET NO.
E421.c

STATE OF MICHIGAN
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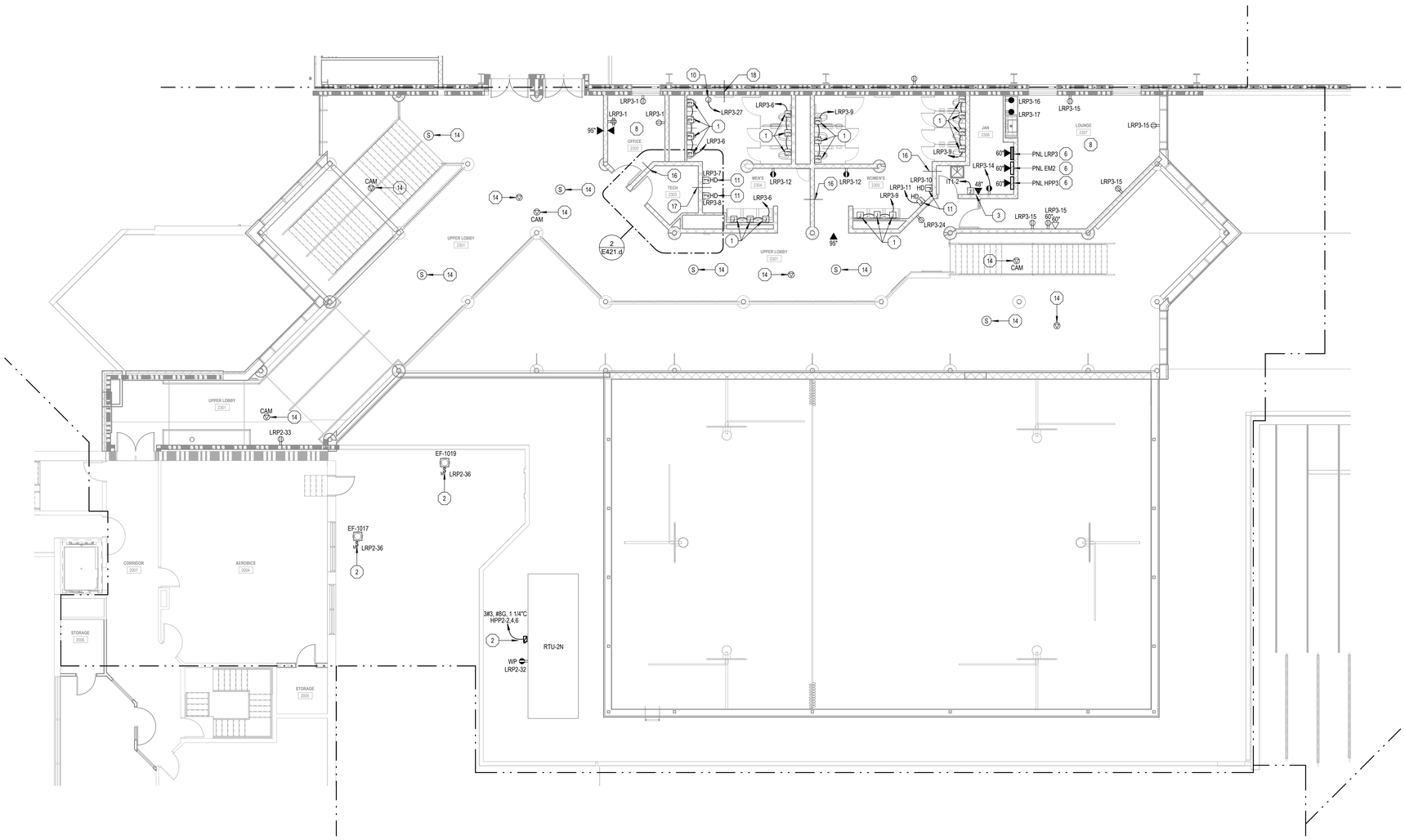
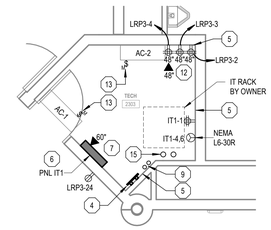


1 SECOND FLOOR ELECTRICAL PLAN - UNIT 2300A

E421.d SCALE = 1/8" = 1'-0"



2 PARTIAL ENLARGED TECH 2303 - ELECTRICAL

E421.d SCALE = 1/4" = 1'-0"

KEYNOTES:

1. PROVIDE CONNECTION TO PLUMBING VALVE FIXTURES. COORDINATE ALL NECESSARY CONNECTIONS, WIRES, BOXES, AND ALL OTHER ELECTRICAL APPURTENANCES FOR A COMPLETE INSTALLATION OF POWERED VALVES.
2. DISCONNECT BY MANUFACTURER INSTALLED FROM THE FACTORY.
3. POWER TO MECHANICAL CONTROL PANELS.
4. PROVIDE GROUND BAR FOR TELECOMM EQUIPMENT. REFER TO DETAIL 3 ON SHEET E8.01 FOR ADDITIONAL INFORMATION.
5. PROVIDE AND INSTALL A 3/4" FIRE RETARDANT TELEPHONE BOARD. COORDINATE EXTENT OF FIRE RATED TELEPHONE BOARD WITH THE OWNER AND AV CONSULTANT PRIOR TO START OF CONSTRUCTION.
6. PROVIDE 1" EMPTY CONDUIT PATHWAY STUBBED UP TO CEILING SPACE ABOVE FOR ELECTRICAL ENERGY MONITORING PER ASHRAE 90.1-2019 SECTION 8.4.3. COORDINATE FINAL CONDUIT ROUTING AND MOUNTING HEIGHT THE OWNER, LV CONSULTANT AND ARCHITECT PRIOR TO ROUGH-IN. PANEL SHALL TIE BACK TO THE BMS FOR PANEL MONITORING AND DATA STORAGE.
7. MAINTAIN CODE REQUIRED WORKING CLEARANCE PER SECTION 110.26.
8. NEW OUTLETS SHALL BE WIRED AS FOLLOWS WITH THE TOP OUTLET CONNECTED TO THE CEILING MOUNTED OCCUPANCY SENSOR FOR AUTOMATIC CONTROL AND THE BOTTOM OUTLET HAVING CONTINOUS POWER. OUTLETS SHALL BE CONTROLLED PER ASHRAE 90.1-2019 SECTION 8.4.2. REFER TO DETAIL 2 ON SHEET E811 FOR ADDITIONAL INFORMATION.
9. (2) 3" EMPTY DATA CONDUITS WITH PULLSTRINGS STUBBED DOWN BELOW GRADE TO IT 1163. REFER TO SHEET E112 FOR APPROXIMATE CONDUIT ROUTING PATH BELOW GRADE. REFER TO SHEET E411.b FOR FINAL DESTINATION. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH THE OWER, GC, AND CIVIL CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
10. PROVIDE 120V POWER TO MOTORIZED FIRE/SMOKE DAMPER. DAMPER SHALL BE TIED INTO BUILDING FIRE ALARM SYSTEM VIA DUCT SMOKE DETECTORS.
11. PROVIDE POWER CONNECTION TO HAND DRYER.
12. (3) QUAD OUTLET SCHEDULED TO SERVE AV EQUIPMENT NOTED ON SHEET TA202D OF THE AV SHEETS. VERIFY FINAL OUTLET MOUNTING HEIGHT AND LOCATION WITH AV DESIGN CONSULTANT, THE OWNER, ARCHITECT AND GC PRIOR TO START OF CONSTRUCTION.
13. INDOOR AC UNITS TO BE POWERED FROM OUTDOOR CU. COORDINATE WITH MANUFACTURER RECOMMENDATIONS FOR OVERCURRENT PROTECTION OF AC UNIT.
14. PROVIDE DOUBLE GANG BOX WITH (1) 1" EMPTY DATA ROUTED CONCEALED BACK TO THE NEAREST ACCESSIBLE CEILING SPACE. COORDINATE FINAL ROUTING WITH LOW VOLTAGE CONTRACTOR, ARCHITECT AND GC PRIOR TO ROUGH-IN.
15. PROVIDE (2) 4" FLOOR SLEEVES FOR LOW VOLTAGE CABLING ROUTING. FIELD VERIFY FINAL LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.
16. PROVIDE A HILTI FIRE SLEEVE FOR LOW VOTLAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-S. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.
17. PROVIDE A HILTI FIRE SLEEVE FOR LOW VOTLAGE CABLE ROUTING. PROVIDE A MODEL CFS-MSL-L. FIELD VERIFY FINAL MOUNTING HEIGHT AND LOCATION WITH LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.
18. PROVIDE A 2 1/2" CONDUIT SLEEVE FOR LOW VOLTAGE CABLE ROUTING. FIELD VERIFY FINAL MOUNTING HEIGHT, LOCATION AND ROUTING WITH THE LOW VOLTAGE CONSULTANT, OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.
FIRE ALARM SYSTEM VIA DUCT SMOKE DETECTORS.

GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS). PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

GENERAL LV NOTE:
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REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

CONDUIT ROUTING NOTE

THE MAXIMUM SIZE CONDUIT ALLOWED TO BE ROUTED ABOVE LOBBY 1303 STRUCTURAL ROOF CEILING IS A 1" CONDUIT. ANYTHING LARGER THAN A 1" CONDUIT WILL NEED TO BE ROUTED BELOW GRADE. PRIOR TO ROUTING ANY CONDUIT PATHWAYS ABOVE THE LOBBY 1303 STRUCTURAL ROOF CEILING FINAL APPROVAL MUST BE OBTAINED FROM THE ARCHITECT AND GC PRIOR TO THE START OF CONSTRUCTIONS.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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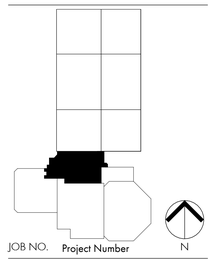

JOB NO. Project Number

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SHEET TITLE

SECOND FLOOR ELECTRICAL PLAN - UNIT 2300A

SHEET NO.

E421.d

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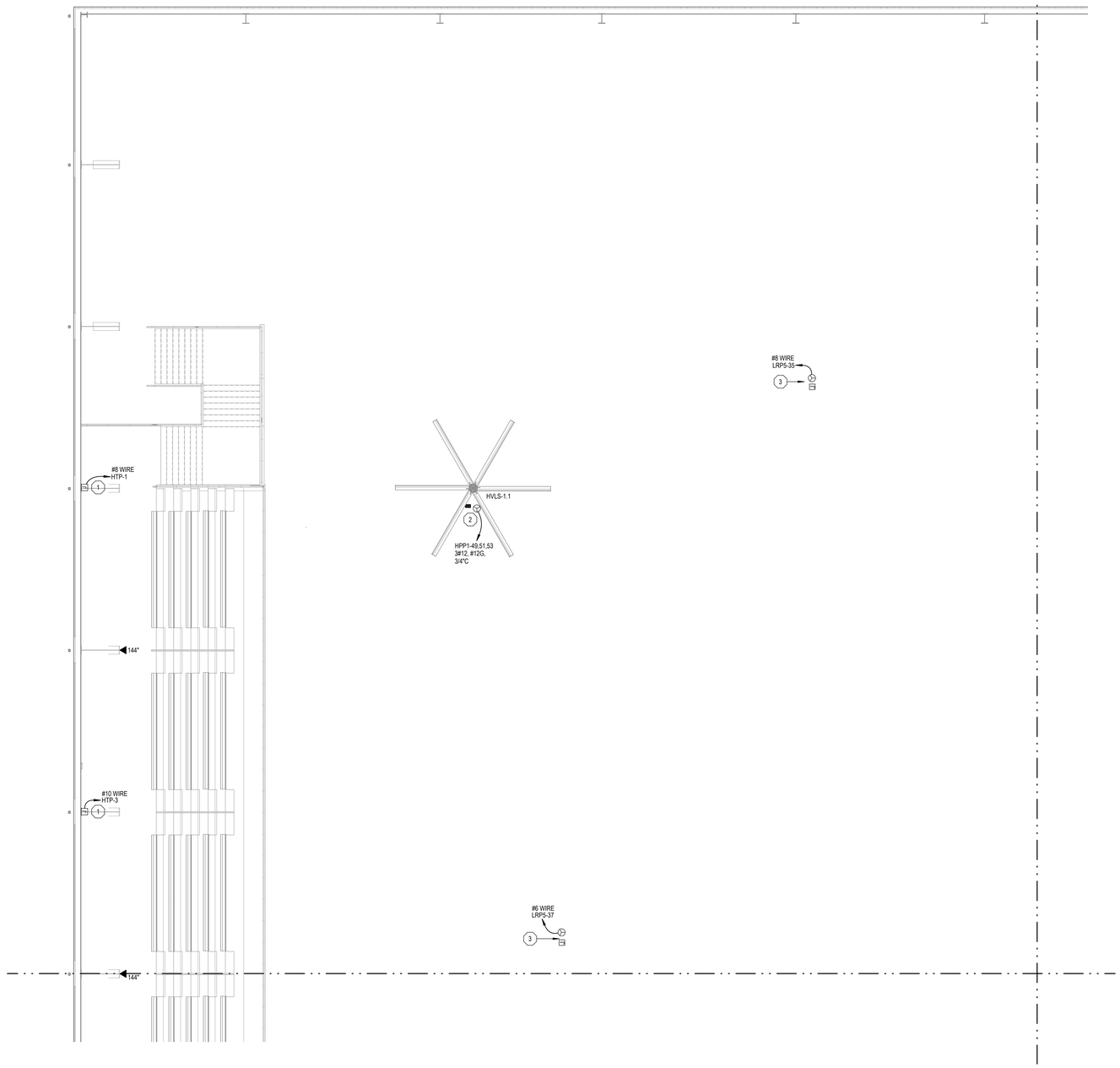

1 E421.f **SECOND FLOOR ELECTRICAL PLAN - UNIT 2400A**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 RAYCHEM HEAT TRACE SIMILAR TO GM-2X OR APPROVED EQUAL. PROVIDE (1) CONTINOUS HEAT TRACE RUN THAT WILL BE LOOPED IN THE GUTTER AND DOWN SPOUTS. DOWN SPOUT HEAT TRACE RUNS SHALL EXTEND 4' BELOW FINISH GRADE TO BELOW FROST LINE DEPTH. JUNCTION BOX WILL BE INSTALLED HIGH UP UNDER THE INTERIOR ROOF FRAMING STRUCTURE AT THE SAME HEIGHT AS THE EXTERIOR GUTTER SYSTEM. REFER TO MANUFACTURERS LAYOUT SHOP DRAWINGS AND INSTALLATION INSTRUCTIONS FOR ALL CABLE LENGTHS, MOUNTING DETAILS, AND COMPLETE DETAIL INSTALLATION INSTRUCTIONS. VERIY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION.

2 PROVIDE POWER CONNECTION TO CEILING MOUNTED FAN. STARTER/DISCONNECT PROVIDED BY THE MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. PROVIDE L16-20R TWIST LOCK RECEPTACLE AT FAN LOCATION. FAN WILL BE CONTROLLED BY A CONTROL PANEL SUPPLIED FROM THE FAN MANUFACTURER. FINAL CONTROL PANEL LOCATION SHALL BE COORDINATED WITH THE OWNER AND EQUIPMENT VENDOR PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY UNISTRUT, MOUNTING HARDWARE, AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL CEILING FAN SYSTEM.

3 PROVIDE 120V POWER TO ATHLETIC FIELD NET MOTOR. PROVIDE AN EMPTY JUNCTION BOX WITH 1" EMPTY CONDUIT PATHWAY ROUTED BACK TO TOUCH SCREEN CONTROL PANEL LOCATED ON THE WALL OUTSIDE OF ELECTRICAL 1412. REFER TO KEYNOTE 3 ON SHEET E411 h FOR TOUCH SCREEN LOCATION. FINAL MOTOR LOCATION AND MOUNTING HEIGHT WILL NEED TO BE VERIFIED WITH ATHLETIC EQUIPMENT DESIGN `FORESITES` DRAWINGS AND GC PRIOR TO ROUGH-IN.

GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS). PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

GENERAL LV NOTE:
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REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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HOWELL PUBLIC SCHOOLS

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SECOND FLOOR ELECTRICAL PLAN - UNIT 2400A

SHEET NO.
E421.f

STATE OF MICHIGAN
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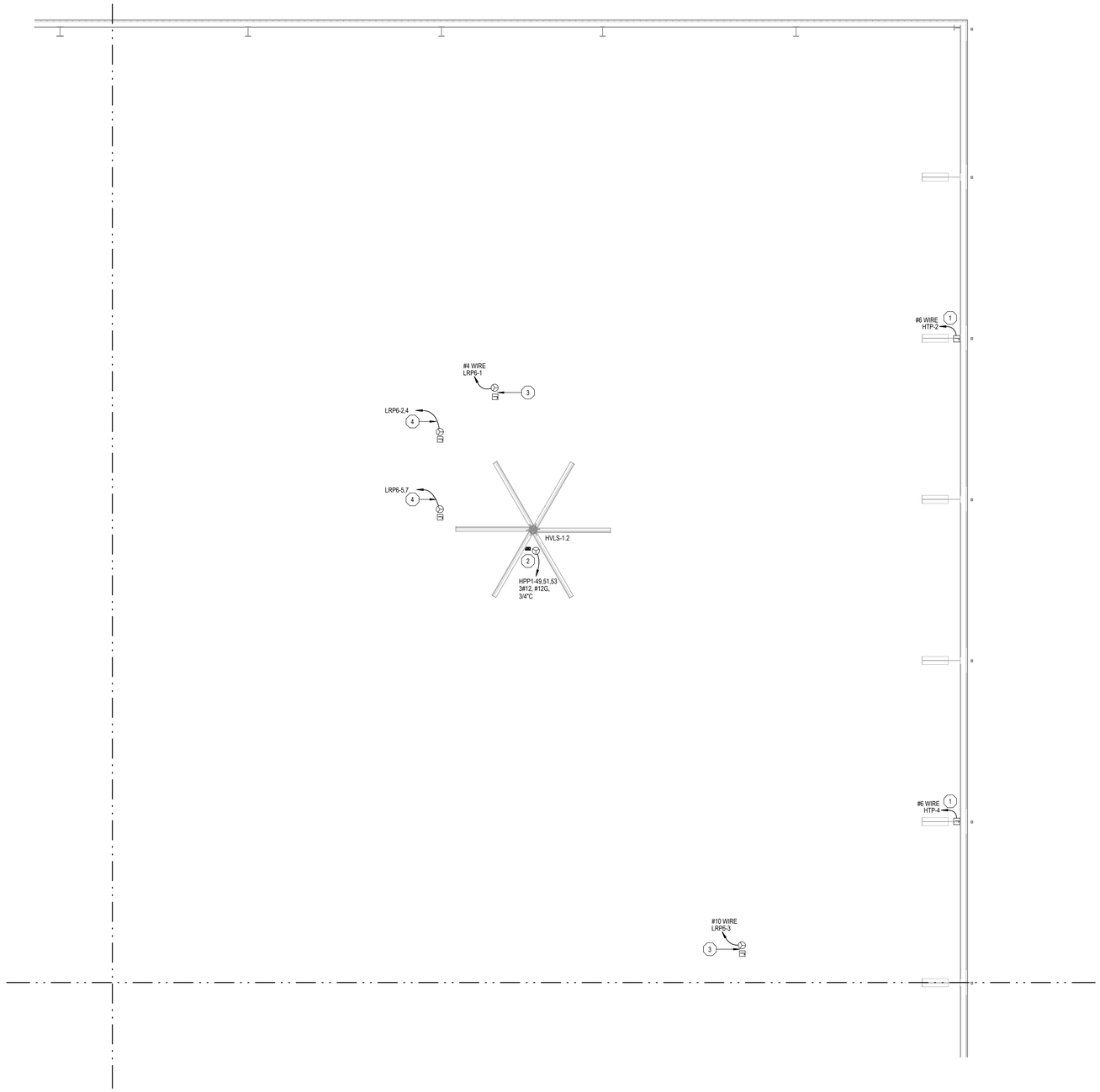

1 E421.g **SECOND FLOOR ELECTRICAL PLAN - UNIT 2400B**

SCALE = 1/8" = 1'-0"

KEYNOTES:

1 RAYCHEM HEAT TRACE SIMILAR TO GM-2X OR APPROVED EQUAL. PROVIDE (1) CONTINOUS HEAT TRACE RUN THAT WILL BE LOOPED IN THE GUTTER AND DOWN SPOUTS. DOWN SPOUT HEAT TRACE RUNS SHALL EXTEND 4' BELOW FINISH GRADE TO BELOW FROST LINE DEPTH. JUNCTION BOX WILL BE INSTALLED HIGH UP UNDER THE INTERIOR ROOF FRAMING STRUCTURE AT THE SAME HEIGHT AS THE EXTERIOR GUTTER SYSTEM. REFER TO MANUFACTURERS LAYOUT SHOP DRAWINGS AND INSTALLATION INSTRUCTIONS FOR ALL CABLE LENGTHS, MOUNTING DETAILS, AND COMPLETE DETAIL INSTALLATION INSTRUCTIONS. VERIFY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION.

2 PROVIDE POWER CONNECTION TO CEILING MOUNTED FAN. STARTER/DISCONNECT PROVIDED BY THE MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. PROVIDE L16-20R TWIST LOCK RECEPTACLE AT FAN LOCATION. FAN WILL BE CONTROLLED BY A CONTROL PANEL SUPPLIED FROM THE FAN MANUFACTURER. FINAL CONTROL PANEL LOCATION SHALL BE COORDINATED WITH THE OWNER AND EQUIPMENT VENDOR PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY UNISTRUT, MOUNTING HARDWARE, AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL CEILING FAN SYSTEM.

3 PROVIDE 120V POWER TO ATHLETIC FIELD NET MOTOR. PROVIDE AN EMPTY JUNCTION BOX WITH 1" EMPTY CONDUIT PATHWAY ROUTED BACK TO TOUCH SCREEN CONTROL PANEL LOCATED ON THE WALL OUTSIDE OF ELECTRICAL 1412. REFER TO KEYNOTE 3 ON SHEET E411.h FOR TOUCH SCREEN LOCATION. FINAL MOTOR LOCATION AND MOUNTING HEIGHT WILL NEED TO BE VERIFIED WITH ATHLETIC EQUIPMENT DESIGN `FORESITES` DRAWINGS AND GC PRIOR TO ROUGH-IN.

4 PROVIDE 208V POWER TO BATTING CAGE MOTOR. PROVIDE AN EMPTY JUNCTION BOX WITH 1" EMPTY CONDUIT PATHWAY ROUTED BACK TO TOUCH SCREEN CONTROL PANEL LOCATED ON THE WALL OUTSIDE OF ELECTRICAL 1412. REFER TO KEYNOTE 3 ON SHEET E411.h FOR TOUCH SCREEN LOCATION. FINAL MOTOR LOCATION AND MOUNTING HEIGHT WILL NEED TO BE VERIFIED WITH ATHLETIC EQUIPMENT DESIGN `FORESITES` DRAWINGS AND GC PRIOR TO ROUGH-IN.

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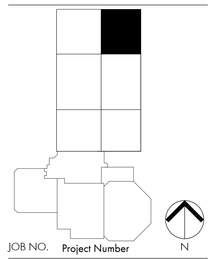

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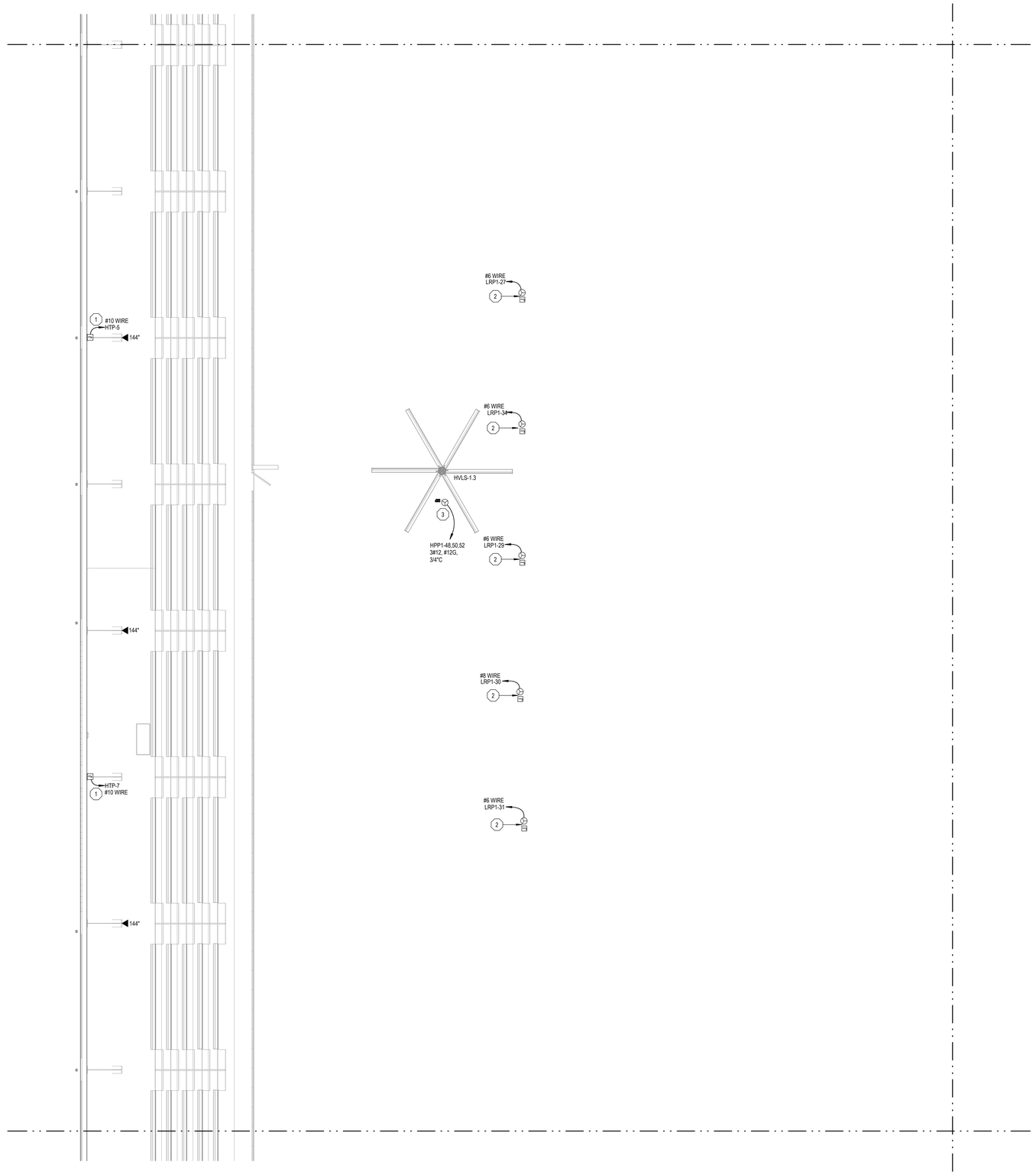

1 E421.h **SECOND FLOOR ELECTRICAL PLAN - UNIT 2400C**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 RAYCHEM HEAT TRACE SIMILAR TO GM-2X OR APPROVED EQUAL. PROVIDE (1) CONTINOUS HEAT TRACE RUN THAT WILL BE LOOPED IN THE GUTTER AND DOWN SPOUTS. DOWN SPOUT HEAT TRACE RUNS SHALL EXTEND 4' BELOW FINISH GRADE TO BELOW FROST LINE DEPTH. JUNCTION BOX WILL BE INSTALLED HIGH UP UNDER THE INTERIOR ROOF FRAMING STRUCTURE AT THE SAME HEIGHT AS THE EXTERIOR GUTTER SYSTEM. REFER TO MANUFACTURERS LAYOUT SHOP DRAWINGS AND INSTALLATION INSTRUCTIONS FOR ALL CABLE LENGTHS, MOUNTING DETAILS, AND COMPLETE DETAIL INSTALLATION INSTRUCTIONS. VERIY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION.

2 PROVIDE 120V POWER TO ATHLETIC FIELD NET MOTOR. PROVIDE AN EMPTY JUNCTION BOX WITH 1" EMPTY CONDUIT PATHWAY ROUTED BACK TO TOUCH SCREEN CONTROL PANEL LOCATED ON THE WALL OUTSIDE OF ELECTRICAL 1412. REFER TO KEYNOTE 3 ON SHEET E411.h FOR TOUCH SCREEN LOCATION. FINAL MOTOR LOCATION AND MOUNTING HEIGHT WILL NEED TO BE VERIFIED WITH ATHLETIC EQUIPMENT DESIGN `FORESITES` DRAWINGS AND GC PRIOR TO ROUGH-IN.

3 PROVIDE POWER CONNECTION TO CEILING MOUNTED FAN. STARTER/DISCONNECT PROVIDED BY THE MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. PROVIDE L16-20R TWIST LOCK RECEPTACLE AT FAN LOCATION. FAN WILL BE CONTROLLED BY A CONTROL PANEL SUPPLIED FROM THE FAN MANUFACTURER. FINAL CONTROL PANEL LOCATION SHALL BE COORDINATED WITH THE OWNER AND EQUIPMENT VENDOR PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY UNISTRUT, MOUNTING HARDWARE, AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL CEILING FAN SYSTEM.

GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS). PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE
SECOND FLOOR ELECTRICAL PLAN - UNIT 2400C

SHEET NO.
E421.h

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
LICENSED PROFESSIONAL ENGINEER

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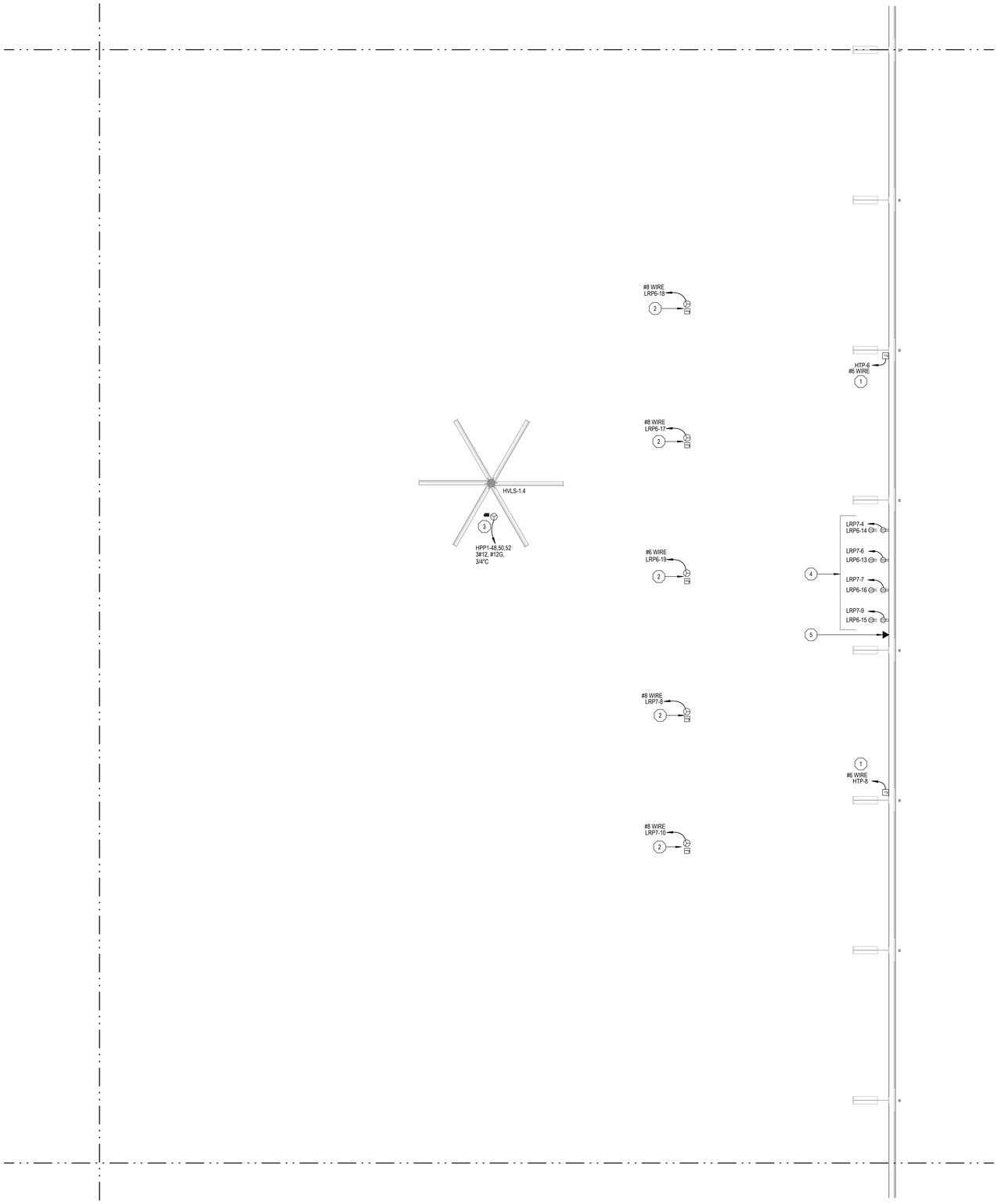

1 E421.j **SECOND FLOOR ELECTRICAL PLAN - UNIT 2400D**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1. RAYCHEM HEAT TRACE SIMILAR TO GM-2X OR APPROVED EQUAL. PROVIDE (1) CONTINOUS HEAT TRACE RUN THAT WILL BE LOOPED IN THE GUTTER AND DOWN SPOUTS. DOWN SPOUT HEAT TRACE RUNS SHALL EXTEND 4' BELOW FINISH GRADE TO BELOW FROST LINE DEPTH. JUNCTION BOX WILL BE INSTALLED HIGH UP UNDER THE INTERIOR ROOF FRAMING STRUCTURE AT THE SAME HEIGHT AS THE EXTERIOR GUTTER SYSTEM. REFER TO MANUFACTURERS LAYOUT SHOP DRAWINGS AND INSTALLATION INSTRUCTIONS FOR ALL CABLE LENGTHS, MOUNTING DETAILS, AND COMPLETE DETAIL INSTALLATION INSTRUCTIONS. VERIY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION.
2. PROVIDE 120V POWER TO ATHLETIC FIELD NET MOTOR. PROVIDE AN EMPTY JUNCTION BOX WITH 1" EMPTY CONDUIT PATHWAY ROUTED BACK TO TOUCH SCREEN CONTROL PANEL LOCATED ON THE WALL OUTSIDE OF ELECTRICAL 1412. REFER TO KEYNOTE 3 ON SHEET E411.h FOR TOUCH SCREEN LOCATION. FINAL MOTOR LOCATION AND MOUNTING HEIGHT WILL NEED TO BE VERIFIED WITH ATHLETIC EQUIPMENT DESIGN `FORESITES` DRAWINGS AND GC PRIOR TO ROUGH-IN.
3. PROVIDE POWER CONNECTION TO CEILING MOUNTED FAN. STARTER/DISCONNECT PROVIDED BY THE MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. PROVIDE L16-20R TWIST LOCK RECEPTACLE AT FAN LOCATION. FAN WILL BE CONTROLLED BY A CONTROL PANEL SUPPLIED FROM THE FAN MANUFACTURER. FINAL CONTROL PANEL LOCATION SHALL BE COORDINATED WITH THE OWNER AND EQUIPMENT VENDOR PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY UNISTRUT, MOUNTING HARDWARE, AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL CEILING FAN SYSTEM.
4. POWER TO LED VIDEO WALL ARRAY. OUTLET LOCATIONS AND MOUNTING HEIGHTS WILL NEED TO BE VERIFIED WITH THE VIDEO WALL VENDOR AND HAV DESIGN. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION. REFER TO HAV DESIGN DRAWINGS FOR ADDITIONAL INFORMATION.
5. PROVIDE (1) 1 1/4" EMPTY DATA CONDUIT PATHWAY WITH PULLSTRING ROUTED BELOW GRADE TO TIMING BOOTH 2404. COORDINATE FINAL CONDUIT SIZE, CONDUIT ROUTING PATH, AND STUBUP LOCATIONS WITH THE OWNER, FIELD WALL VENDOR AND HAV DESIGN PRIOR TO ROUGH-IN. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION.

GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS). PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

GENERAL LV NOTE:
ALL LOW VOLTAGE CABLING FEEDS SCHEDULED TO SERVE (PANEL MONITORING, SWITCHBOARD MONITORING, GENERATOR MONITORING, INTERIOR LIGHTING CONTROLS MONITORING SHALL INTERFACE BACK TO THE IT RACK LOCATION IN TECH 2303. REFER TO TECHNOLOGY SHEETS (T-SHEETS) FOR ADDITIONAL INFORMATION.

REFER TO TECHNOLOGY SHEETS (T-SERIES SHEETS) FOR A LOW VOLTAGE DEVICE AND WIRING INFORMATION.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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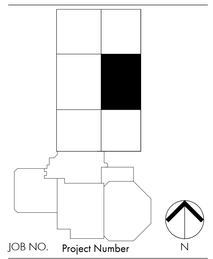

JOB NO. Project Number

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SHEET TITLE
SECOND FLOOR ELECTRICAL PLAN - UNIT 2400D

SHEET NO.
E421.j

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
LICENSED PROFESSIONAL ENGINEER

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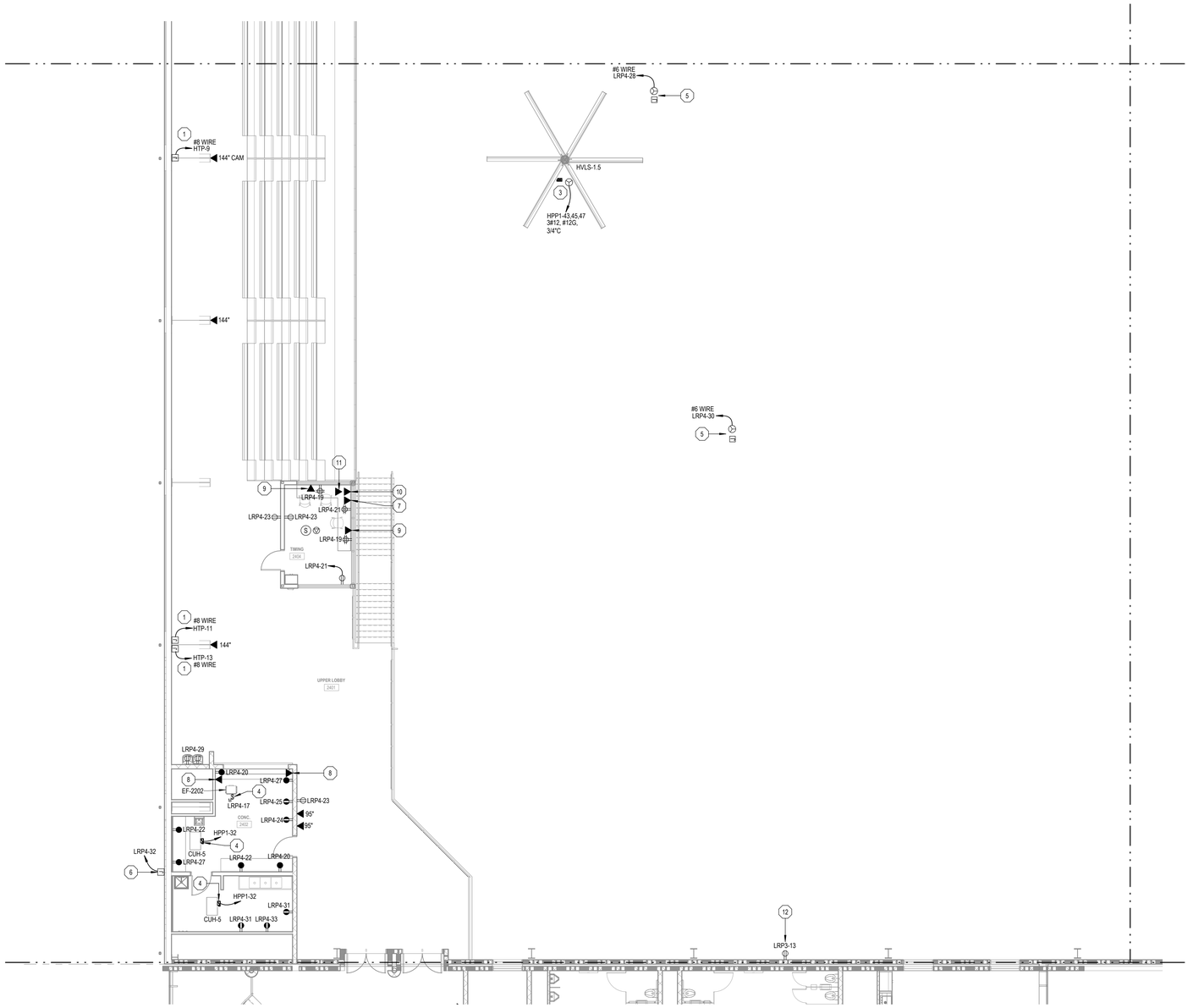

1 **SECOND FLOOR ELECTRICAL PLAN - UNIT 2400E**
E421.k SCALE = 1/8" = 1'-0"

KEYNOTES:

1 RAYCHEM HEAT TRACE SIMILAR TO GM-2X OR APPROVED EQUAL. PROVIDE (1) CONTINOUS HEAT TRACE RUN THAT WILL BE LOOPED IN THE GUTTER AND DOWN SPOUTS. DOWN SPOUT HEAT TRACE RUNS SHALL EXTEND 4' BELOW FINISH GRADE TO BELOW FROST LINE DEPTH. JUNCTION BOX WILL BE INSTALLED HIGH UP UNDER THE INTERIOR ROOF FRAMING STRUCTURE AT THE SAME HEIGHT AS THE EXTERIOR GUTTER SYSTEM. REFER TO MANUFACTURERS LAYOUT SHOP DRAWINGS AND INSTALLATION INSTRUCTIONS FOR ALL CABLE LENGTHS, MOUNTING DETAILS, AND COMPLETE DETAIL INSTALLATION INSTRUCTIONS. VERIFY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION.

3 PROVIDE POWER CONNECTION TO CEILING MOUNTED FAN. STARTER/DISCONNECT PROVIDED BY THE MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. PROVIDE L16-20R TWIST LOCK RECEPTACLE AT FAN LOCATION. FAN WILL BE CONTROLLED BY A CONTROL PANEL SUPPLIED FROM THE FAN MANUFACTURER. FINAL CONTROL PANEL LOCATION SHALL BE COORDINATED WITH THE OWNER AND EQUIPMENT VENDOR PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY UNISTRUT, MOUNTING HARDWARE, AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL CEILING FAN SYSTEM.

4 DISCONNECT INTEGRAL TO THE EQUIPMENT FROM THE FACTORY.

5 PROVIDE 120V POWER TO ATHLETIC FIELD NET MOTOR. PROVIDE AN EMPTY JUNCTION BOX WITH 1" EMPTY CONDUIT PATHWAY ROUTED BACK TO TOUCH SCREEN CONTROL PANEL LOCATED ON THE WALL OUTSIDE OF ELECTRICAL 1412. REFER TO KEYNOTE 3 ON SHEET E411.h FOR TOUCH SCREEN LOCATION. FINAL MOTOR LOCATION AND MOUNTING HEIGHT WILL NEED TO BE VERIFIED WITH ATHLETIC EQUIPMENT DESIGN 'FORESITES' DRAWINGS AND GC PRIOR TO ROUGH-IN.

6 POWER FOR BUILDING MOUNTED SIGN LOCATED ON INSIDE OF BUILDING. SIGN CIRCUIT SHALL BE ROUTED THROUGH A ROOM CONTROLLER WITH INTEGRAL PROGRAMMABLE TIME CLOCK LOCATED ABOVE CONCESSION STORAGE 2403 ACCESSIBLE CEILING. FINAL SIGN CONNECTIONS SHALL BE MADE WEATHER TIGHT. COORDINATE FINAL LOCATIONS FOR POWER CONNECTION, JUNCTION BOXE'S, AND ELECTRICAL REQUIREMENTS WITH THE SIGN VENDOR PRIOR TO ROUGH-IN. SIGN SHALL OPERATE FROM DUSK TO DAWN VIA A WALL MOUNTED EXTERIOR PHOTOCELL BUT TURN OFF AT MIDNIGHT OR BUISNESS CLOSING WHICHEVER IS LATER AND TURN BACK ON AT 6AM OR BUISNESS OPENING WHICHEVER IS EARLIER VIA A SCHEDULE. UPON SUN RISE SIGN SHALL SHUT OFF VIA BUILDING MOUNTED PHOTOCELL. FIELD VERIFY FINAL MOUNTING HEIGHT, LOCATION WITH OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

7 PROVIDE (1) 1 1/4" EMPTY CONDUIT RACEWAY WITH PULLSTRING ROUTED DOWN TO THE FIRST FLOOR AND CONTINUING BELOW GRADE TO THE EAST WALL OF JAN 1305 SPACE. STUB CONDUIT UP INTO WALL CAVITY EXTENDING UP TO JUNCTION BOX LOCATED IN TECH 2103 ON THE EAST WALL. REFER TO HAV LV CONSULTANTS DRAWINGS SHEET TA202C FOR ADDITIONAL INFORMATION.

8 MOUNT DATA OUTLET 4" ABOVE COUNTER BACKSPLASH OR COUNTERTOP FOR POS SYSTEM.

9 ROUTE ASSOCIATED EMPTY DATA CONDUIT DOWN TO THE LOWER LEVEL ABOVE AN ACCESSIBLE CEILING.

10 PROVIDE A RECESSED DOUBLE GANG JUNCTION BOX TO LAND (2) INCOMING 1 1/4 " C FROM THE INGRADE BOX LOCATED AT THE TRACK FINISH LINE. REFER TO KEYNOTE 9 ON SHEET E411.k FOR ADDITIONAL INFORMATION. COORDINATE ALL ELECTRICAL REQUIREMENTS AND FINAL JUNCTION BOX LOCATION WITH THE OWNER, ARCHITECT AND GC PRIOR TO THE START OF CONSTRUCTION.

11 PROVIDE A RECESSED DOUBLE GANG JUNCTION BOX TO LAND (1) INCOMING 1 1/4 " C FROM THE TRACK FINISH LINE CAMERA. REFER TO KEYNOTE 11 ON SHEET E411.k FOR ADDITIONAL INFORMATION. COORDINATE ALL ELECTRICAL REQUIREMENTS AND FINAL JUNCTION BOX LOCATION WITH THE OWNER, ARCHITECT AND GC PRIOR TO THE START OF CONSTRUCTION.

12 PROVIDE POWER TO WALL MOUNTED CLOCK. FIELD VERIFY CLOCK MOUNTING HEIGHT AND FINAL LOCATION WITH OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION.

GENERAL AV NOTE:
E.C. IS RESPONSIBLE FOR ALL SYSTEMS NOTED ON THE AV CONSULTANTS DRAWINGS (TA SERIES SHEETS), PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM. COORDINATE WITH AV CONSULTANT AND G.C. FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO START OF CONSTRUCTION.

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ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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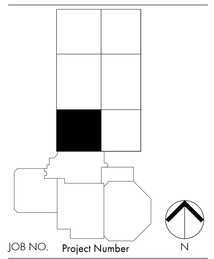

JOB NO. Project Number

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SHEET TITLE
SECOND FLOOR ELECTRICAL PLAN - UNIT 2400E

SHEET NO.
E421.k

STATE OF MICHIGAN
Robin Hyman
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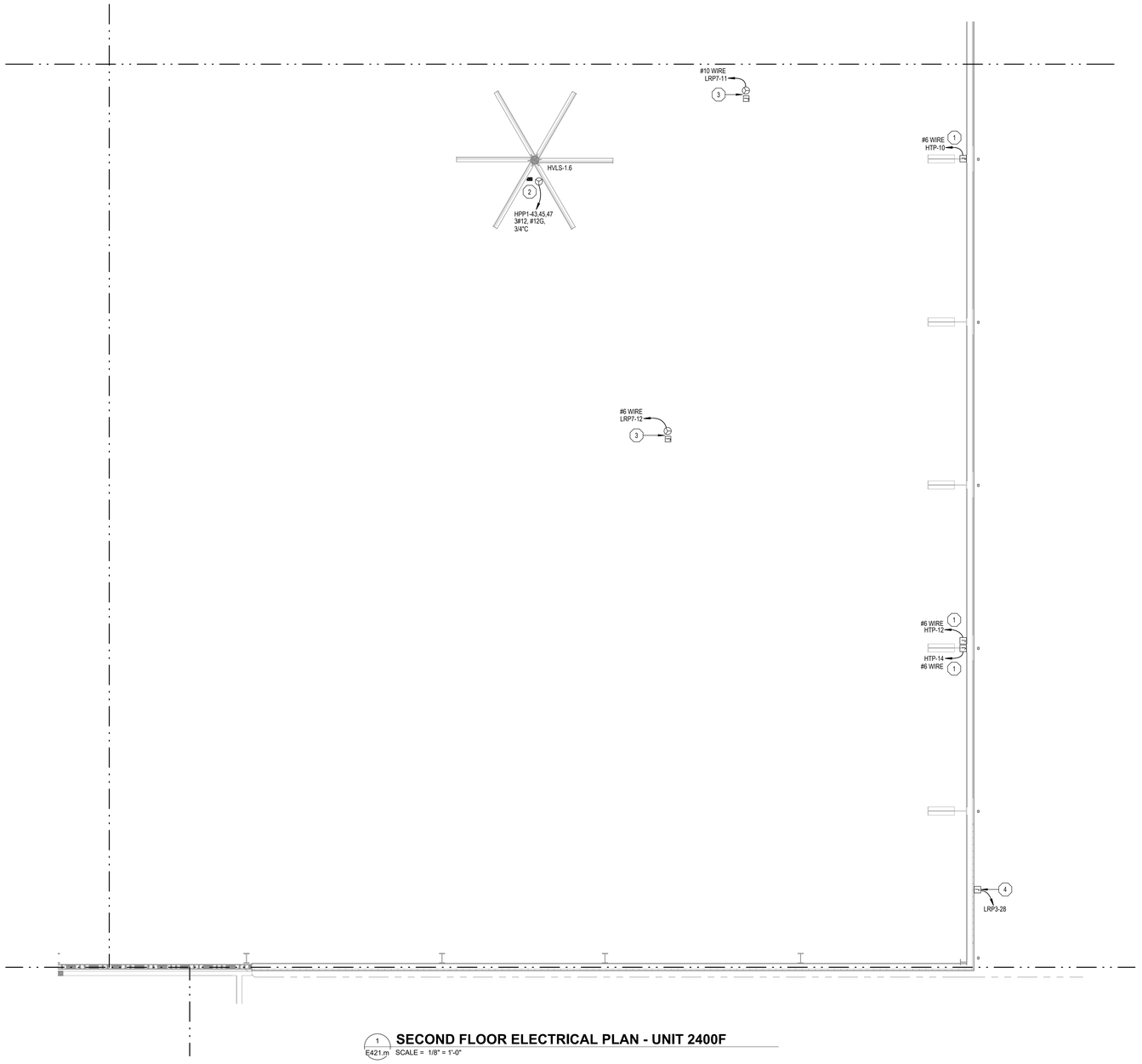

1 E421.m **SECOND FLOOR ELECTRICAL PLAN - UNIT 2400F**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 RAYCHEM HEAT TRACE SIMILAR TO GM-2X OR APPROVED EQUAL. PROVIDE (1) CONTINOUS HEAT TRACE RUN THAT WILL BE LOOPED IN THE GUTTER AND DOWN SPOUTS. DOWN SPOUT HEAT TRACE RUNS SHALL EXTEND 4' BELOW FINISH GRADE TO BELOW FROST LINE DEPTH. JUNCTION BOX WILL BE INSTALLED HIGH UP UNDER THE INTERIOR ROOF FRAMING STRUCTURE AT THE SAME HEIGHT AS THE EXTERIOR GUTTER SYSTEM. REFER TO MANUFACTURERS LAYOUT SHOP DRAWINGS AND INSTALLATION INSTRUCTIONS FOR ALL CABLE LENGTHS, MOUNTING DETAILS, AND COMPLETE DETAIL INSTALLATION INSTRUCTIONS. VERIY ALL ELECTRICAL REQUIREMENTS WITH EQUIPMENT VENDOR PRIOR TO THE START OF CONSTRUCTION.

2 PROVIDE POWER CONNECTION TO CEILING MOUNTED FAN. STARTER/DISCONNECT PROVIDED BY THE MANUFACTURER AND INSTALLED BY THE ELECTRICAL CONTRACTOR. PROVIDE L16-20R TWIST LOCK RECEPTACLE AT FAN LOCATION. FAN WILL BE CONTROLLED BY A CONTROL PANEL SUPPLIED FROM THE FAN MANUFACTURER. FINAL CONTROL PANEL LOCATION SHALL BE COORDINATED WITH THE OWNER AND EQUIPMENT VENDOR PRIOR TO ROUGH-IN. PROVIDE ALL NECESSARY UNISTRUT, MOUNTING HARDWARE, AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL CEILING FAN SYSTEM.

3 PROVIDE 120V POWER TO ATHLETIC FIELD NET MOTOR. PROVIDE AN EMPTY JUNCTION BOX WITH 1" EMPTY CONDUIT PATHWAY ROUTED BACK TO TOUCH SCREEN CONTROL PANEL LOCATED ON THE WALL OUTSIDE OF ELECTRICAL 1412. REFER TO KEYNOTE 3 ON SHEET E411.h FOR TOUCH SCREEN LOCATION. FINAL MOTOR LOCATION AND MOUNTING HEIGHT WILL NEED TO BE VERIFIED WITH ATHLETIC EQUIPMENT DESIGN 'FORESITES' DRAWINGS AND GC PRIOR TO ROUGH-IN.

4 POWER FOR BUILDING MOUNTED SIGN LOCATED ON INSIDE OF BUILDING. SIGN CIRCUIT SHALL BE ROUTED THROUGH A ROOM CONTROLLER WITH INTEGRAL PROGRAMMABLE TIME CLOCK LOCATED AT APPROXIMATELY 9' WITHIN OPEN WALL FRAMING. FINAL SIGN CONNECTIONS SHALL BE MADE WEATHER TIGHT. COORDINATE FINAL LOCATIONS FOR POWER CONNECTION, JUNCTION BOXE 'S, AND ELECTRICAL REQUIREMENTS WITH THE SIGN VENDOR PRIOR TO ROUGH-IN. SIGN SHALL OPERATE FROM DUSK TO DAWN VIA A WALL MOUNTED EXTERIOR PHOTOCELL BUT TURN OFF AT MIDNIGHT OR BUSINESS CLOSING WHICHEVER IS LATER AND TURN BACK ON AT 6AM OR BUSINESS OPENING WHICHEVER IS EARLIER VIA A SCHEDULE. UPON SUN RISE SIGN SHALL SHUT OFF VIA BUILDING MOUNTED PHOTOCELL. FIELD VERIFY FINAL MOUNTING HEIGHT, LOCATION WITH OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.

GENERAL AV NOTE:
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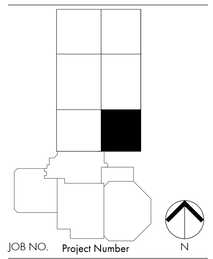

JOB NO. Project Number

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SHEET TITLE
SECOND FLOOR ELECTRICAL PLAN - UNIT 2400F

SHEET NO.
E421.m

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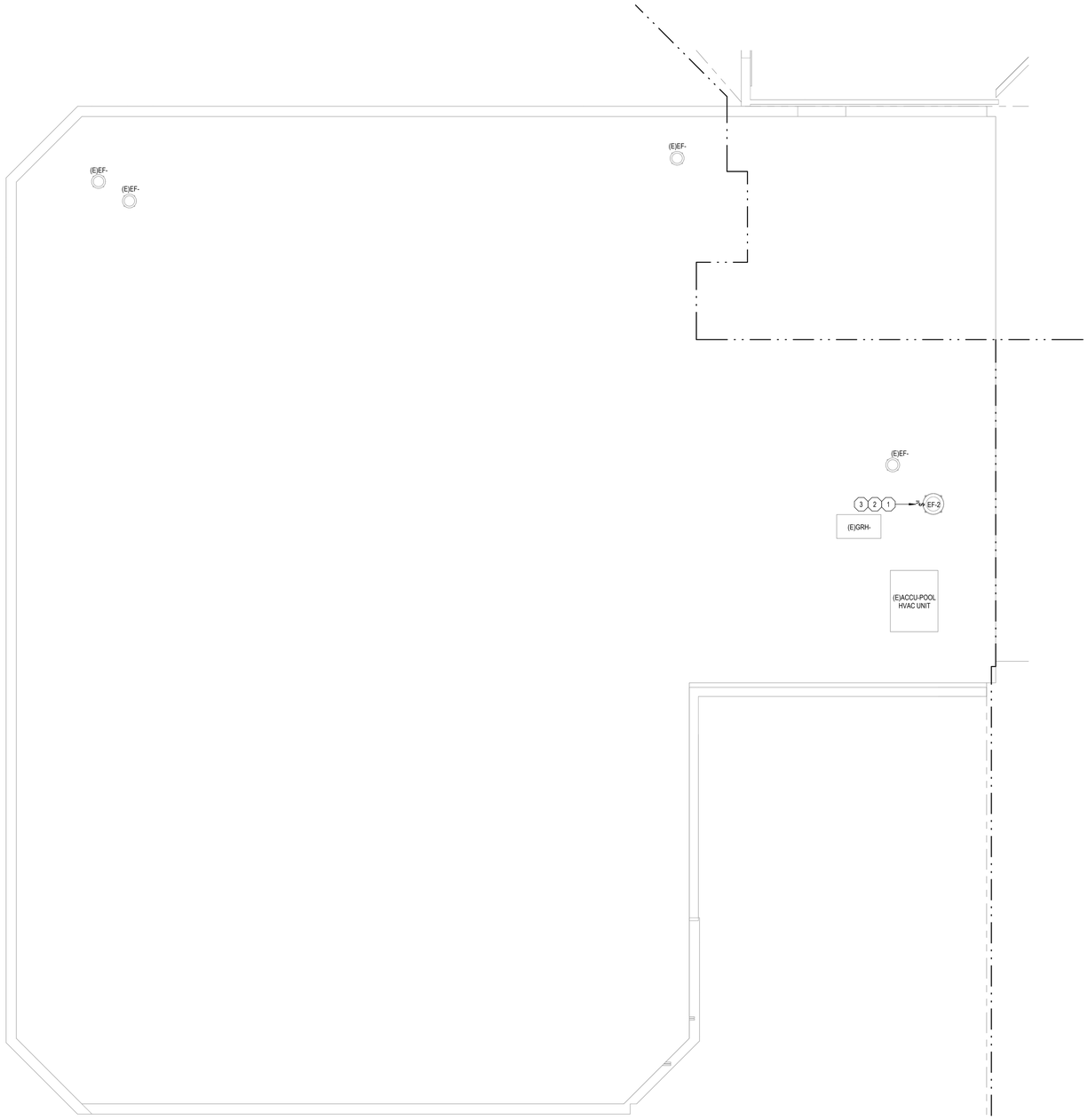

1 E431.a **ROOF ELECTRICAL PLAN - UNIT 3000**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 DISCONNECT BY MECHANICAL INSTALLED FROM THE FACTORY.
2 PROVIDE CONNECTION TO EXHAUST FAN FROM PANEL BP2C4 POLE POSITION 30.
3 EXHAUST FAN IS SCHEDULED TO BE TIED INTO THE BMS PER MECHANICAL DRAWINGS EQUIPMENT SCHEDULES AND CONTROLLED BASED ON PROGRAMMED SCHEDULE. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH MECHANICAL TRADES PRIOR TO START OF CONSTRUCTION.

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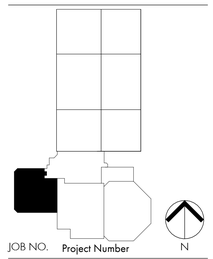

JOB NO. Project Number

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SHEET TITLE

ROOF ELECTRICAL PLAN - UNIT 3000

SHEET NO.

E431.a

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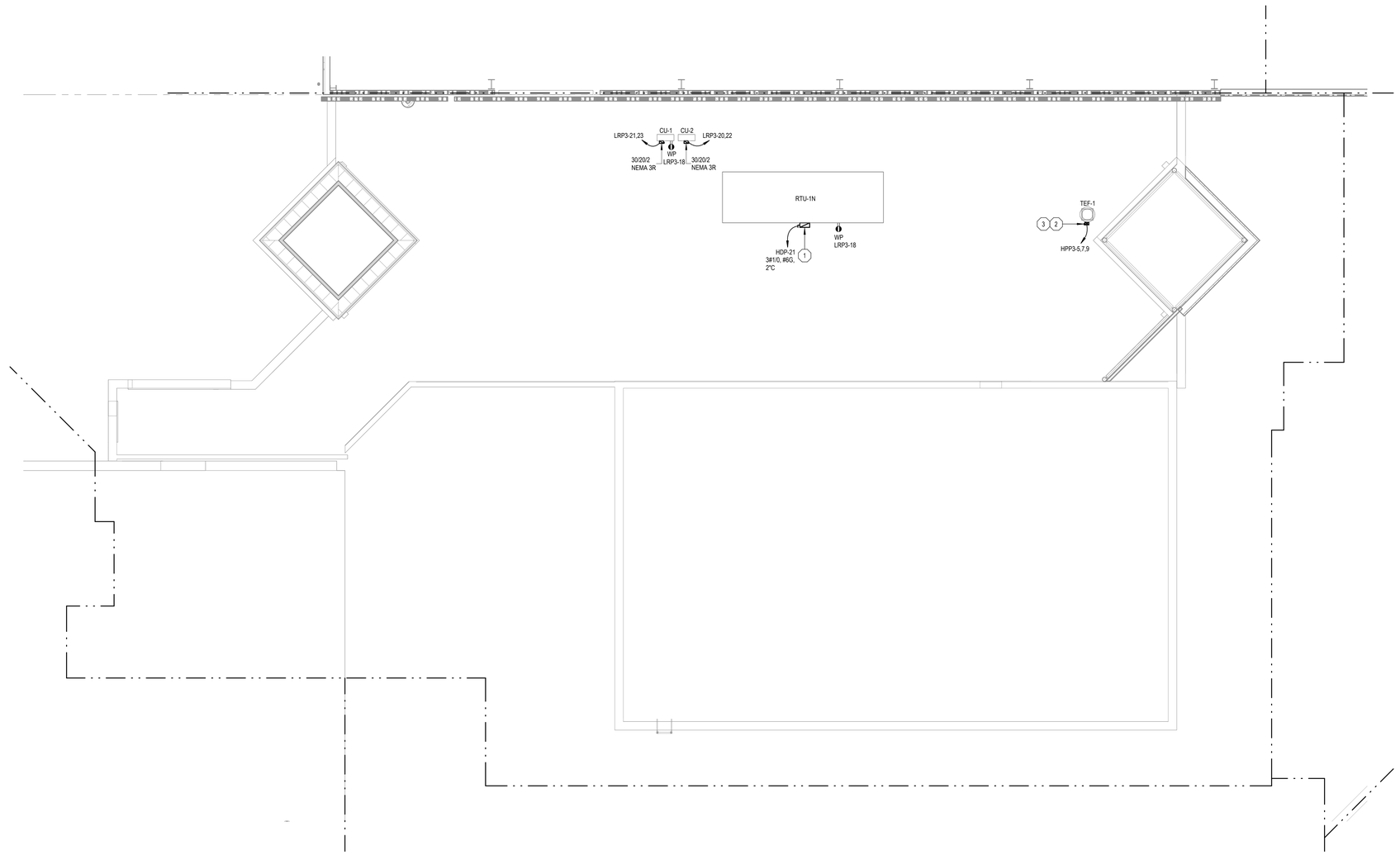

1 E431.d **ROOF ELECTRICAL PLAN - UNIT 3300A**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 DISCONNECT FACTORY INSTALLED FROM THE MAUFACTURER.
2 DISCONNECT BY MECHANICAL INSTALLED FROM THE FACTORY.
3 EXHAUST FAN IS SCHEDULED TO BE TIED INTO THE BMS PER MECHANICAL DRAWINGS EQUIPMENT SCHEDULES AND CONTROLLED BASED ON PROGRAMMED SCHEDULE. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH MECHANICAL TRADES PRIOR TO START OF CONSTRUCTION.

ELECTRICAL CONNECTION NOTE:
PROVIDE REDUCING CONNECTORS FOR ALL ELECTRICAL CONNECTIONS SHOWN WITH LARGER WIRE SIZES THAT HAVE BEEN INCREASED FOR VOLTAGE DROP. THESE WOULD INCLUDE BUT NOT LIMITED TO (LIGHT FIXTURES, MECHANICAL EQUIPMENT DISCONNECTS, RECEPTACLE OUTLETS, ELECTRICAL PANELS, ETC.).

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Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE
ROOF ELECTRICAL PLAN - UNIT 3300A

SHEET NO.
E431.d

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
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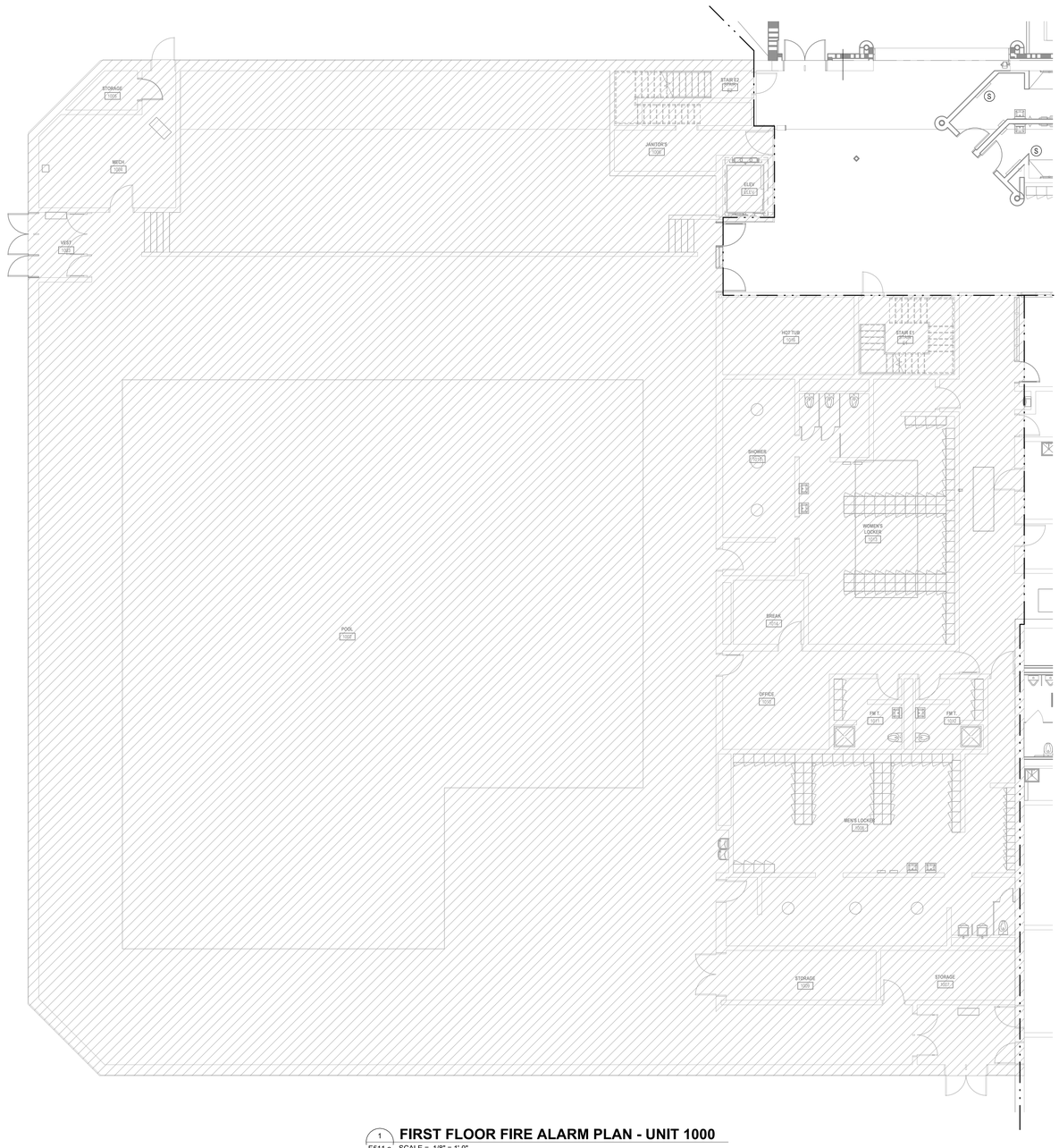

1 **FIRST FLOOR FIRE ALARM PLAN - UNIT 1000**
E511.a SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

ALL EXISTING LOW VOLTAGE FIRE ALARM CABLING MUST BE REMOVED AND REPLACED WITH NEW. REUSE OF EXISTING LOW VOLTAGE FIRE ALARM CABLING WILL NOT BE ALLOWED. ALL FINAL FIRE ALARM DEVICE LOCATIONS WILL NEED TO BE FIELD VERIFIED AND COORDINATED WITH ARCHITECT PRIOR TO START OF CONSTRUCTION. IF ANY EXISTING FA NEED TO REMAIN FOR CODE COMPLIANCE AND CONNECTED TO AN EXISTING FA PANEL CONTRACTOR MUST PROVIDE A CROSS TIE BETWEEN NEW PANEL AND EXISTING PANELS.

IF ANY PORTION OF THE EXISTING FIRE ALARM SYSTEM(S) MUST REMAIN TO KEEP SYSTEMS OPERATIONAL THAT MAY NOT BE COMPATIBLE WITH THE NEW BUILDING FA SYSTEM THE CONTRACTOR WILL NEED TO PROVIDE A CROSS TIE BETWEEN THE NEW FACP AND THE EXISTING FACP(S).

CONTRACTOR WILL NEED TO FIELD VERIFY ALL EXISTING AIR HANDLING UNITS, ROOF TOP UNITS, ENERGY RECOVERY UNITS TO CONFIRM AND TO REPLACE EXISTING DUCT SMOKE DETECTORS WITH NEW DUCT DETECTORS COMPATIBLE WITH THE NEW FIRE ALARM SYSTEM FOR SUPPLY AND RETURN DUCT SYSTEMS.

CONTRACTOR WILL NEED TO REFER TO NEW MECHANICAL DRAWINGS TO PROVIDE NEW DUCT DETECTORS IN THE SUPPLY AND RETURN DUCTS FOR ALL ROOF MOUNTED EQUIPMENT REQUIRED BY CODE.

CONTRACTOR WILL NEED TO VERIFY QUANTITY AND LOCATIONS OF DOOR HOLD OPENS WITH DOOR HARDWARE SCHEDULE AND SPECIFICATIONS. PROVIDE ALL REQUIRED DOOR HOLD OPENS.

PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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Howell Community Center

Howell Public Schools

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE

FIRST FLOOR FIRE ALARM PLAN - UNIT 1000

SHEET NO.

E511.a

STATE OF MICHIGAN
Robin Hyman
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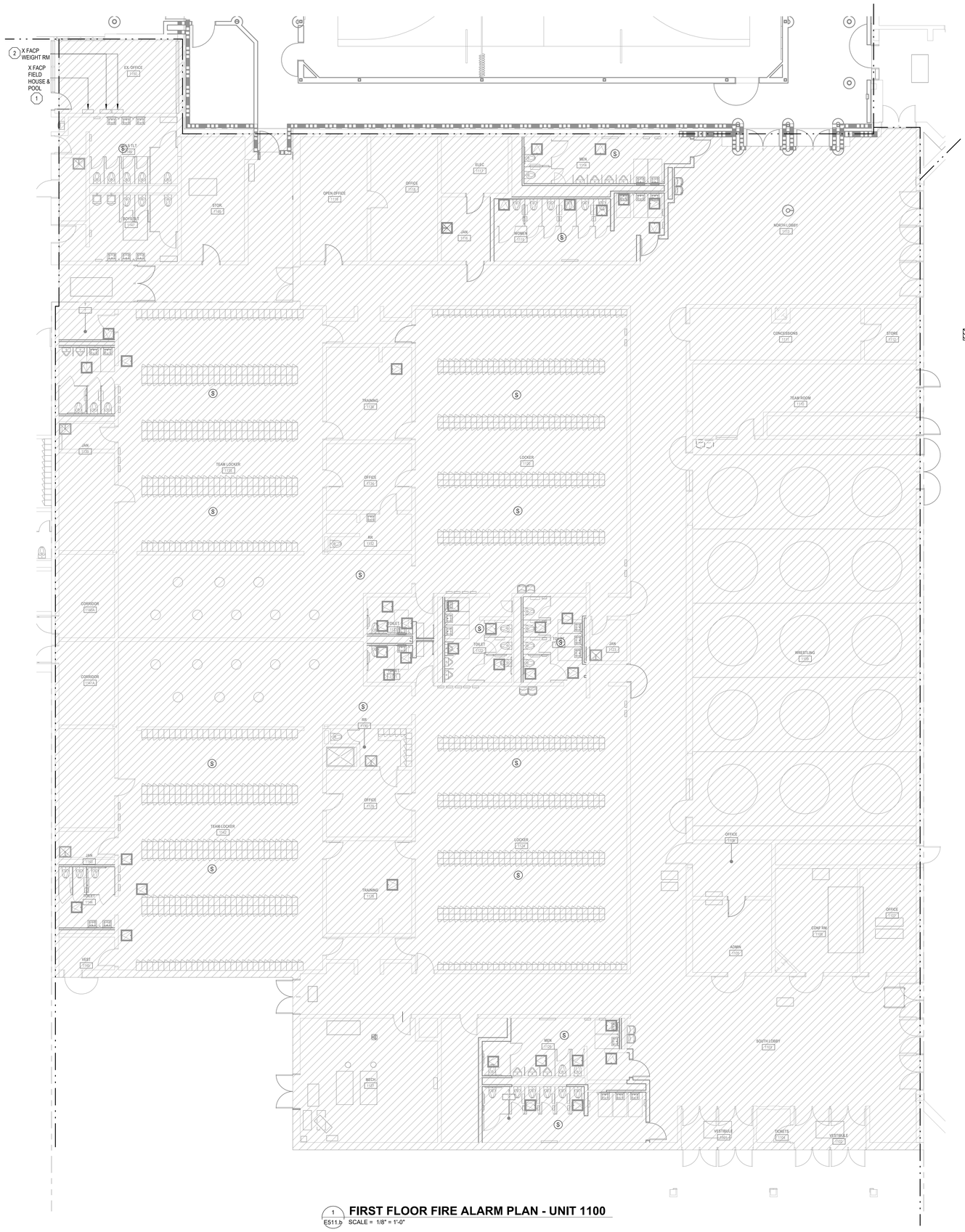

1 E511.b **FIRST FLOOR FIRE ALARM PLAN - UNIT 1100**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 NATIONAL TIME & SIGNAL 901 SERIES FA CONTROL FOR WEIGHT ROOM.
2 SILENT KNIGHT SK-5208 FOR FIELD HOUSE & POOL.

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

ALL EXISTING LOW VOLTAGE FIRE ALARM CABLING MUST BE REMOVED AND REPLACED WITH NEW. REUSE OF EXISTING LOW VOLTAGE FIRE ALARM CABLING WILL NOT BE ALLOWED. ALL FINAL FIRE ALARM DEVICE LOCATIONS WILL NEED TO BE FIELD VERIFIED AND COORDINATED WITH ARCHITECT PRIOR TO START OF CONSTRUCTION. IF ANY EXISTING FA NEED TO REMAIN FOR CODE COMPLIANCE AND CONNECTED TO AN EXISTING FA PANEL CONTRACTOR MUST PROVIDE A CROSS TIE BETWEEN NEW PANEL AND EXISTING PANELS.

IF ANY PORTION OF THE EXISTING FIRE ALARM SYSTEM(S) MUST REMAIN TO KEEP SYSTEMS OPERATIONAL THAT MAY NOT BE COMPATIBLE WITH THE NEW BUILDING FA SYSTEM THE CONTRACTOR WILL NEED TO PROVIDE A CROSS TIE BETWEEN THE NEW FACP AND THE EXISTING FACP(S).

CONTRACTOR WILL NEED TO FIELD VERIFY ALL EXISTING AIR HANDLING UNITS, ROOF TOP UNITS, ENERGY RECOVERY UNITS TO CONFIRM AND TO REPLACE EXISTING DUCT SMOKE DETECTORS WITH NEW DUCT DETECTORS COMPATIBLE WITH THE NEW FIRE ALARM SYSTEM FOR SUPPLY AND RETURN DUCT SYSTEMS.

CONTRACTOR WILL NEED TO REFER TO NEW MECHANICAL DRAWINGS TO PROVIDE NEW DUCT DETECTORS IN THE SUPPLY AND RETURN DUCTS FOR ALL ROOF MOUNTED EQUIPMENT REQUIRED BY CODE.

CONTRACTOR WILL NEED TO VERIFY QUANTITY AND LOCATIONS OF DOOR HOLD OPENS WITH DOOR HARDWARE SCHEDULE AND SPECIFICATIONS. PROVIDE ALL REQUIRED DOOR HOLD OPENS.

PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE
FIRST FLOOR FIRE ALARM PLAN - UNIT 1100

SHEET NO.
E511.b

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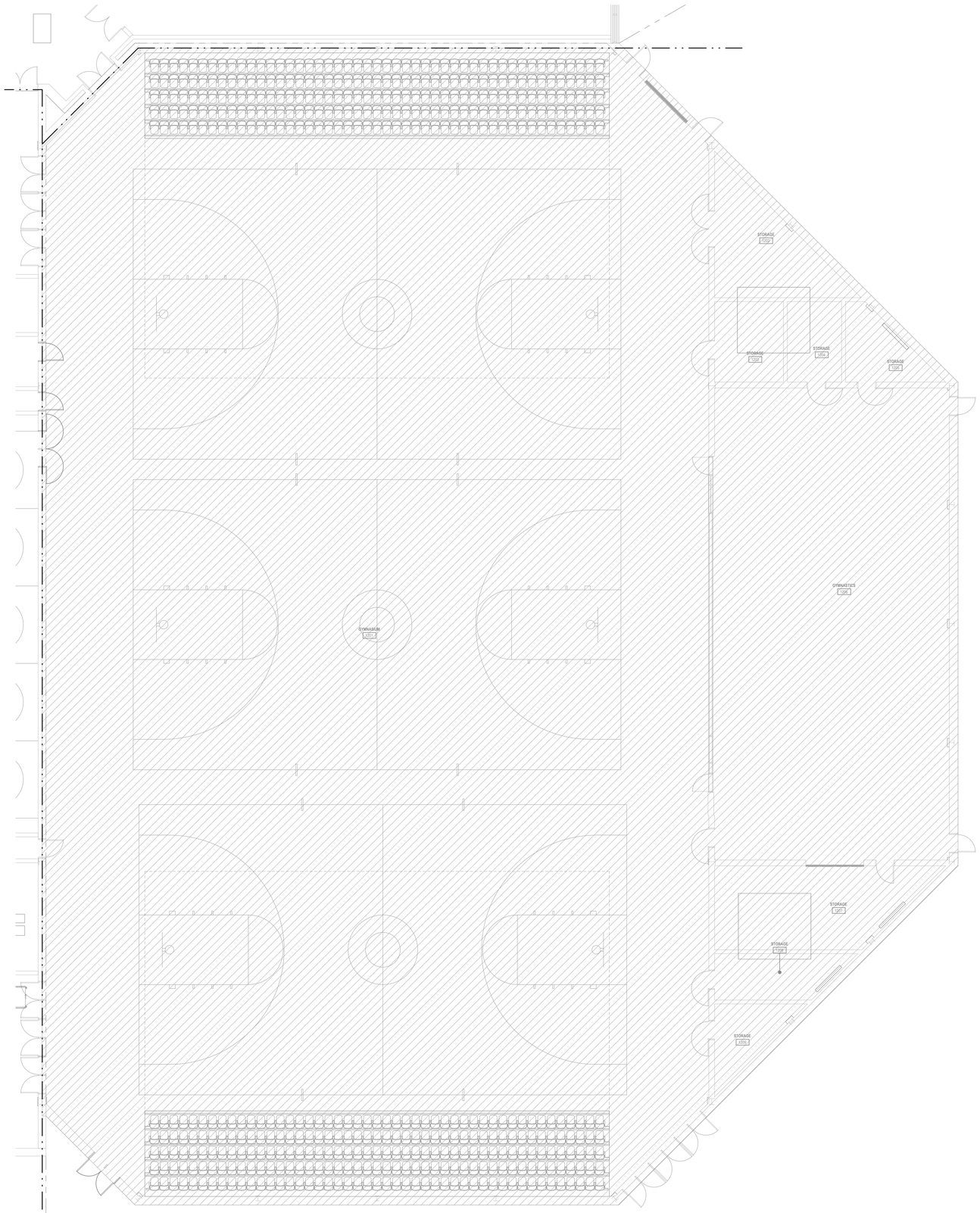

1 E511.c **FIRST FLOOR FIRE ALARM PLAN - UNIT 1200**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

ALL EXISTING LOW VOLTAGE FIRE ALARM CABLING MUST BE REMOVED AND REPLACED WITH NEW. REUSE OF EXISTING LOW VOLTAGE FIRE ALARM CABLING WILL NOT BE ALLOWED. ALL FINAL FIRE ALARM DEVICE LOCATIONS WILL NEED TO BE FIELD VERIFIED AND COORDINATED WITH ARCHITECT PRIOR TO START OF CONSTRUCTION. IF ANY EXISTING FA NEED TO REMAIN FOR CODE COMPLIANCE AND CONNECTED TO AN EXISTING FA PANEL CONTRACTOR MUST PROVIDE A CROSS TIE BETWEEN NEW PANEL AND EXISTING PANELS.

IF ANY PORTION OF THE EXISTING FIRE ALARM SYSTEM(S) MUST REMAIN TO KEEP SYSTEMS OPERATIONAL THAT MAY NOT BE COMPATIBLE WITH THE NEW BUILDING FA SYSTEM THE CONTRACTOR WILL NEED TO PROVIDE A CROSS TIE BETWEEN THE NEW FACP AND THE EXISTING FACP(S).

CONTRACTOR WILL NEED TO FIELD VERIFY ALL EXISTING AIR HANDLING UNITS, ROOF TOP UNITS, ENERGY RECOVERY UNITS TO CONFIRM AND TO REPLACE EXISTING DUCT SMOKE DETECTORS WITH NEW DUCT DETECTORS COMPATIBLE WITH THE NEW FIRE ALARM SYSTEM FOR SUPPLY AND RETURN DUCT SYSTEMS.

CONTRACTOR WILL NEED TO REFER TO NEW MECHANICAL DRAWINGS TO PROVIDE NEW DUCT DETECTORS IN THE SUPPLY AND RETURN DUCTS FOR ALL ROOF MOUNTED EQUIPMENT REQUIRED BY CODE.

CONTRACTOR WILL NEED TO VERIFY QUANTITY AND LOCATIONS OF DOOR HOLD OPENS WITH DOOR HARDWARE SCHEDULE AND SPECIFICATIONS. PROVIDE ALL REQUIRED DOOR HOLD OPENS.

PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE

FIRST FLOOR FIRE ALARM PLAN - UNIT 1200

SHEET NO.

E511.c

STATE OF MICHIGAN
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KEYNOTES:

1 FIRE ALARM ANNUNCIATOR PANEL SHALL TIE BACK TO THE BUILDING FIRE ALARM CONTROL PANEL LOCATED IN ELECTRICAL 1412.

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

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PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

ALL FIRE ALARM DEVICES LOCATED IN VESTIBULES 1301, 1302 AND LOBBY 1303 SHALL BE WALL MOUNTED UNITS. CEILING MOUNTED UNITS WILL NOT BE ALLOWED.

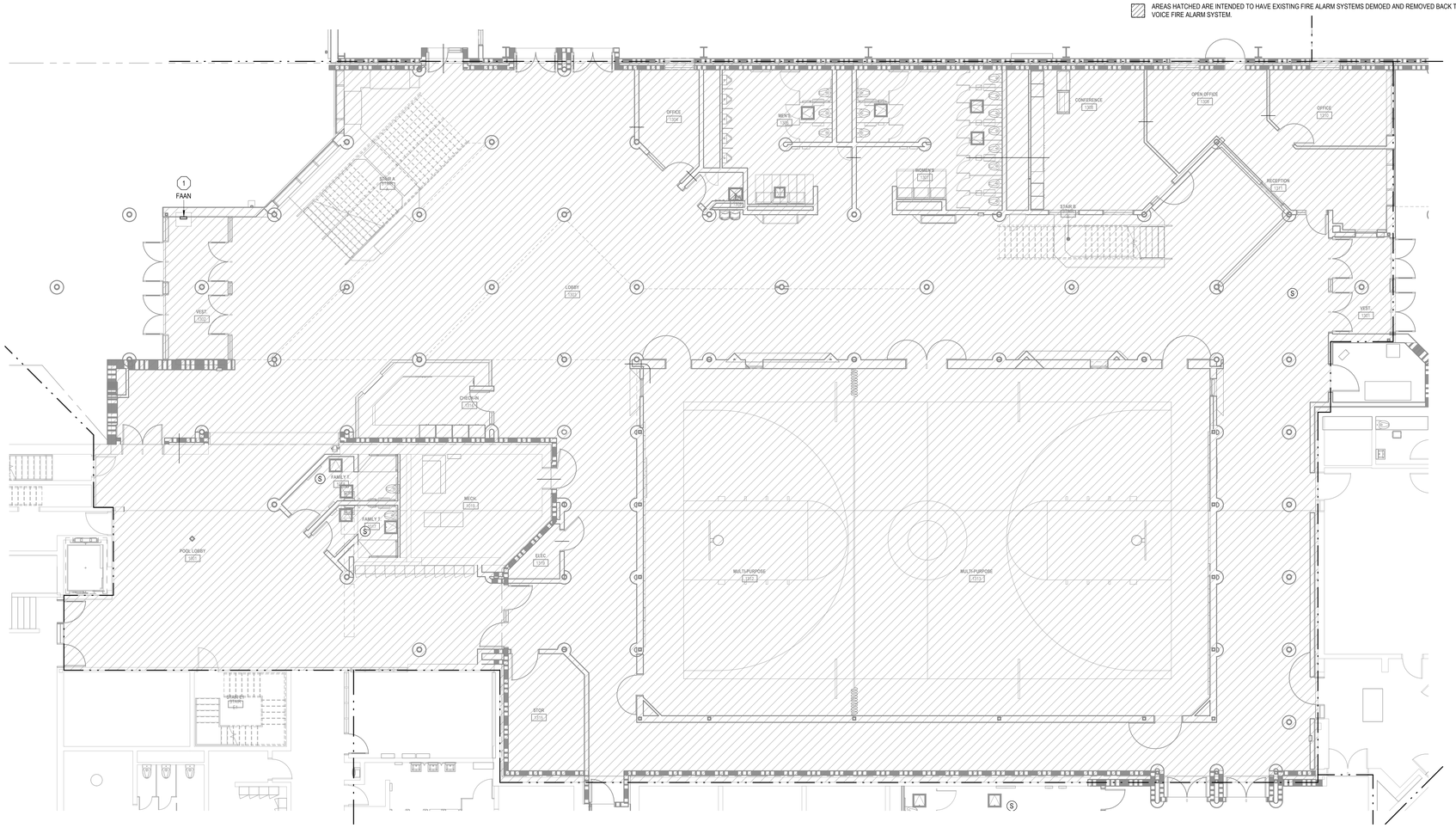
ROLLING FIRE GATED LOCATED BETWEEN LOBBY 1303 AND POOL LOBBY 1001 SHALL BE TIED INTO THE BUILDING FIRE ALARM SYSTEM.

CONNECT LARGE CIRCULATION FANS LOCATED IN MULTI-PURPOSE 1312 & 1313 TO THE BUILDING FIRE ALARM SYSTEM. FANS SHALL SHUTDOWN UPON ACTIVATION OF FIRE SUPPRESSION SYSTEM. COORDINATE REQUIREMENTS WITH THE AHJ PRIOR TO THE START OF CONSTRUCTION.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.



1 E511.d **FIRST FLOOR FIRE ALARM PLAN - UNIT 1300A**
SCALE = 1/8" = 1'-0"

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SHEET TITLE
FIRST FLOOR FIRE ALARM PLAN - UNIT 1300A

SHEET NO.
E511.d

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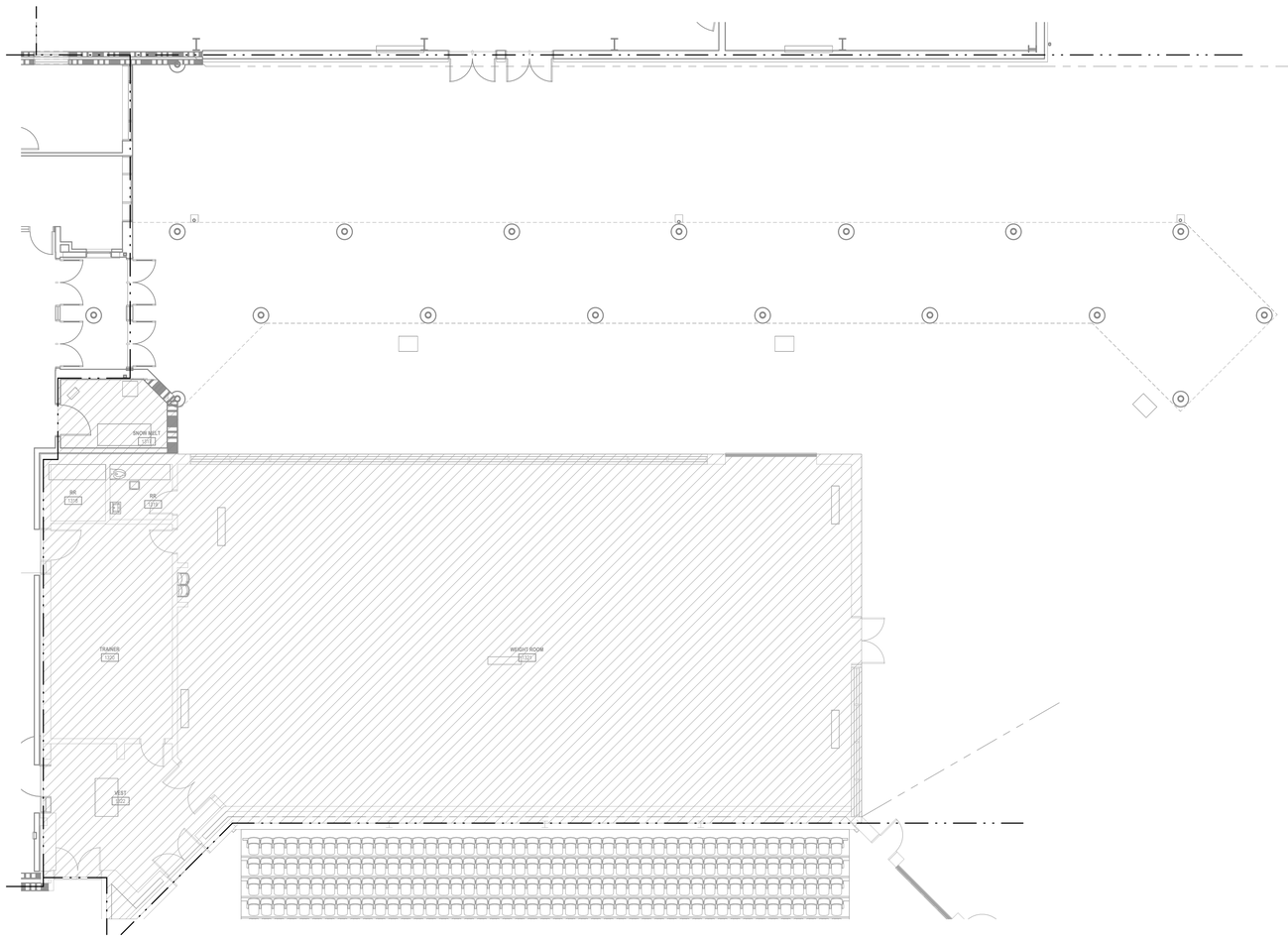

1 E511.e **FIRST FLOOR FIRE ALARM PLAN - UNIT 1300B**
SCALE = 1/8" = 1'-0"

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE
FIRST FLOOR FIRE ALARM PLAN - UNIT 1300B

SHEET NO.
E511.e

STATE OF MICHIGAN
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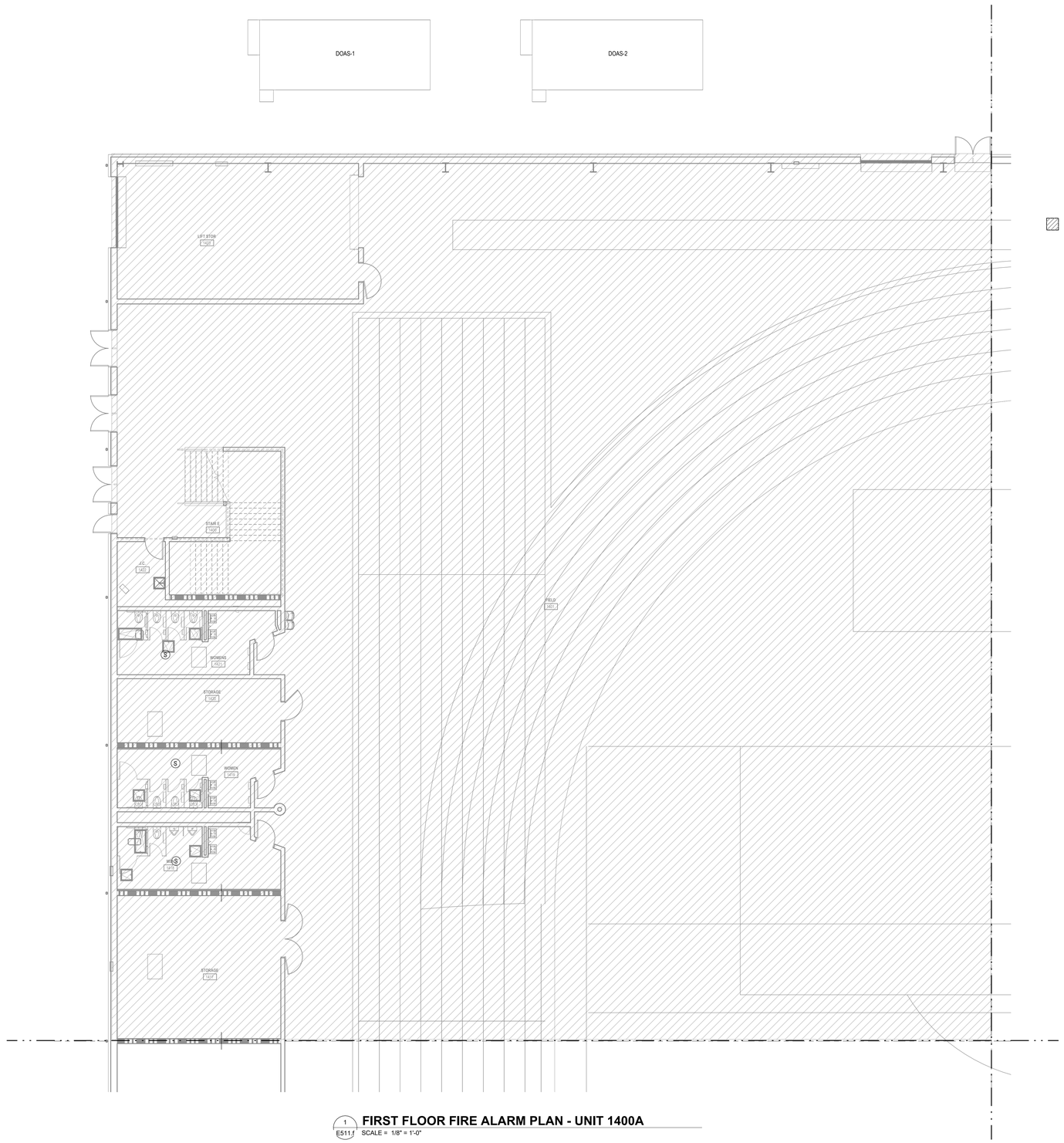

1 E511.f **FIRST FLOOR FIRE ALARM PLAN - UNIT 1400A**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

ALL EXISTING LOW VOLTAGE FIRE ALARM CABLING MUST BE REMOVED AND REPLACED WITH NEW. REUSE OF EXISTING LOW VOLTAGE FIRE ALARM CABLING WILL NOT BE ALLOWED. ALL FINAL FIRE ALARM DEVICE LOCATIONS WILL NEED TO BE FIELD VERIFIED AND COORDINATED WITH ARCHITECT PRIOR TO START OF CONSTRUCTION. IF ANY EXISTING FA NEED TO REMAIN FOR CODE COMPLIANCE AND CONNECTED TO AN EXISTING FA PANEL CONTRACTOR MUST PROVIDE A CROSS TIE BETWEEN NEW PANEL AND EXISTING PANELS.

IF ANY PORTION OF THE EXISTING FIRE ALARM SYSTEM(S) MUST REMAIN TO KEEP SYSTEMS OPERATIONAL THAT MAY NOT BE COMPATIBLE WITH THE NEW BUILDING FA SYSTEM THE CONTRACTOR WILL NEED TO PROVIDE A CROSS TIE BETWEEN THE NEW FACP AND THE EXISTING FACP(S).

CONTRACTOR WILL NEED TO FIELD VERIFY ALL EXISTING AIR HANDLING UNITS, ROOF TOP UNITS, ENERGY RECOVERY UNITS TO CONFIRM AND TO REPLACE EXISTING DUCT SMOKE DETECTORS WITH NEW DUCT DETECTORS COMPATIBLE WITH THE NEW FIRE ALARM SYSTEM FOR SUPPLY AND RETURN DUCT SYSTEMS.

CONTRACTOR WILL NEED TO REFER TO NEW MECHANICAL DRAWINGS TO PROVIDE NEW DUCT DETECTORS IN THE SUPPLY AND RETURN DUCTS FOR ALL ROOF MOUNTED EQUIPMENT REQUIRED BY CODE.

CONTRACTOR WILL NEED TO VERIFY QUANTITY AND LOCATIONS OF DOOR HOLD OPENS WITH DOOR HARDWARE SCHEDULE AND SPECIFICATIONS. PROVIDE ALL REQUIRED DOOR HOLD OPENS.

PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

CONNECT LARGE CIRCULATION FANS LOCATED IN FIELD 1401 TO THE BUILDING FIRE ALARM SYSTEM. FANS SHALL SHUTDOWN UPON ACTIVATION OF FIRE SUPPRESSION SYSTEM. COORDINATE REQUIREMENTS WITH THE AHJ PRIOR TO THE START OF CONSTRUCTION.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE

FIRST FLOOR FIRE ALARM PLAN - UNIT 1400A

SHEET NO.

E511.f

STATE OF MICHIGAN
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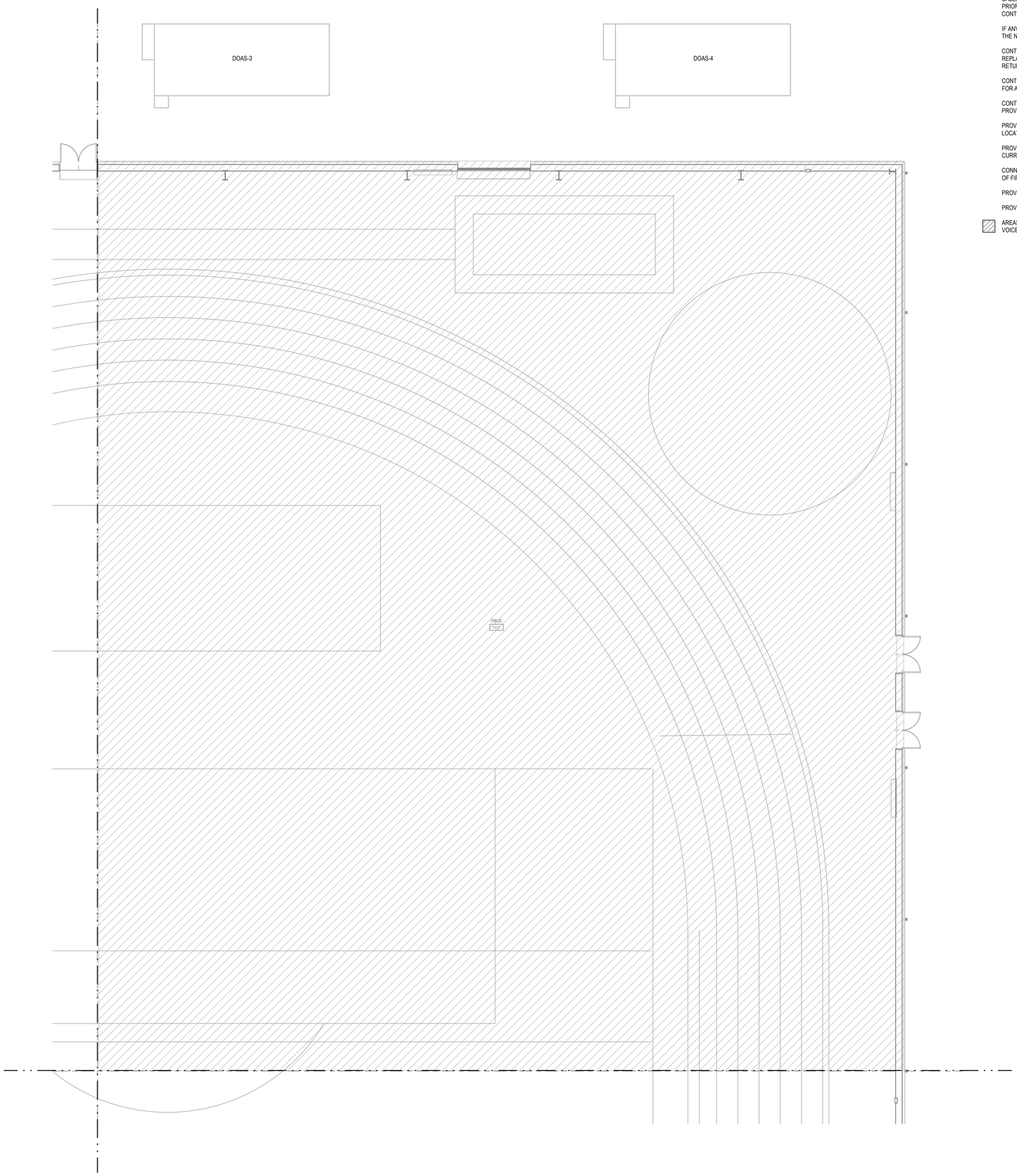

1 E511.g **FIRST FLOOR FIRE ALARM PLAN - UNIT 1400B**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

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PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

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Howell Public Schools

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE

FIRST FLOOR FIRE ALARM PLAN - UNIT 1400B

SHEET NO.

E511.g

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
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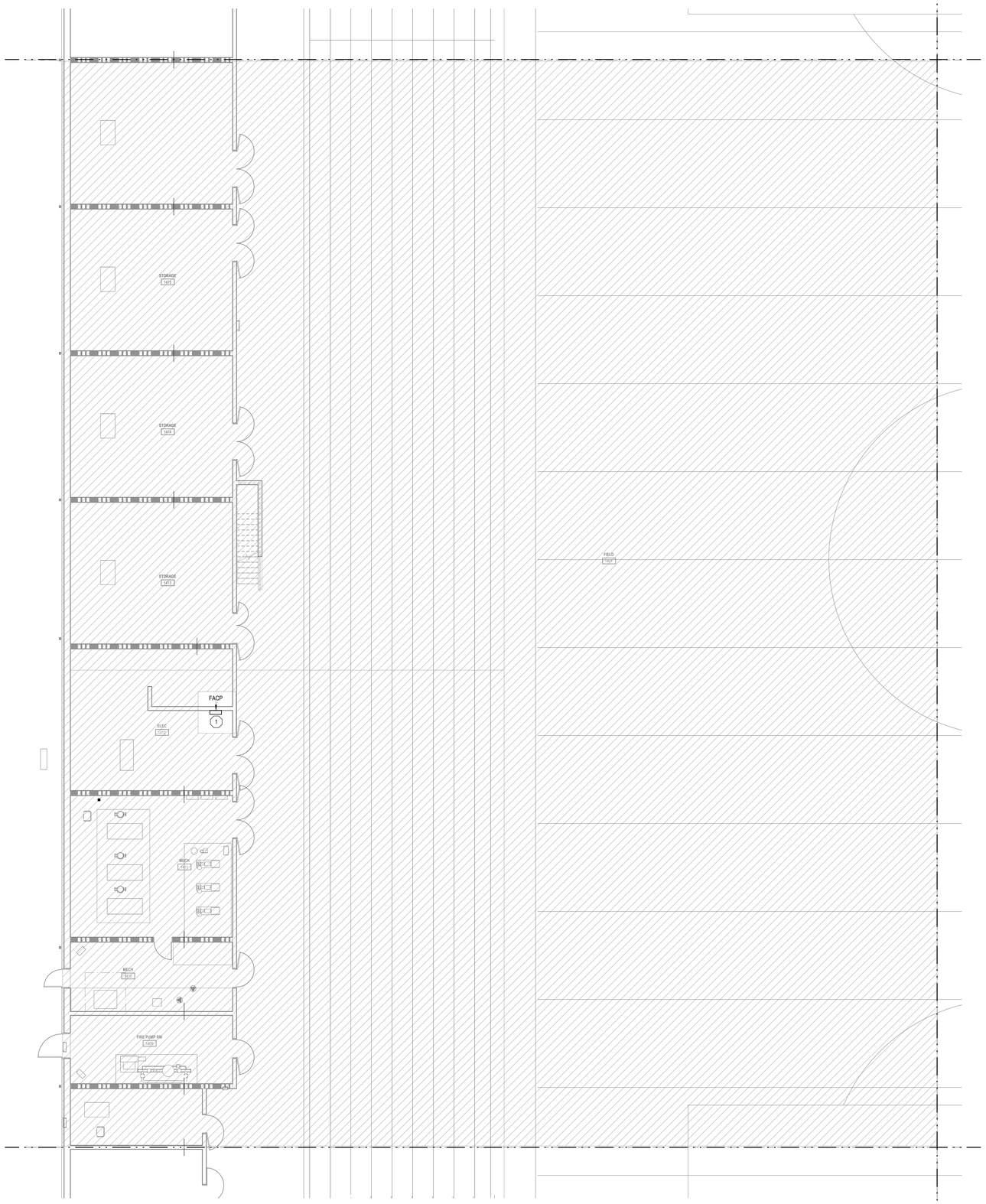

1 E511.h **FIRST FLOOR FIRE ALARM PLAN - UNIT 1400C**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 NEW MASTER FIRE ALARM CONTROL PANEL. PROVIDE AND INSTALL ALL NECESSARY DEDICATED PHONE LINES AND 120V POWER TO NEW PANEL. PROVIDE ALL NECESSARY CROSSTIE WIRES BETWEEN NEW AND EXISTING FA PANELS THAT MAY NEED TO REMAIN AS A RESULT OF EXISTING EQUIPMENT NOT COMPATIBLE WITH NEW BUILDING FIRE ALARM SYSTEM.

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

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Howell Community Center

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

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SHEET TITLE
FIRST FLOOR FIRE ALARM PLAN - UNIT 1400C

SHEET NO.
E511.h

STATE OF MICHIGAN
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07/30/26

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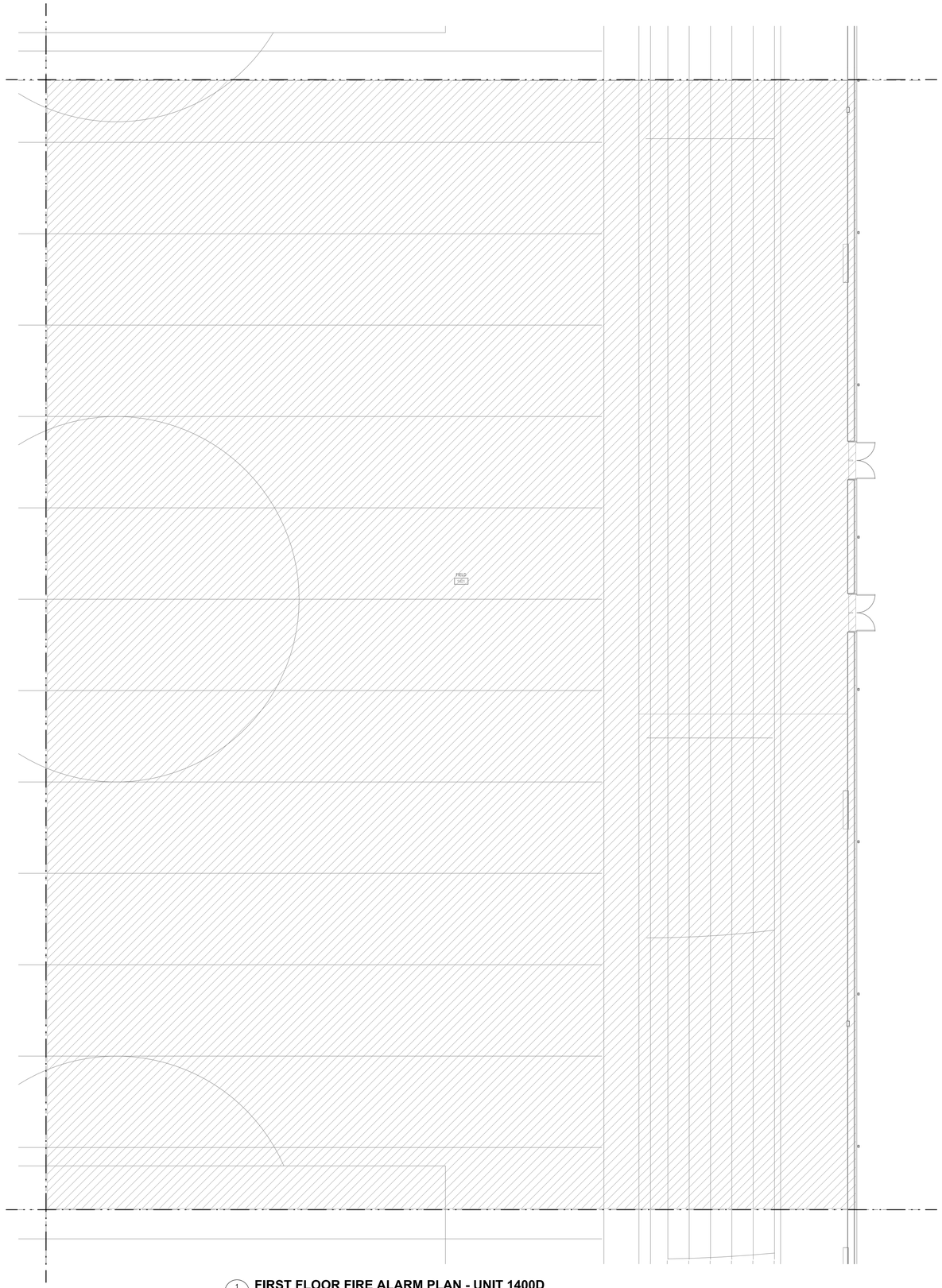

1 E511.i **FIRST FLOOR FIRE ALARM PLAN - UNIT 1400D**
SCALE = 1/8" = 1'-0"

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

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SHEET TITLE
FIRST FLOOR FIRE ALARM PLAN - UNIT 1400D

SHEET NO.
E511.i

STATE OF MICHIGAN
Robin Hyman
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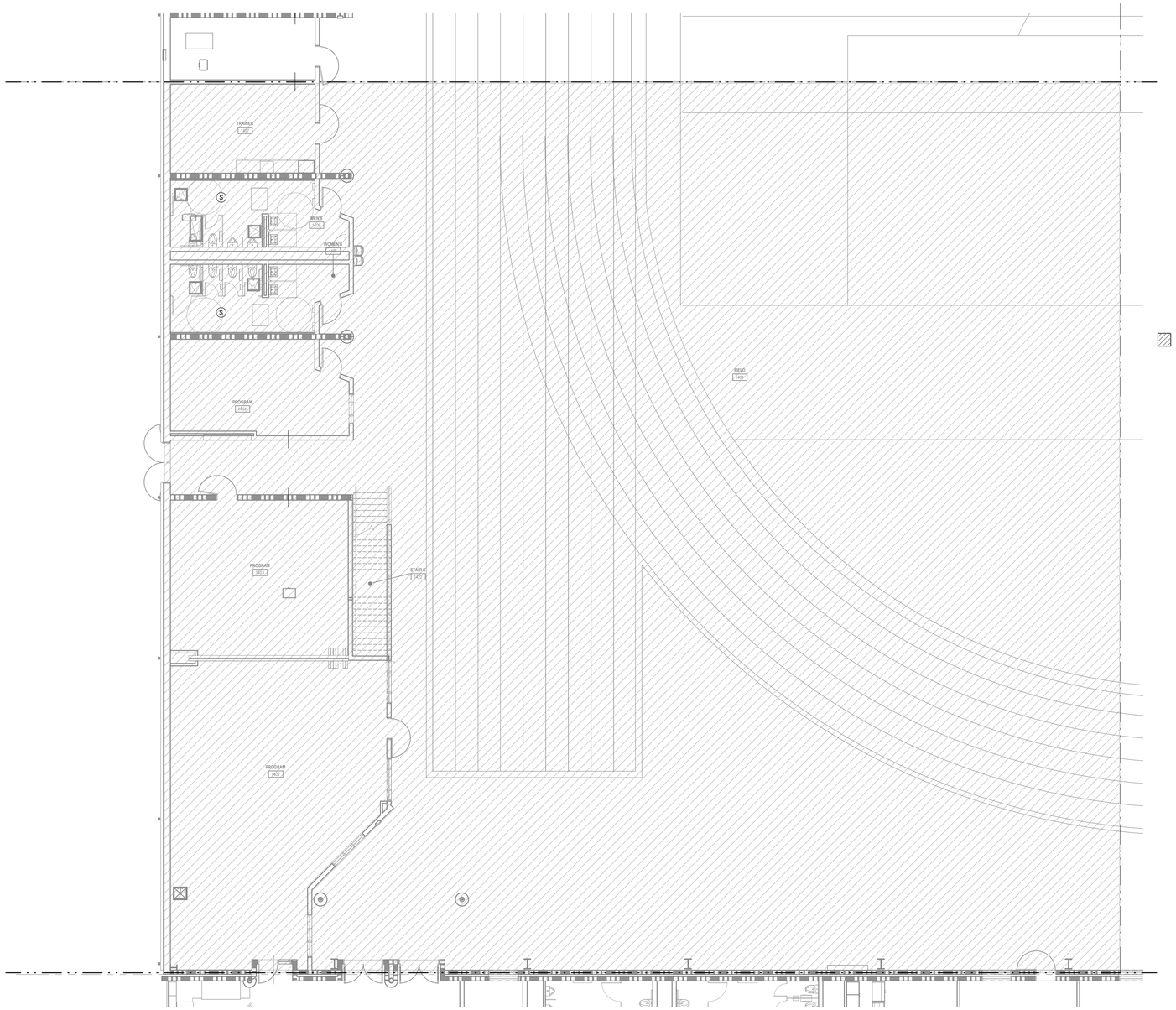

1 E511.k **FIRST FLOOR FIRE ALARM PLAN - UNIT 1400E**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

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JOB NO. Project Number

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SHEET TITLE

FIRST FLOOR FIRE ALARM PLAN - UNIT 1400E

SHEET NO.

E511.k

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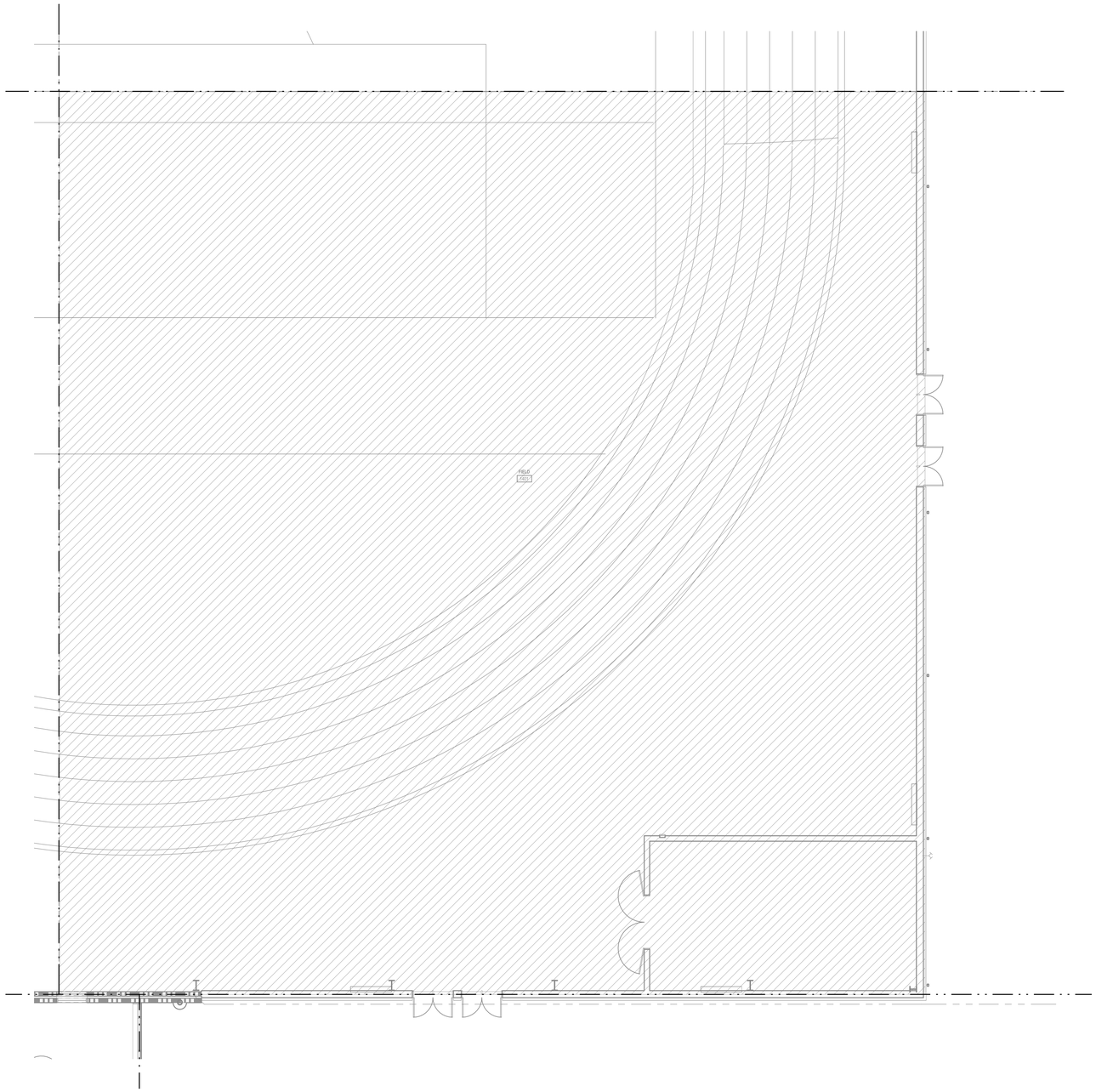

1 E511.m **FIRST FLOOR FIRE ALARM PLAN - UNIT 1400F**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

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CONNECT LARGE CIRCULATION FANS LOCATED IN FIELD 1401 TO THE BUILDING FIRE ALARM SYSTEM. FANS SHALL SHUTDOWN UPON ACTIVATION OF FIRE SUPPRESSION SYSTEM. COORDINATE REQUIREMENTS WITH THE AHJ PRIOR TO THE START OF CONSTRUCTION.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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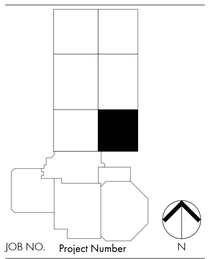
Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. Project Number

N

SHEET TITLE

FIRST FLOOR FIRE ALARM PLAN - UNIT 1400F

SHEET NO.

E511.m

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
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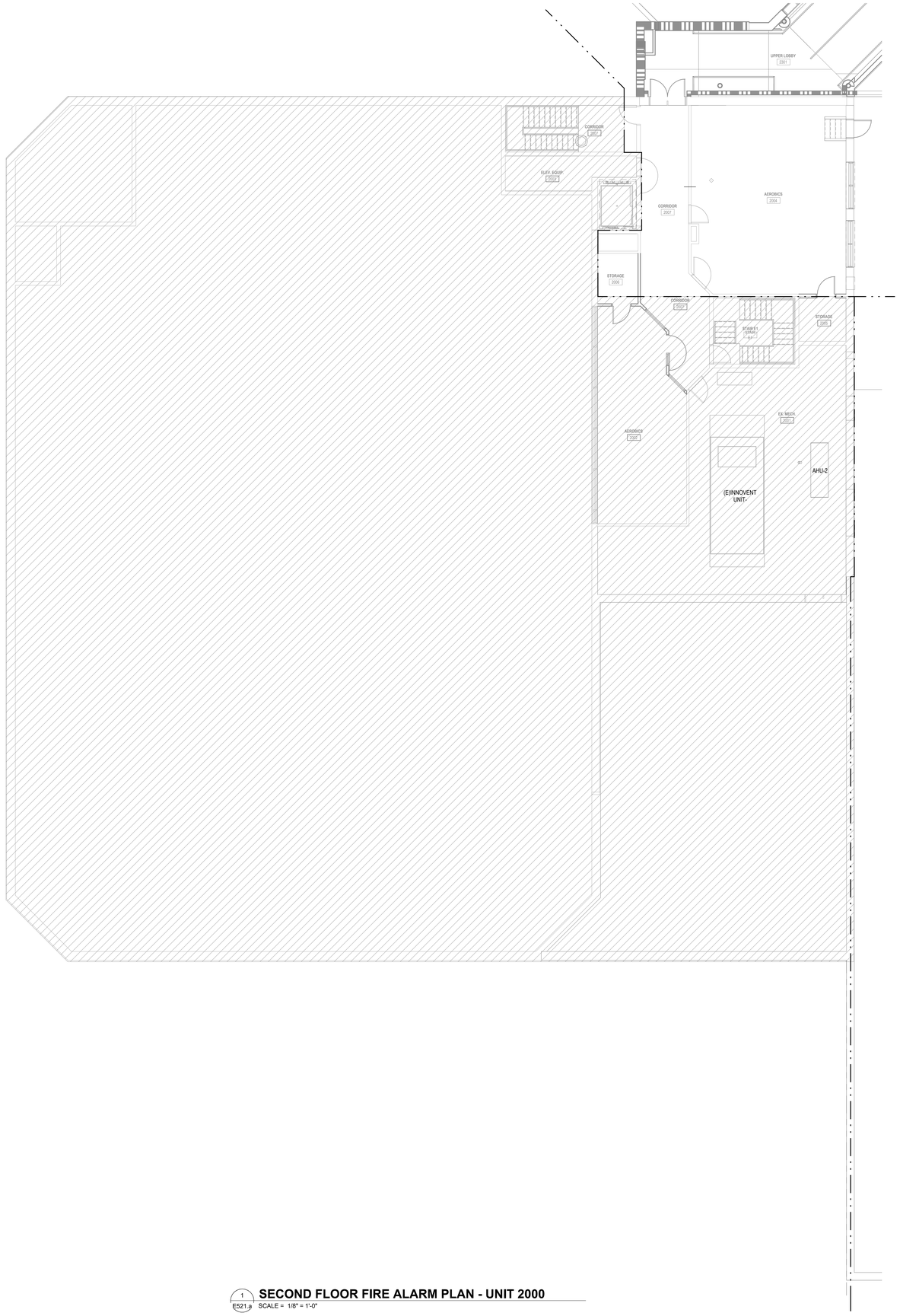

1 E521.a **SECOND FLOOR FIRE ALARM PLAN - UNIT 2000**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

ALL EXISTING LOW VOLTAGE FIRE ALARM CABLING MUST BE REMOVED AND REPLACED WITH NEW. REUSE OF EXISTING LOW VOLTAGE FIRE ALARM CABLING WILL NOT BE ALLOWED. ALL FINAL FIRE ALARM DEVICE LOCATIONS WILL NEED TO BE FIELD VERIFIED AND COORDINATED WITH ARCHITECT PRIOR TO START OF CONSTRUCTION. IF ANY EXISTING FA NEED TO REMAIN FOR CODE COMPLIANCE AND CONNECTED TO AN EXISTING FA PANEL CONTRACTOR MUST PROVIDE A CROSS TIE BETWEEN NEW PANEL AND EXISTING PANELS.

IF ANY PORTION OF THE EXISTING FIRE ALARM SYSTEM(S) MUST REMAIN TO KEEP SYSTEMS OPERATIONAL THAT MAY NOT BE COMPATIBLE WITH THE NEW BUILDING FA SYSTEM THE CONTRACTOR WILL NEED TO PROVIDE A CROSS TIE BETWEEN THE NEW FACP AND THE EXISTING FACP(S).

CONTRACTOR WILL NEED TO FIELD VERIFY ALL EXISTING AIR HANDLING UNITS, ROOF TOP UNITS, ENERGY RECOVERY UNITS TO CONFIRM AND TO REPLACE EXISTING DUCT SMOKE DETECTORS WITH NEW DUCT DETECTORS COMPATIBLE WITH THE NEW FIRE ALARM SYSTEM FOR SUPPLY AND RETURN DUCT SYSTEMS.

CONTRACTOR WILL NEED TO REFER TO NEW MECHANICAL DRAWINGS TO PROVIDE NEW DUCT DETECTORS IN THE SUPPLY AND RETURN DUCTS FOR ALL ROOF MOUNTED EQUIPMENT REQUIRED BY CODE.

CONTRACTOR WILL NEED TO VERIFY QUANTITY AND LOCATIONS OF DOOR HOLD OPENS WITH DOOR HARDWARE SCHEDULE AND SPECIFICATIONS. PROVIDE ALL REQUIRED DOOR HOLD OPENS.

PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE

SECOND FLOOR FIRE ALARM PLAN - UNIT 2000

SHEET NO.

E521.a

STATE OF MICHIGAN
Robin Hyman
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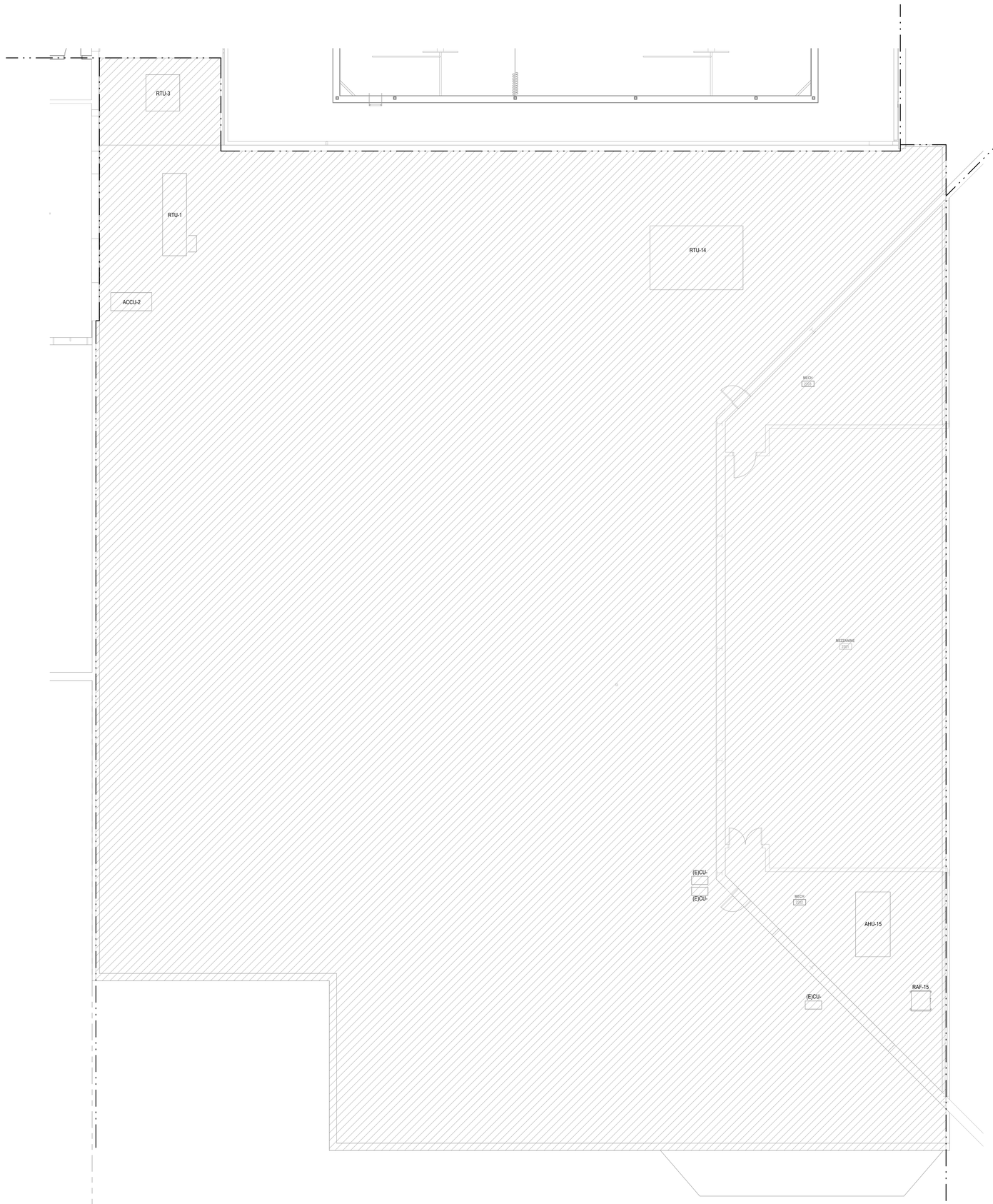

SECOND FLOOR FIRE ALARM PLAN - UNIT 2100
1 / E521.b SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

ALL EXISTING LOW VOLTAGE FIRE ALARM CABLING MUST BE REMOVED AND REPLACED WITH NEW. REUSE OF EXISTING LOW VOLTAGE FIRE ALARM CABLING WILL NOT BE ALLOWED. ALL FINAL FIRE ALARM DEVICE LOCATIONS WILL NEED TO BE FIELD VERIFIED AND COORDINATED WITH ARCHITECT PRIOR TO START OF CONSTRUCTION. IF ANY EXISTING FA NEED TO REMAIN FOR CODE COMPLIANCE AND CONNECTED TO AN EXISTING FA PANEL CONTRACTOR MUST PROVIDE A CROSS TIE BETWEEN NEW PANEL AND EXISTING PANELS.

IF ANY PORTION OF THE EXISTING FIRE ALARM SYSTEM(S) MUST REMAIN TO KEEP SYSTEMS OPERATIONAL THAT MAY NOT BE COMPATIBLE WITH THE NEW BUILDING FA SYSTEM THE CONTRACTOR WILL NEED TO PROVIDE A CROSS TIE BETWEEN THE NEW FACP AND THE EXISTING FACP(S).

CONTRACTOR WILL NEED TO FIELD VERIFY ALL EXISTING AIR HANDLING UNITS, ROOF TOP UNITS, ENERGY RECOVERY UNITS TO CONFIRM AND TO REPLACE EXISTING DUCT SMOKE DETECTORS WITH NEW DUCT DETECTORS COMPATIBLE WITH THE NEW FIRE ALARM SYSTEM FOR SUPPLY AND RETURN DUCT SYSTEMS.

CONTRACTOR WILL NEED TO REFER TO NEW MECHANICAL DRAWINGS TO PROVIDE NEW DUCT DETECTORS IN THE SUPPLY AND RETURN DUCTS FOR ALL ROOF MOUNTED EQUIPMENT REQUIRED BY CODE.

CONTRACTOR WILL NEED TO VERIFY QUANTITY AND LOCATIONS OF DOOR HOLD OPENS WITH DOOR HARDWARE SCHEDULE AND SPECIFICATIONS. PROVIDE ALL REQUIRED DOOR HOLD OPENS.

PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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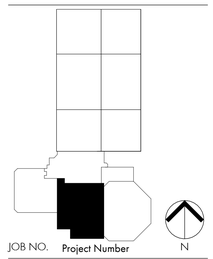
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. Project Number

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SHEET TITLE

SECOND FLOOR FIRE ALARM PLAN - UNIT 2100

SHEET NO.

E521.b



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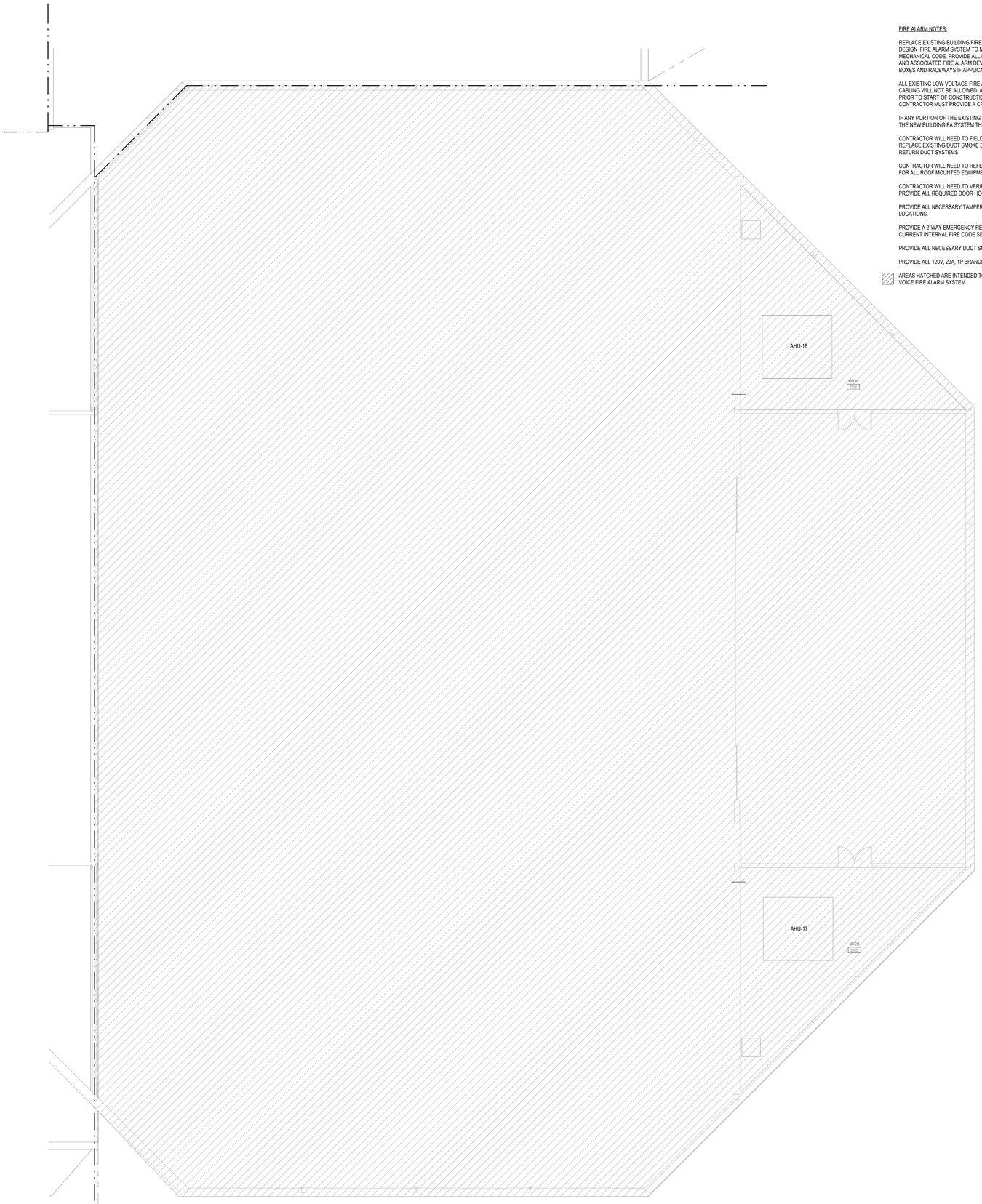

1 E521.c **SECOND FLOOR FIRE ALARM PLAN - UNIT 2200**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

ALL EXISTING LOW VOLTAGE FIRE ALARM CABLING MUST BE REMOVED AND REPLACED WITH NEW. REUSE OF EXISTING LOW VOLTAGE FIRE ALARM CABLING WILL NOT BE ALLOWED. ALL FINAL FIRE ALARM DEVICE LOCATIONS WILL NEED TO BE FIELD VERIFIED AND COORDINATED WITH ARCHITECT PRIOR TO START OF CONSTRUCTION. IF ANY EXISTING FA NEED TO REMAIN FOR CODE COMPLIANCE AND CONNECTED TO AN EXISTING FA PANEL CONTRACTOR MUST PROVIDE A CROSS TIE BETWEEN NEW PANEL AND EXISTING PANELS.

IF ANY PORTION OF THE EXISTING FIRE ALARM SYSTEM(S) MUST REMAIN TO KEEP SYSTEMS OPERATIONAL THAT MAY NOT BE COMPATIBLE WITH THE NEW BUILDING FA SYSTEM THE CONTRACTOR WILL NEED TO PROVIDE A CROSS TIE BETWEEN THE NEW FACP AND THE EXISTING FACP(S).

CONTRACTOR WILL NEED TO FIELD VERIFY ALL EXISTING AIR HANDLING UNITS, ROOF TOP UNITS, ENERGY RECOVERY UNITS TO CONFIRM AND TO REPLACE EXISTING DUCT SMOKE DETECTORS WITH NEW DUCT DETECTORS COMPATIBLE WITH THE NEW FIRE ALARM SYSTEM FOR SUPPLY AND RETURN DUCT SYSTEMS.

CONTRACTOR WILL NEED TO REFER TO NEW MECHANICAL DRAWINGS TO PROVIDE NEW DUCT DETECTORS IN THE SUPPLY AND RETURN DUCTS FOR ALL ROOF MOUNTED EQUIPMENT REQUIRED BY CODE.

CONTRACTOR WILL NEED TO VERIFY QUANTITY AND LOCATIONS OF DOOR HOLD OPENS WITH DOOR HARDWARE SCHEDULE AND SPECIFICATIONS. PROVIDE ALL REQUIRED DOOR HOLD OPENS.

PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE

SECOND FLOOR FIRE ALARM PLAN - UNIT 2200

SHEET NO.

E521.c

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FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

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CONTRACTOR WILL NEED TO VERIFY QUANTITY AND LOCATIONS OF DOOR HOLD OPENS WITH DOOR HARDWARE SCHEDULE AND SPECIFICATIONS. PROVIDE ALL REQUIRED DOOR HOLD OPENS.

PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

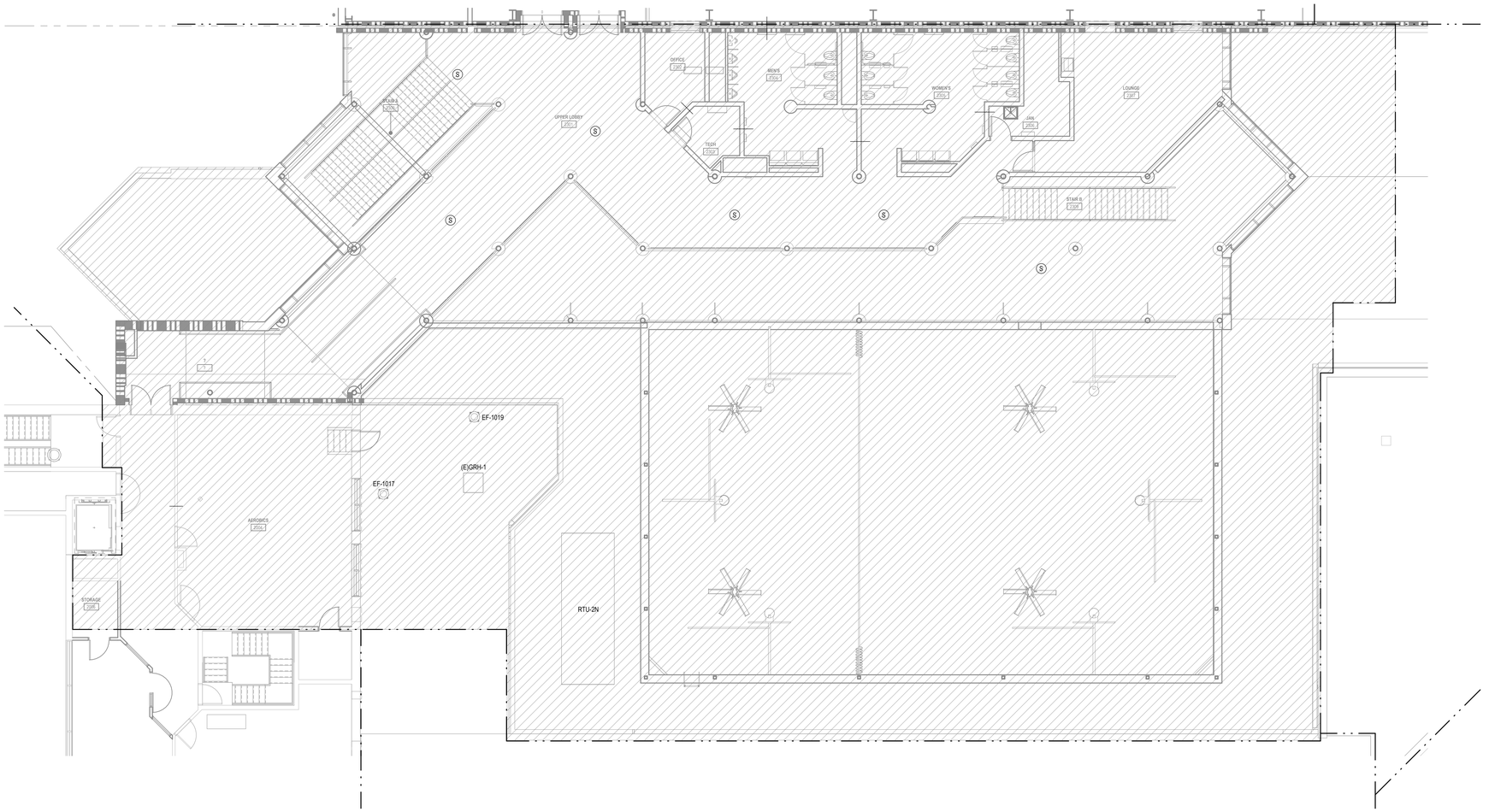
LARGE CEILING FANS SHALL BE TIED INTO THE BUILDING FA SYSTEM. PROGRAMMING OF OPERATION TO SHUT DOWN FANS SHALL BE PER CURRENT CODE AND VERIFIED WITH THE AHJ.

ALL FIRE ALARM DEVICES LOCATED IN UPPER LOBBY 2301 SHALL BE WALL MOUNTED UNITS. CEILING MOUNTED UNITS WILL NOT BE ALLOWED.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.



1 E521.d **SECOND FLOOR FIRE ALARM PLAN - UNIT 2300A**
SCALE = 1/8" = 1'-0"

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JOB NO. Project Number

N

SHEET TITLE

SECOND FLOOR FIRE ALARM PLAN - UNIT 2300A

SHEET NO.

E521.d

STATE OF MICHIGAN
LICENSED PROFESSIONAL ENGINEER
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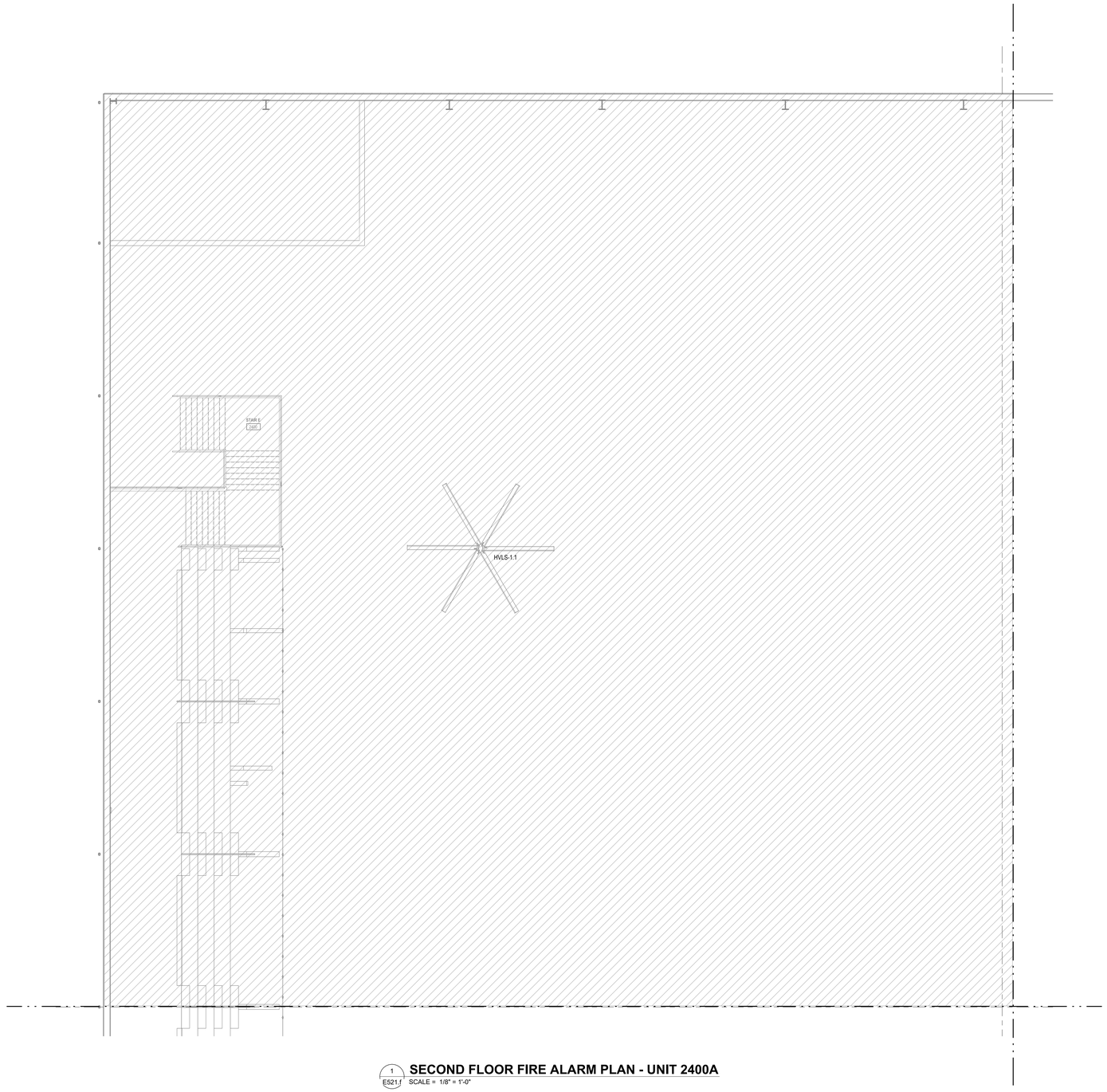

1 E521.f **SECOND FLOOR FIRE ALARM PLAN - UNIT 2400A**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

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CONTRACTOR WILL NEED TO FIELD VERIFY ALL EXISTING AIR HANDLING UNITS, ROOF TOP UNITS, ENERGY RECOVERY UNITS TO CONFIRM AND TO REPLACE EXISTING DUCT SMOKE DETECTORS WITH NEW DUCT DETECTORS COMPATIBLE WITH THE NEW FIRE ALARM SYSTEM FOR SUPPLY AND RETURN DUCT SYSTEMS.

CONTRACTOR WILL NEED TO REFER TO NEW MECHANICAL DRAWINGS TO PROVIDE NEW DUCT DETECTORS IN THE SUPPLY AND RETURN DUCTS FOR ALL ROOF MOUNTED EQUIPMENT REQUIRED BY CODE.

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PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

LARGE CEILING FANS SHALL BE TIED INTO THE BUILDING FA SYSTEM. PROGRAMMING OF OPERATION TO SHUT DOWN FANS SHALL BE PER CURRENT CODE AND VERIFIED WITH THE AHJ.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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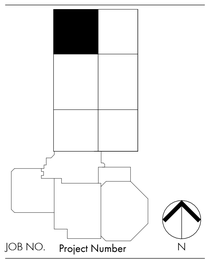

JOB NO. Project Number

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SHEET TITLE
SECOND FLOOR FIRE ALARM PLAN - UNIT 2400A

SHEET NO.
E521.f

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
LICENSED PROFESSIONAL ENGINEER

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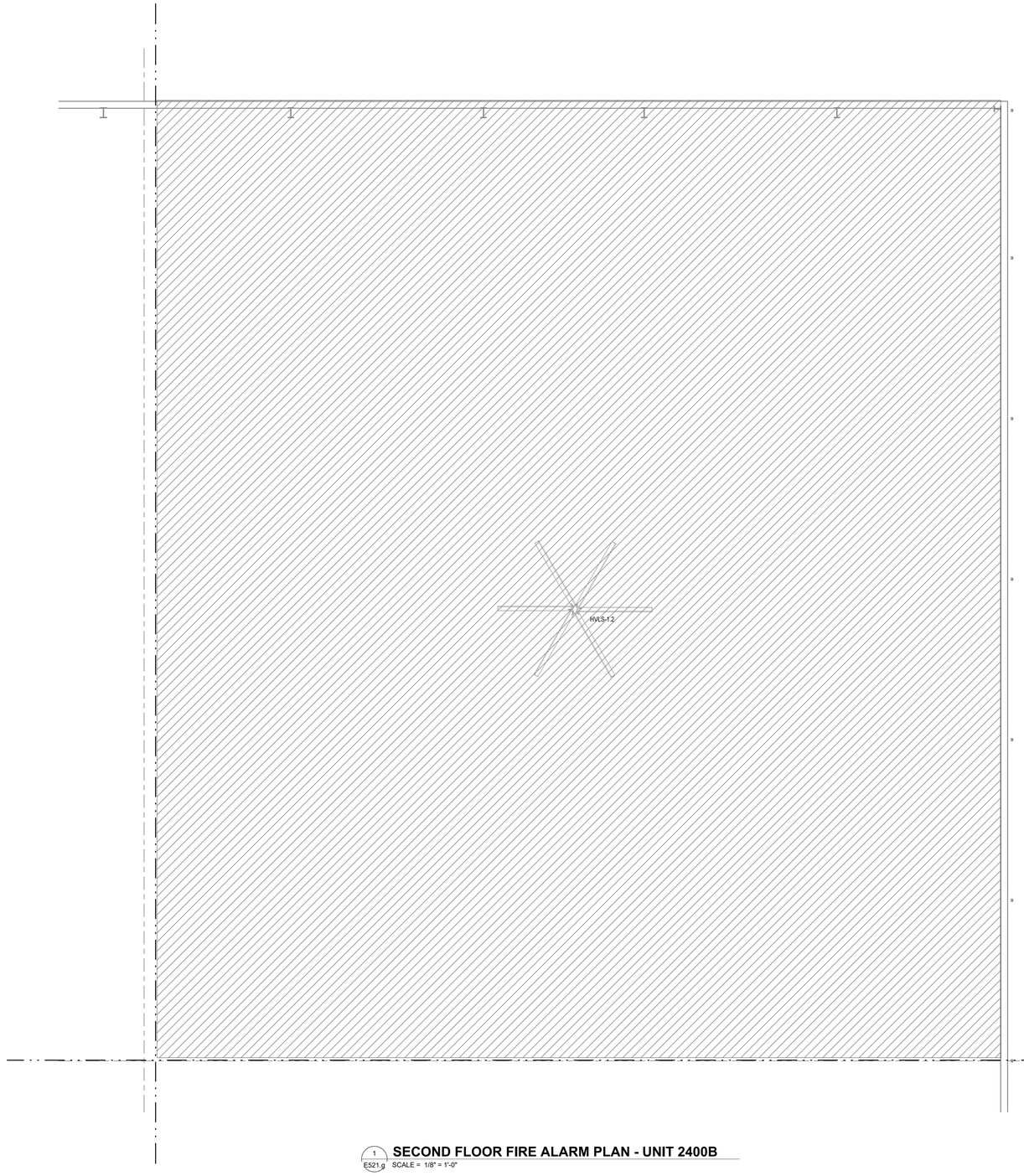

1 E521.g **SECOND FLOOR FIRE ALARM PLAN - UNIT 2400B**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

ALL EXISTING LOW VOLTAGE FIRE ALARM CABLING MUST BE REMOVED AND REPLACED WITH NEW. REUSE OF EXISTING LOW VOLTAGE FIRE ALARM CABLING WILL NOT BE ALLOWED. ALL FINAL FIRE ALARM DEVICE LOCATIONS WILL NEED TO BE FIELD VERIFIED AND COORDINATED WITH ARCHITECT PRIOR TO START OF CONSTRUCTION. IF ANY EXISTING FA NEED TO REMAIN FOR CODE COMPLIANCE AND CONNECTED TO AN EXISTING FA PANEL CONTRACTOR MUST PROVIDE A CROSS TIE BETWEEN NEW PANEL AND EXISTING PANELS.

IF ANY PORTION OF THE EXISTING FIRE ALARM SYSTEM(S) MUST REMAIN TO KEEP SYSTEMS OPERATIONAL THAT MAY NOT BE COMPATIBLE WITH THE NEW BUILDING FA SYSTEM THE CONTRACTOR WILL NEED TO PROVIDE A CROSS TIE BETWEEN THE NEW FACP AND THE EXISTING FACP(S).

CONTRACTOR WILL NEED TO FIELD VERIFY ALL EXISTING AIR HANDLING UNITS, ROOF TOP UNITS, ENERGY RECOVERY UNITS TO CONFIRM AND TO REPLACE EXISTING DUCT SMOKE DETECTORS WITH NEW DUCT DETECTORS COMPATIBLE WITH THE NEW FIRE ALARM SYSTEM FOR SUPPLY AND RETURN DUCT SYSTEMS.

CONTRACTOR WILL NEED TO REFER TO NEW MECHANICAL DRAWINGS TO PROVIDE NEW DUCT DETECTORS IN THE SUPPLY AND RETURN DUCTS FOR ALL ROOF MOUNTED EQUIPMENT REQUIRED BY CODE.

CONTRACTOR WILL NEED TO VERIFY QUANTITY AND LOCATIONS OF DOOR HOLD OPENS WITH DOOR HARDWARE SCHEDULE AND SPECIFICATIONS. PROVIDE ALL REQUIRED DOOR HOLD OPENS.

PROVIDE ALL NECESSARY TAMPER AND FLOWS FOR EACH FP STAND PIPE. REFER TO FIRE PROTECTION DRAWINGS FOR FINAL QUANTITIES AND LOCATIONS.

PROVIDE A 2-WAY EMERGENCY RESPONDER COMMUNICATION SYSTEM PER THE CURRENT MICHIGAN BUILDING CODE 2021 SECTION 918 AND THE CURRENT INTERNAL FIRE CODE SECTION 510.

LARGE CEILING FANS SHALL BE TIED INTO THE BUILDING FA SYSTEM. PROGRAMMING OF OPERATION TO SHUT DOWN FANS SHALL BE PER CURRENT CODE AND VERIFIED WITH THE AHJ.

PROVIDE ALL NECESSARY DUCT SMOKE DETECTORS FOR THROUGH WALL SMOKE OR FIRE SMOKE DAMPERS NOTED ON MECHANICAL DRAWINGS.

PROVIDE ALL 120V, 20A, 1P BRANCH CIRCUITS AS REQUIRED TO SERVE NEW FA SYSTEM FROM THE NEAREST PANEL BACKUP BY THE GENERATOR.

AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE

SECOND FLOOR FIRE ALARM PLAN - UNIT 2400B

SHEET NO.

E521.g

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
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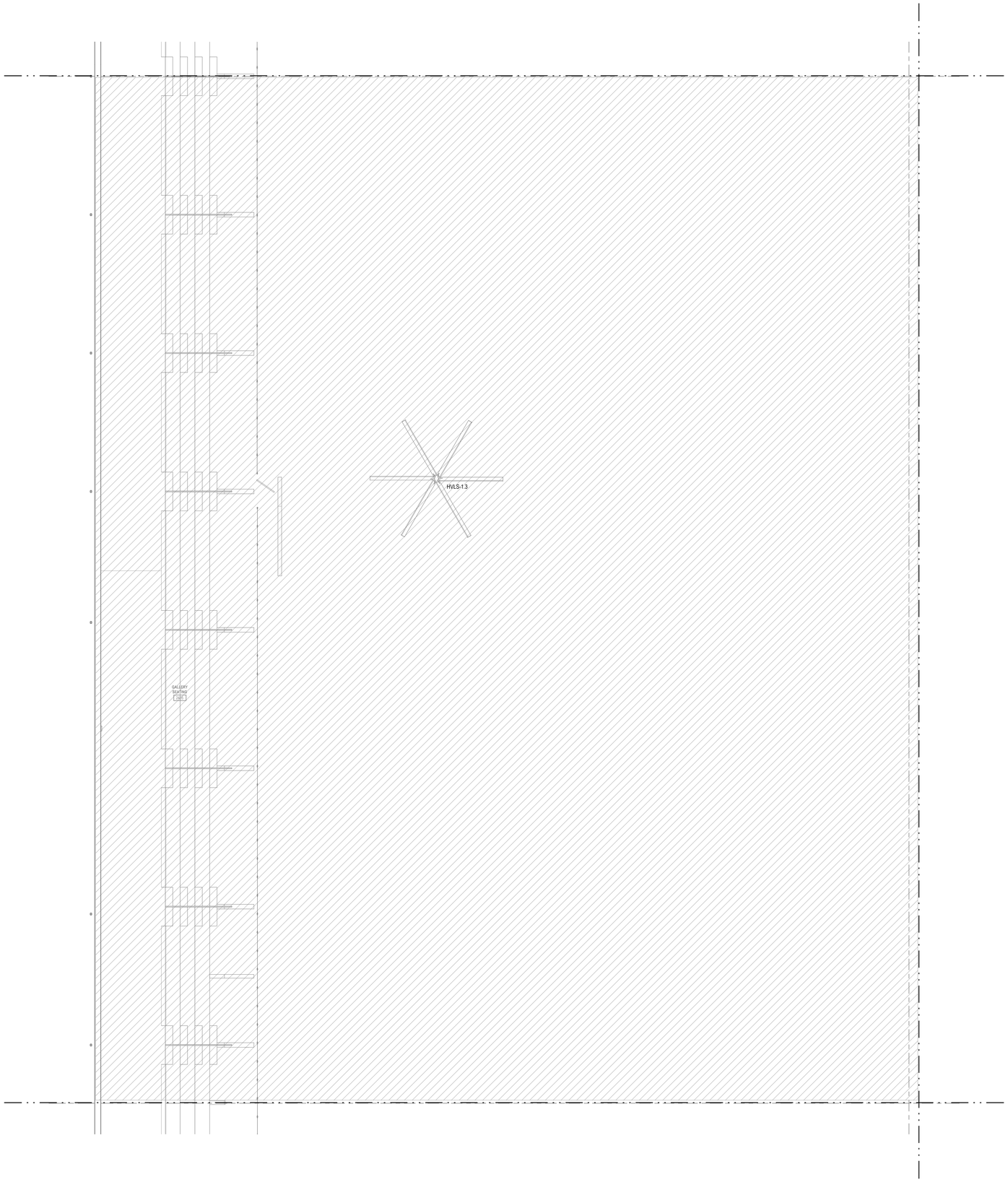

1 E521.h **SECOND FLOOR FIRE ALARM PLAN - UNIT 2400C**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

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AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.

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Howell Community Center

Howell Public Schools

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

N

SHEET TITLE
SECOND FLOOR FIRE ALARM PLAN - UNIT 2400C

SHEET NO.
E521.h

STATE OF MICHIGAN
Robin Hyman
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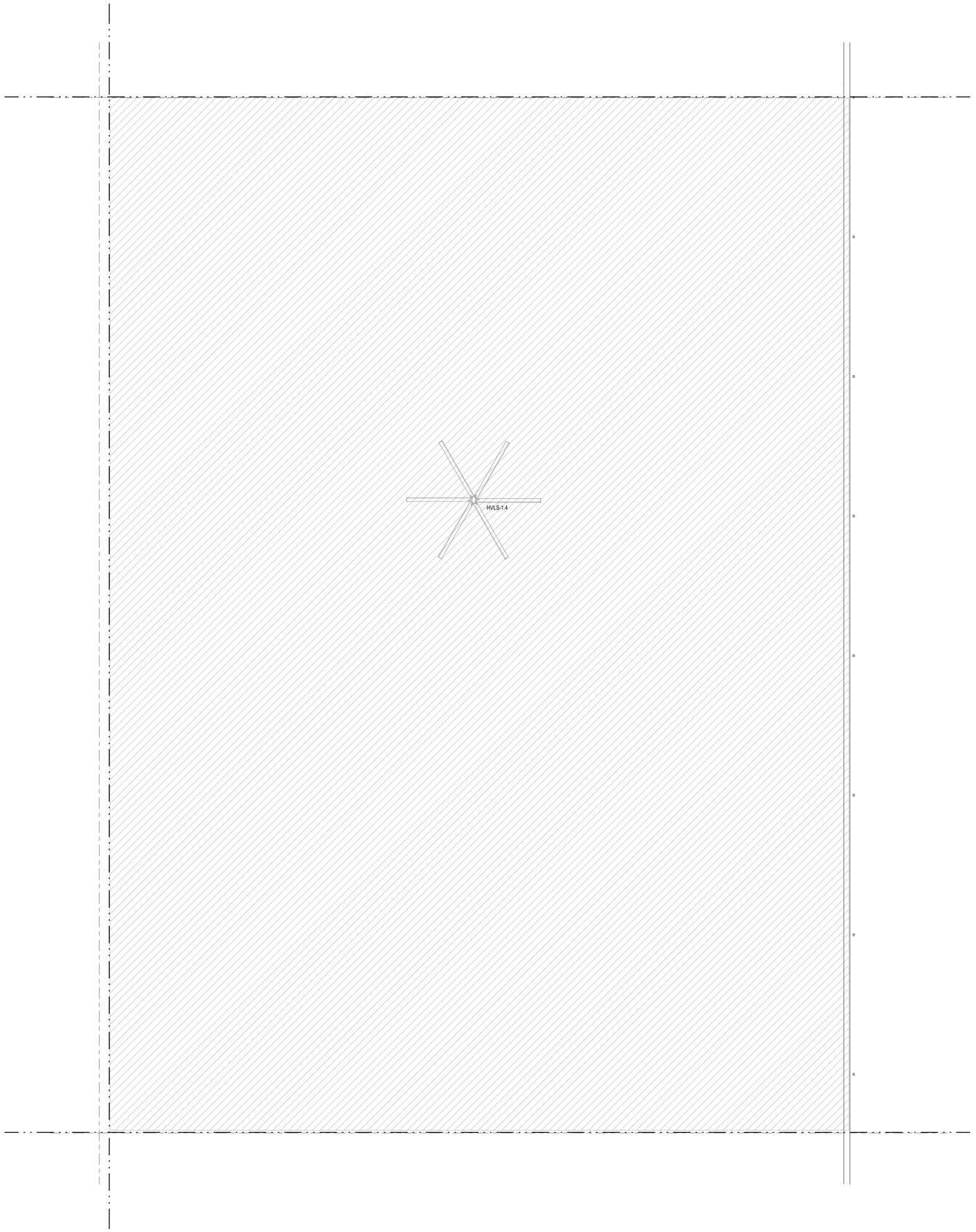

1 E521.i **SECOND FLOOR FIRE ALARM PLAN - UNIT 2400D**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
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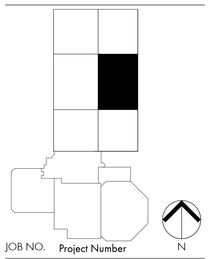

JOB NO. Project Number

SHEET TITLE
SECOND FLOOR FIRE ALARM PLAN - UNIT 2400D

SHEET NO.
E521.j

STATE OF MICHIGAN
Robin Hyman
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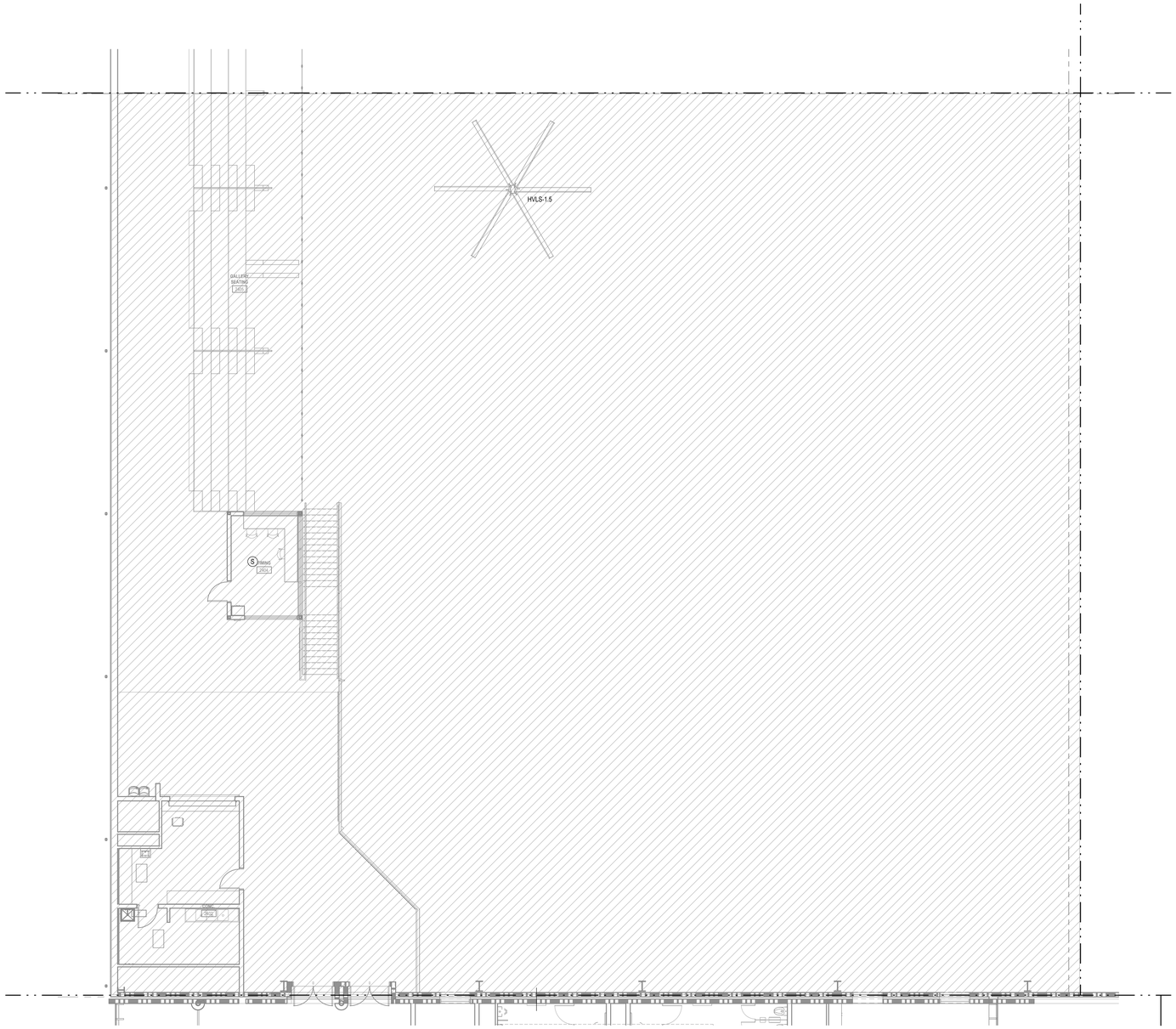

1 E521.k **SECOND FLOOR FIRE ALARM PLAN - UNIT 2400E**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

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Howell Public Schools

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

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SHEET TITLE

SECOND FLOOR FIRE ALARM PLAN - UNIT 2400E

SHEET NO.

E521.k

STATE OF MICHIGAN
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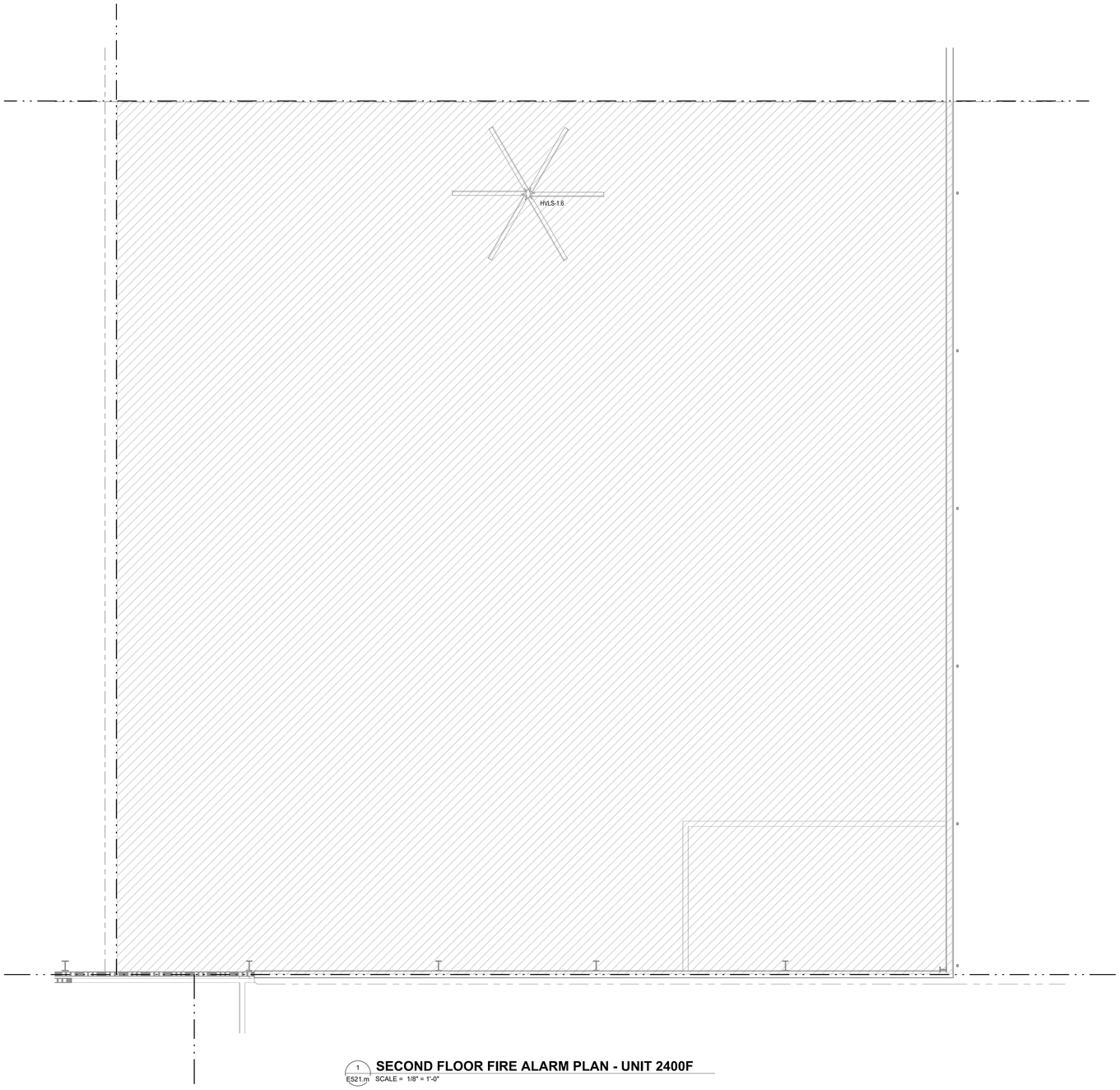

1 E521.m **SECOND FLOOR FIRE ALARM PLAN - UNIT 2400F**
SCALE = 1/8" = 1'-0"

FIRE ALARM NOTES:

REPLACE EXISTING BUILDING FIRE ALARM SYSTEMS WITH A NEW COMPLETE VOICE FIRE ALARM SYSTEM THROUGHOUT THE ENTIRE BUILDING. DESIGN FIRE ALARM SYSTEM TO MEET THE MICHIGAN FIRE CODE, NFPA 72, MICHIGAN ELEVATOR CODE, MICHIGAN BUILDING CODE AND MICHIGAN MECHANICAL CODE. PROVIDE ALL NECESSARY 120V POWER, BACK BOXES AND RACEWAYS ROUTED CONCEALED OUT OF SITE FOR NEW HEAD END AND ASSOCIATED FIRE ALARM DEVICES. NOTHING FROM THE OLD SYSTEMS SHOULD BE REUSED OTHER THEN ITS ACCEPTABLE TO REUSE BACK BOXES AND RACEWAYS IF APPLICABLE.

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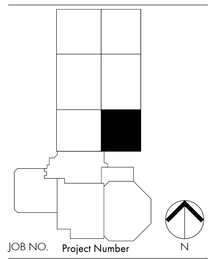

JOB NO. Project Number

N

SHEET TITLE

SECOND FLOOR FIRE ALARM PLAN - UNIT 2400F

SHEET NO.

E521.m

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
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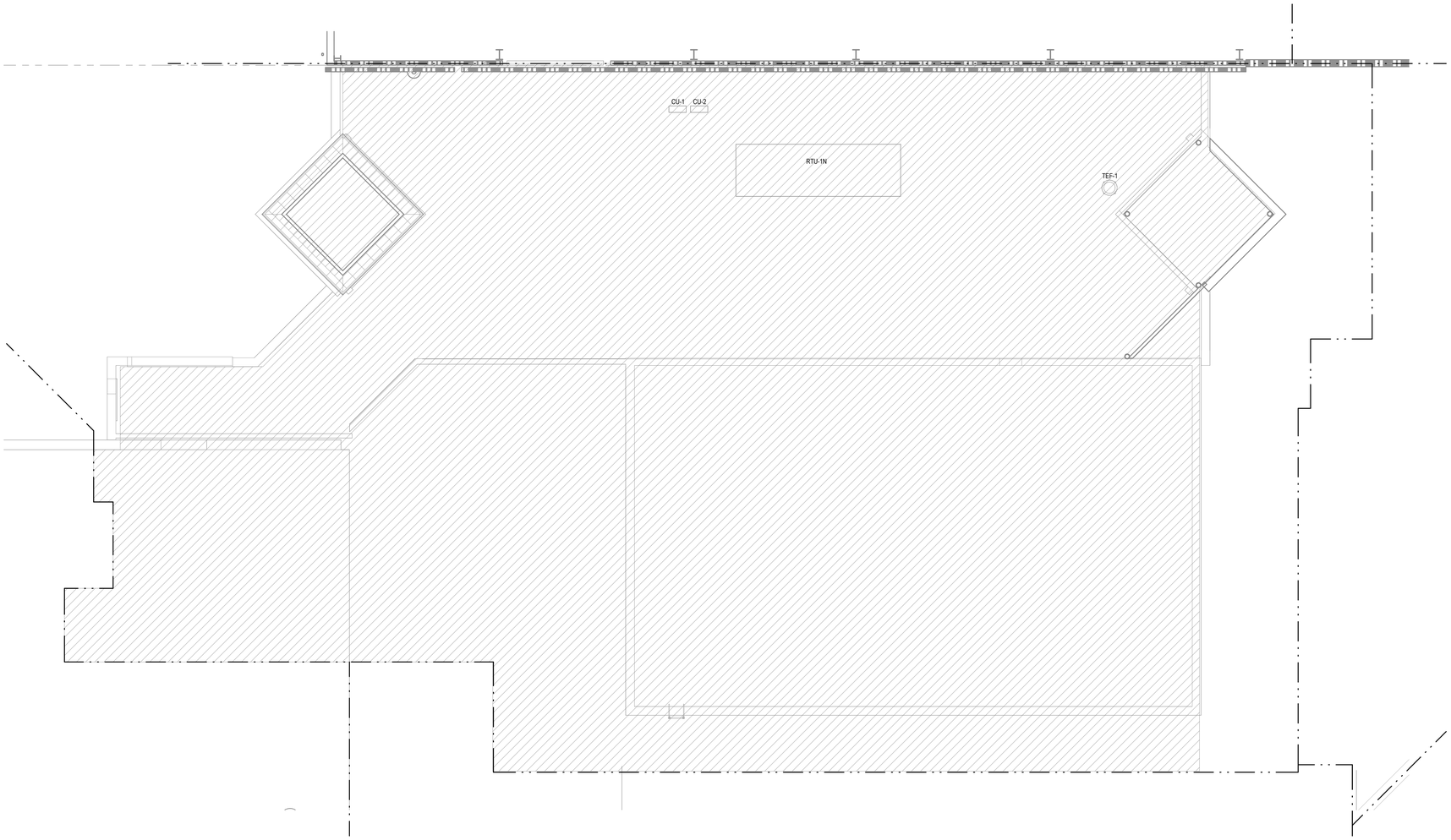
AREAS HATCHED ARE INTENDED TO HAVE EXISTING FIRE ALARM SYSTEMS DEMOED AND REMOVED BACK TO SOURCE AND REPLACED WITH A NEW VOICE FIRE ALARM SYSTEM.



1 E531.d **ROOF FIRE ALARM PLAN - UNIT 3300A**
SCALE = 1/8" = 1'-0"

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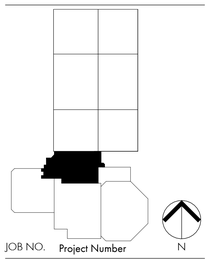
Howell Community Center

Howell Public Schools
1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. Project Number

SHEET TITLE
ROOF FIRE ALARM PLAN - UNIT 3300A

SHEET NO.
E531.d

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
LICENSED PROFESSIONAL ENGINEER

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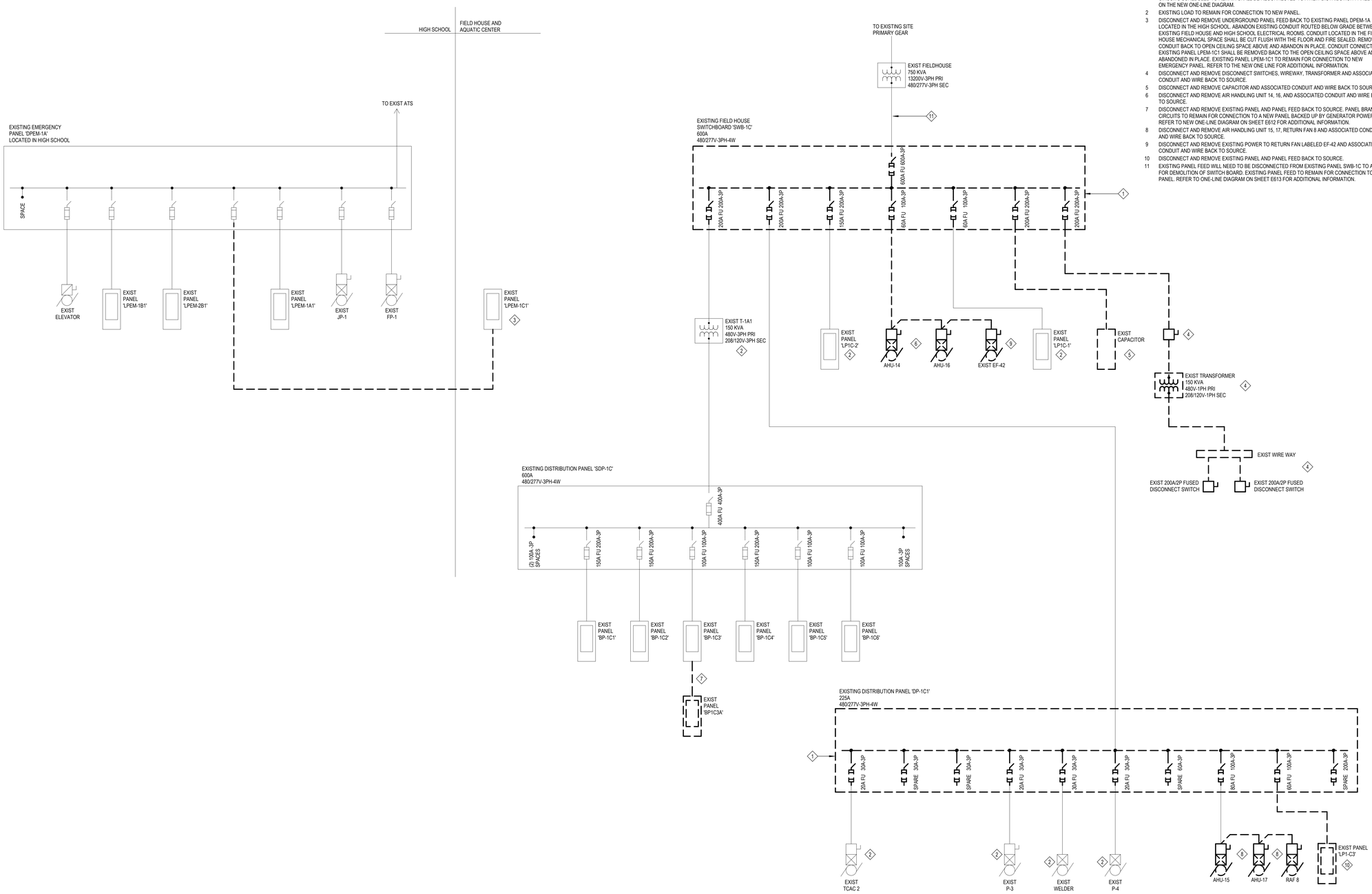

KEYNOTES:

1. DISCONNECT AND REMOVE EXISTING DISTRIBUTION BOARD FOR REPLACEMENT. EXISTING BRANCH CIRCUITS SCHEDULED TO REMAIN SHALL BE RECONNECTED TO A NEW DISTRIBUTION PANEL SHOWN ON THE NEW ONE-LINE DIAGRAM.
2. EXISTING LOAD TO REMAIN FOR CONNECTION TO NEW PANEL.
3. DISCONNECT AND REMOVE UNDERGROUND PANEL FEED BACK TO EXISTING PANEL DPEM-1A LOCATED IN THE HIGH SCHOOL. ABANDON EXISTING CONDUIT ROUTED BELOW GRADE BETWEEN THE EXISTING FIELD HOUSE AND HIGH SCHOOL ELECTRICAL ROOMS. CONDUIT LOCATED IN THE FIELD HOUSE MECHANICAL SPACE SHALL BE CUT FLUSH WITH THE FLOOR AND FIRE SEALED. REMOVE CONDUIT BACK TO OPEN CEILING SPACE ABOVE AND ABANDON IN PLACE. CONDUIT CONNECT TO EXISTING PANEL LPEM-1C1 SHALL BE REMOVED BACK TO THE OPEN CEILING SPACE ABOVE AND ABANDONED IN PLACE. EXISTING PANEL LPEM-1C1 TO REMAIN FOR CONNECTION TO NEW EMERGENCY PANEL. REFER TO THE NEW ONE LINE FOR ADDITIONAL INFORMATION.
4. DISCONNECT AND REMOVE DISCONNECT SWITCHES, WIREWAY, TRANSFORMER AND ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE.
5. DISCONNECT AND REMOVE CAPACITOR AND ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE.
6. DISCONNECT AND REMOVE AIR HANDLING UNIT 14, 16, AND ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE.
7. DISCONNECT AND REMOVE EXISTING PANEL AND PANEL FEED BACK TO SOURCE. PANEL BRANCH CIRCUITS TO REMAIN FOR CONNECTION TO A NEW PANEL BACKED UP BY GENERATOR POWER. REFER TO NEW ONE-LINE DIAGRAM ON SHEET E612 FOR ADDITIONAL INFORMATION.
8. DISCONNECT AND REMOVE AIR HANDLING UNIT 15, 17, RETURN FAN 8 AND ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE.
9. DISCONNECT AND REMOVE EXISTING POWER TO RETURN FAN LABELED EF-42 AND ASSOCIATED CONDUIT AND WIRE BACK TO SOURCE.
10. DISCONNECT AND REMOVE EXISTING PANEL AND PANEL FEED BACK TO SOURCE.
11. EXISTING PANEL FEED WILL NEED TO BE DISCONNECTED FROM EXISTING PANEL SWB-1C TO ALLOW FOR DEMOLITION OF SWITCH BOARD. EXISTING PANEL FEED TO REMAIN FOR CONNECTION TO NEW PANEL. REFER TO ONE-LINE DIAGRAM ON SHEET E613 FOR ADDITIONAL INFORMATION.

1 EXISTING ONE LINE DIAGRAM DEMOLITION

E610 SCALE = 1/8" = 1'-0"

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

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STATE OF MICHIGAN
Robin Hyman
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JOB NO. Project Number

SHEET TITLE
EXISTING ELECTRICAL ONE LINE DIAGRAMS

SHEET NO.
E610

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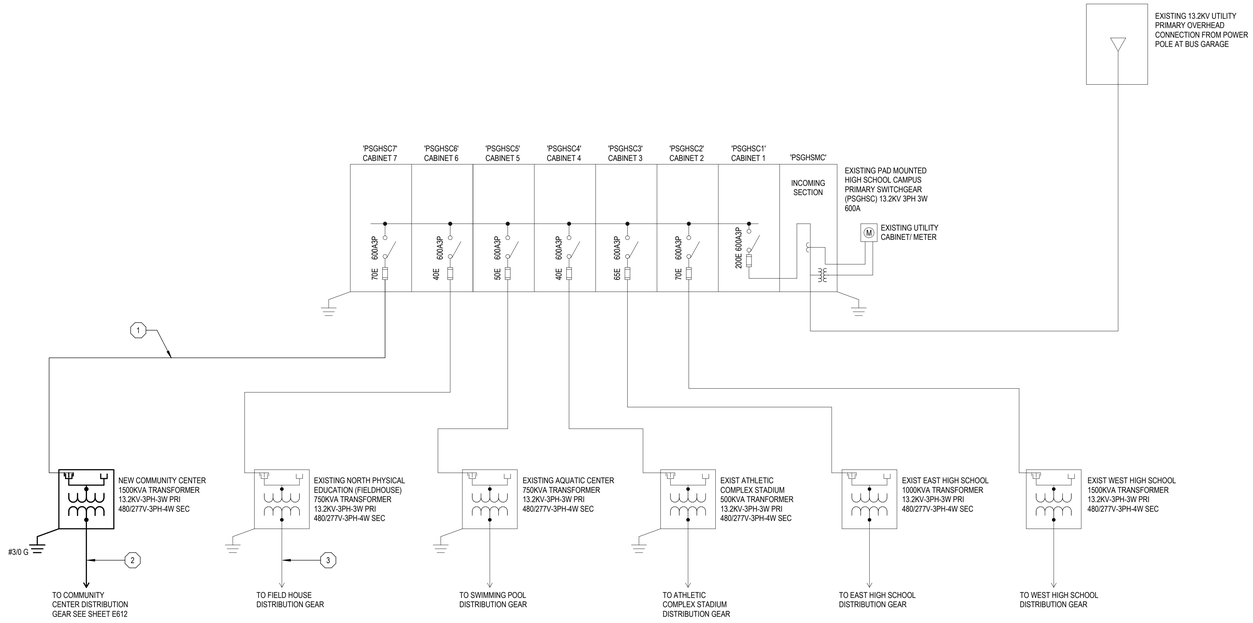

1 E611 **ONE-LINE DIAGRAM PRIMARY COMMUNITY CENTER**
SCALE = 1/8" = 1'-0"

KEYNOTES:

1 PROVIDE #2CU AWG, 15KV, MV105, 133% INSULATION PRIMARY CABLE IN EXISTING 4 " CONDUIT INSTALLED DURING THE EARLY PRIMARY LOOP WORK SCOPE.
2 PROVIDE 4 SETS OF 4#600, #300G. INTERCEPT EXISTING 4 "C STUBBED OUT BELOW GRADE DURING THE EARLY PRIMARY GEAR WORK SCOPE AND EXTEND TO THE NEW COMMUNITY CENTER MAIN DISTRIBUTION GEAR MDP. REFER TO SHEET E612 FOR ADDITIONAL INFORMATION.
3 TRANSFORMER SECONDARY FEED WILL NEED TO BE REWORKED TO ACCOMMODATE REPLACEMENT OF EXISTING FIELD MDP. REFER TO SHEET E613 KEYNOTE 1 FOR ADDITIONAL INFORMATION.

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
ADDENDUM 1	10.31.2025
ADDENDUM 2	11.11.2025
CONSTRUCTION DOCUMENTS	07.30.2026

STATE OF MICHIGAN
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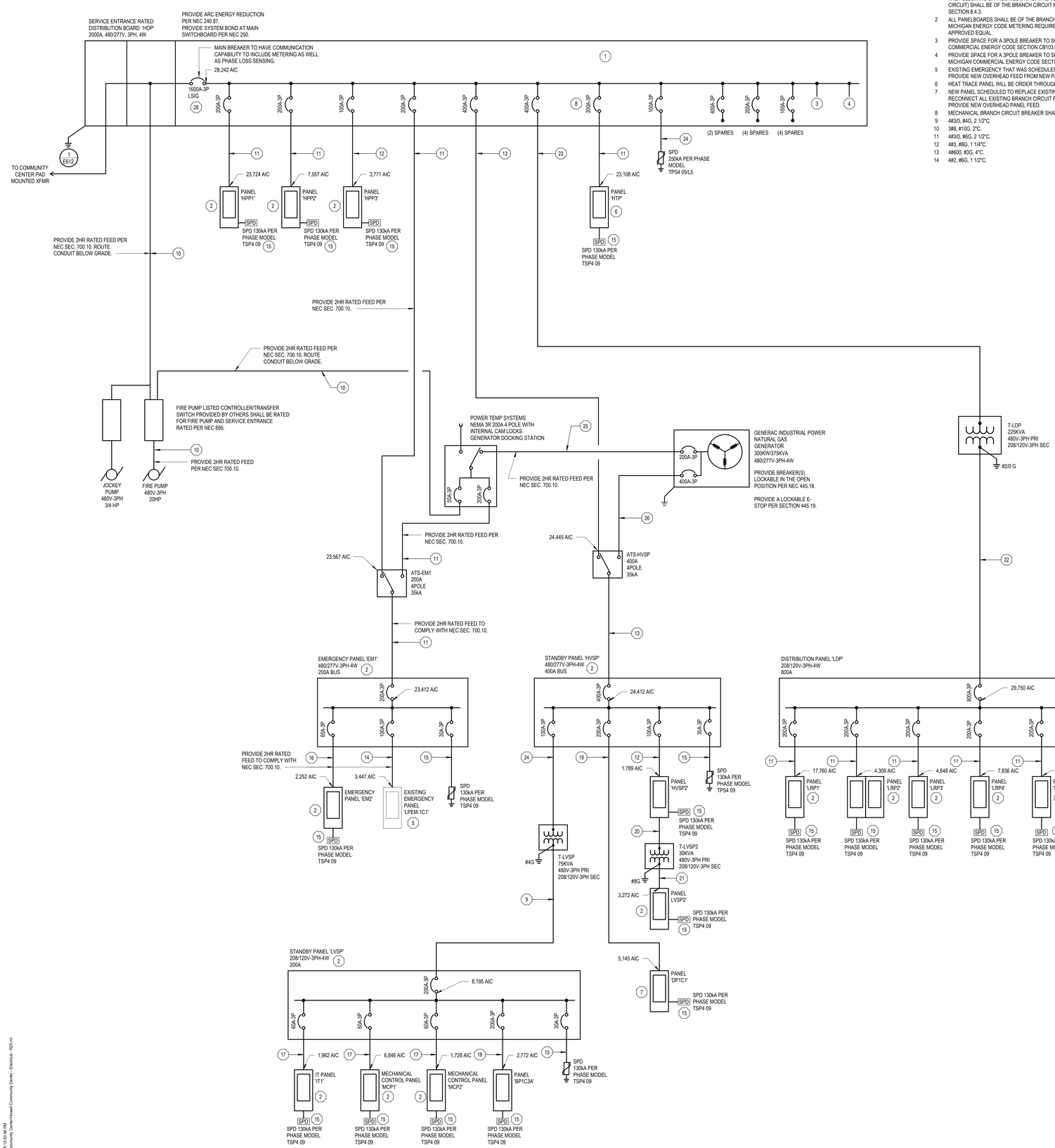
LICENSED PROFESSIONAL ENGINEER

JOB NO. Project Number

SHEET TITLE
EXISTING PRIMARY ELECTRICAL ONE LINE DIAGRAM

SHEET NO.
E611



ONE-LINE DIAGRAM COMMUNITY CENTER HOUSE

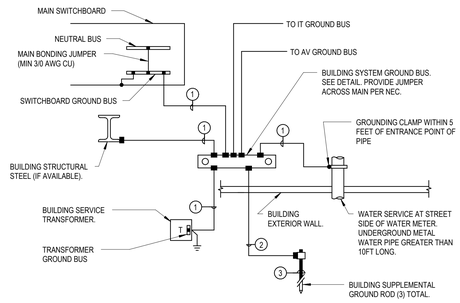
NOT TO SCALE

KEYNOTES:

1. ALL ELECTRICAL LOADS SUPPLIED FROM THE 480/277V MAIN SWITCHBOARD HDP THAT FALL UNDER THE FOLLOWING CATAGORIES (HVAC, INTERIOR LIGHTING, EXTERIOR LIGHTING, RECEPTACLE CIRCUIT) SHALL BE OF THE BRANCH CIRCUIT MONITORING TYPE TO COMPLY WITH ASHRAE 90.1-2019 SECTION 8.4.3.
2. ALL PANELBOARDS SHALL BE OF THE BRANCH CIRCUIT MONITORING TYPE TO COMPLY WITH THE MICHIGAN ENERGY CODE METERING REQUIREMENTS SIMILAR TO SIEMENS SEM3 SYSTEM OR APPROVED EQUAL.
3. PROVIDE SPACE FOR A 3POLE BREAKER TO SERVE FUTURE SOLAR ELECTRIC PER 2021 MICHIGAN COMMERCIAL ENERGY CODE SECTION CB103.8.
4. PROVIDE SPACE FOR A 3POLE BREAKER TO SERVE FUTURE ELECTRIC ENERGY STORAGE PER 2021 MICHIGAN COMMERCIAL ENERGY CODE SECTION CB103.8.
5. EXISTING EMERGENCY THAT WAS SCHEDULED TO REMAIN SHALL BE REFED FROM PANEL EM1. PROVIDE NEW OVERHEAD FEED FROM NEW PANEL.
6. HEAT TRACE PANEL WILL BE ORDER THROUGH HEAT TRACE VENDOR.
7. NEW PANEL SCHEDULED TO REPLACE EXISTING PANEL DP1C1 SCHEDULED TO BE DEMOED. RECONNECT ALL EXISTING BRANCH CIRCUIT FEEDS SCHEDULED TO REMAIN TO NEW PANEL. PROVIDE NEW OVERHEAD PANEL FEED.
8. MECHANICAL BRANCH CIRCUIT BREAKER SHALL BE MONITORED AS AN HVAC LOAD.
9. #4/3/0, #4G, 2 1/2"C.
10. 3#8, #10G, 2"C.
11. #4/3/0, #6G, 2 1/2"C.
12. #4/3, #8G, 1 1/4"C.
13. #4#600, #3G, 4"C.
14. #4/2, #6G, 1 1/2"C.

KEYNOTES:

15. 3#10, #10G, 3/4"C
16. #4/2, #4G, 1 1/2"C.
17. #4#6, #10G, 1"C.
18. 4#350, #2G, 3"C. PROVIDE TYPE XHHW TYPE WIRE. ROUTE CONDUIT BELOW GRADE FROM PANEL LVSP TO THE SOUTH WALL OF MULTI-PURPOSE 1312/1313 OR THE SOUTH WALL OF LOBBY 1303 CORRIDOR LOCATED ON THE SOUTH SIDE OF THE MULTI-PURPOSE SPACE. CONDUIT SHALL CONTINUE IN WALL CAVITY TO ABOVE THE ROOF AND CONTINUE ALONG THE ROOF TO MECHANICAL 1127. CONDUIT SHALL BE MOUNTED ON CONDUIT SUPPORT SYSTEM. REFER TO DETAIL 13 ON SHEET E811. VERIFY FINAL CONDUIT ROUTING WITH THE OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.
19. 4#4/0, #4G, 2 1/2"C. PROVIDE TYPE XHHW TYPE WIRE. ROUTE CONDUIT BELOW GRADE FROM PANEL LVSP TO THE SOUTH WALL OF MULTI-PURPOSE 1312/1313 OR THE SOUTH WALL OF LOBBY 1303 CORRIDOR LOCATED ON THE SOUTH SIDE OF THE MULTI-PURPOSE SPACE. CONDUIT SHALL CONTINUE IN WALL CAVITY TO ABOVE THE ROOF AND CONTINUE ALONG THE ROOF TO MECHANICAL 1127. CONDUIT SHALL BE MOUNTED ON CONDUIT SUPPORT SYSTEM. REFER TO DETAIL 13 ON SHEET E811. VERIFY FINAL CONDUIT ROUTING WITH THE OWNER, ARCHITECT AND GC PRIOR TO ROUGH-IN.
20. 3#8, #10G, 3/4"C.
21. 4#3, #8G, 1 1/4"C.
22. 2 SETS OF 4#600, #250G, 4"C.
23. 3#600, #3G, 4"C.
24. 3#3, #8G, 1 1/4"C.
25. 4#3/0, #6G, 2 1/2"C. INTERCEPT EXISTING 2 1/2" CONDUIT STUBBED OUT BELOW GENERATOR PAD DURING THE EARLY PRIMARY GEAR WORK SCOPE.
26. #4600, #3G, 4"C. INTERCEPT EXISTING 4" CONDUIT STUBBED OUT BELOW GENERATOR PAD DURING THE EARLY PRIMARY GEAR WORK SCOPE.
27. #81, #4G, 1 1/2"C.
28. MAIN BREAKER SHALL BE PROVIDED WITH THE ABILITY FOR METERING AS WELL AS PHASE LOSS SENSING. MAIN BREAKER SHALL UTILIZED BACNET IP AS THE SOURCE FOR COMMUNICATION TO THE BMS. REFER TO SPEC SECTION 260913 FOR ADDITIONAL INFORMATION.



LEGEND:

- ● INDICATES BOLTED CONNECTION.
- ■ INDICATES EXOTHERMIC WELD CONNECTION, COMPATIBLE WITH MATERIOAL BEING JOINED.
- (1) 3/0 AWG INSULATED COPPER GROUND CONDUCTOR IN 1-1/4" CONDUIT.
- (2) 3/0 AWG BARE COPPER GROUND CONDUCTOR.
- (3) 3/4" X 10' - 0" LONG COPPER-CLAD GROUND ROD DRIVEN WITH TOP 12" BELOW GRADE.

1 E612 GROUNDING AND BONDING DETAIL COMMUNITY CENTER

SCALE = 1/8" = 1'-0"

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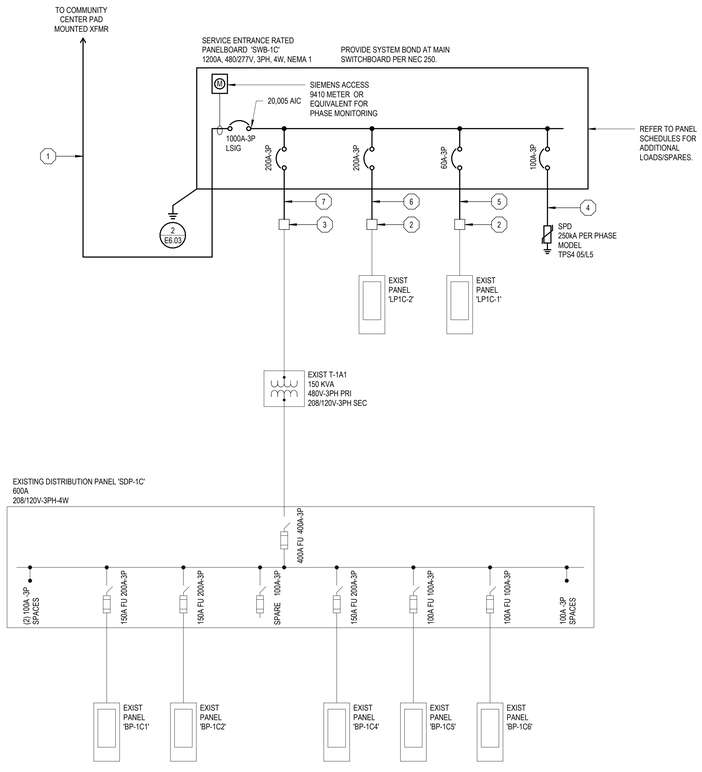
JOB NO. Project Number

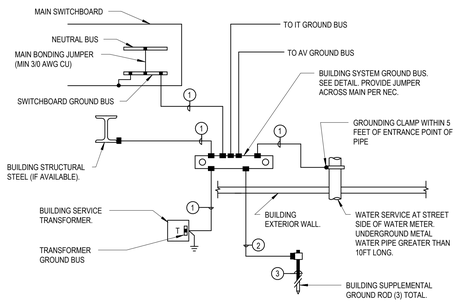
SHEET TITLE
ELECTRICAL ONE LINE DIAGRAM COMMUNITY CENTER

SHEET NO.
E612



1 ONE-LINE DIAGRAM COMMUNITY CENTER HOUSE

E613 SCALE = 1/8" = 1'-0"



LEGEND:

- ● INDICATES BOLTED CONNECTION.
- ■ INDICATES EXOTHERMIC WELD CONNECTION, COMPATIBLE WITH MATERIOAL BEING JOINED.
- (1) 3/0 AWG INSULATED COPPER GROUND CONDUCTOR IN 1-1/4" CONDUIT.
- (2) 3/0 AWG BARE COPPER GROUND CONDUCTOR.
- (3) 3/4" X 10' - 0" LONG COPPER-CLAD GROUND ROD DRIVEN WITH TOP 12" BELOW GRADE.

2 GROUNDING AND BONDING DETAIL FIELD HOUSE

E613 SCALE = 1/8" = 1'-0"

KEYNOTES:

1 CONTRACTOR SHALL REWORK (2) EXISTING UNDERGROUND SECONDARY FEEDS AND CONNECT TO NEW SWITCHBOARD SWB-1C. A THIRD EMPTY CONDUIT WAS INSTALLED DURING THE PRIMARY GEAR PACKAGE AND STOPPED 5' SHORT OF THE EXISTING EXTERIOR WALL. EXISTING 3" CONDUIT WILL NEED TO BE EXTENDED BELOW GRADE THROUGH THE EXISTING WALL AND STUB UP ADJACENT TO THE (2) EXISTING 3" CONDUITS IN PLACE. EXISTING EXTERIOR WALL FOUNDATION WILL NEED TO BE CORED TO EXTEND THE 3RD 3" CONDUIT. PROVIDE 4#400, #250G IN THE 3" CONDUIT.

2 PROVIDE A JUNCTION BOX TO SPLICE AND EXTEND EXISTING PANEL FEED TO ACCOMMODATE THE NEW FIELD HOUSE PANELBOARD.

3 PROVIDE A JUNCTION BOX TO SPLICE AND EXTEND EXISTING TRANSFORMER FEED TO ACCOMMODATE THE NEW FIELD HOUSE PANELBOARD.

4 3#3, #8G, 3/4"C.

5 4#6, #10G, 1"C. CONTRACTOR TO FIELD VERIFY EXISTING WIRE AND CONDUIT SIZES AND REPORT ANY DISCREPANCIES WITH NEW WIRE AND CONDUITS SIZES NOTED.

6 4#1/0, #6G, 2"C. CONTRACTOR TO FIELD VERIFY EXISTING WIRE AND CONDUIT SIZES AND REPORT ANY DISCREPANCIES WITH NEW WIRE AND CONDUITS SIZES NOTED.

7 3#3/0, #6G, 2"C. CONTRACTOR TO FIELD VERIFY EXISTING WIRE AND CONDUIT SIZES AND REPORT ANY DISCREPANCIES WITH NEW WIRE AND CONDUITS SIZES NOTED.

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Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

STATE OF MICHIGAN
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JOB NO. Project Number

SHEET TITLE
ELECTRICAL ONE LINE DIAGRAM
FIELD HOUSE

SHEET NO.
E613

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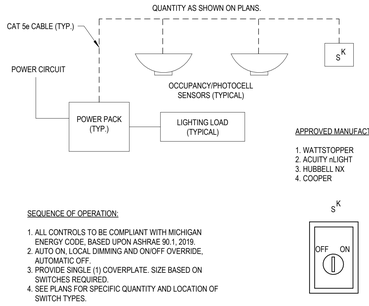


APPROVED MANUFACTURERS:

1. WATTSTOPPER
2. ACUITY nLIGHT
3. HUBBELL NX
4. COOPER

SEQUENCE OF OPERATION:

1. ALL CONTROLS TO BE COMPLIANT WITH MICHIGAN ENERGY CODE, BASED UPON ASHRAE 90.1, 2019.
2. AUTO ON, LOCAL DIMMING AND ON/OFF OVERRIDE, AUTOMATIC OFF.
3. PROVIDE SINGLE (1) COVERPLATE. SIZE BASED ON SWITCHES REQUIRED.
4. SEE PLANS FOR SPECIFIC QUANTITY AND LOCATION OF SWITCH TYPES.

11 LIGHTING CONTROL KEYED DETAILS
E811 NOT TO SCALE

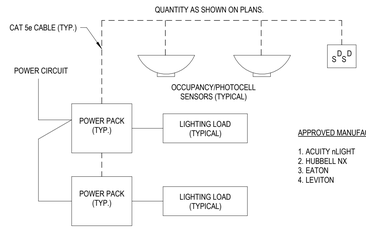
APPROVED LIGHTING MANUFACTURERS:

1. WATTSTOPPER
2. HUBBELL
3. ACUITY
4. COOPER

SEQUENCE OF OPERATION:

1. ALL CONTROLS TO BE COMPLIANT WITH MICHIGAN ENERGY CODE, BASED UPON ASHRAE 90.1, 2019.
2. MANUAL ON, ON/OFF OVERRIDE, AUTOMATIC OFF.
3. TOILETS AND STORAGE CLOSETS SHALL BE AUTOMATIC ON/OFF.

7 OCCUPANCY SENSOR STAND ALONE
E811 NOT TO SCALE

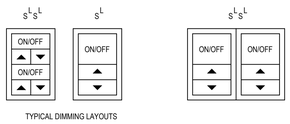


APPROVED MANUFACTURERS:

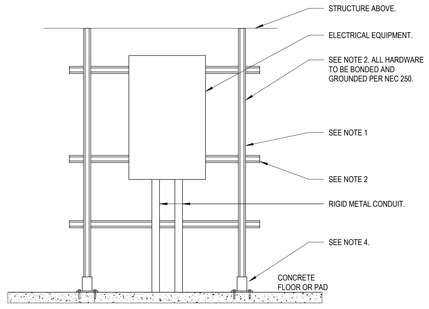
1. ACUITY nLIGHT
2. HUBBELL NX
3. EATON
4. LEVITON

SEQUENCE OF OPERATION:

1. ALL CONTROLS TO BE COMPLIANT WITH MICHIGAN ENERGY CODE, BASED UPON ASHRAE 90.1, 2019.
2. MANUAL ON, LOCAL DIMMING AND ON/OFF OVERRIDE, AUTOMATIC OFF.
3. PROVIDE SINGLE (1) COVERPLATE. SIZE BASED ON SWITCHES REQUIRED.
4. SEE PLANS FOR SPECIFIC QUANTITY AND LOCATION OF SWITCH TYPES.



8 LIGHTING CONTROL DIMMING DETAILS
E811 NOT TO SCALE



NOTES:

1. UNISTRUT SUPPORT POST FOR ELECTRICAL EQUIPMENT: 12 GAUGE 1-5/8" X 1-5/8" CONTINUOUS SLOT HOT DIPPED GALVANIZED CHANNEL.

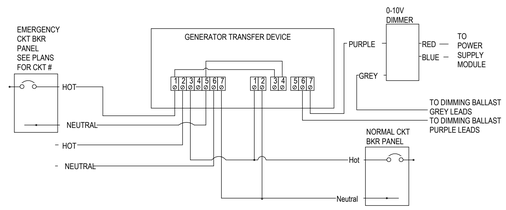
2. MOUNTING HARDWARE- 12 GAUGE 1-5/8" X 1-5/8" CONTINUOUS SLOT HOT DIPPED GALVANIZED CHANNEL (e.g., UNISTRUT) COMPLETE WITH 1-1/4" X 5/16" DIA. 13 THD SPRING NUT (2 PER CHANNEL), 5/16" HEX NUT, AND LOCK WASHER SECURELY MOUNTED TO SUPPORT POSTS.

3. POSTS AND CABINETS SHALL BE GROUNDED WITH #2 BARE TINNED COPPER TO TWO (2) GROUND RODS, BOND TO SWITCHGEAR GROUND SYSTEM.

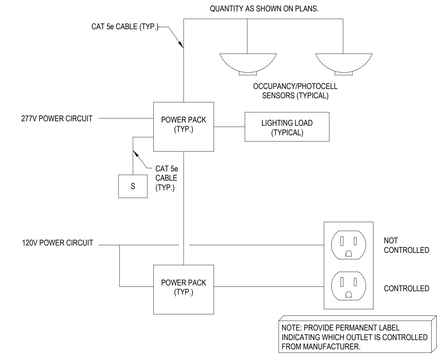
4. UNISTRUT FLOOR MOUNTING BRACKET.

NOTE:
TO ENSURE UNISTRUT RACK IS RIGID VERTICAL SUPPORT MEMBERS MAY NEED TO BE SUPPORTED FROM STRUCTURAL FRAMING ABOVE.

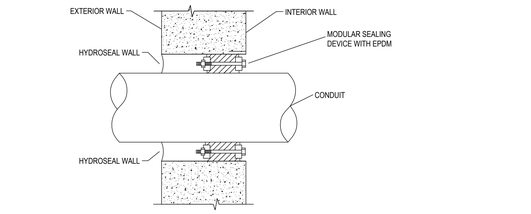
5 INTERIOR UNISTRUT RACK SYSTEM
E811 NOT TO SCALE



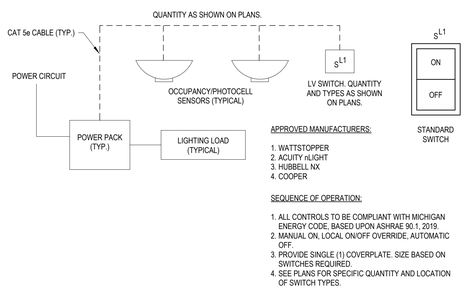
1 GTD WIRING DIAGRAM
E811 SCALE = 1/8" = 1'-0"



2 OCCUPANCY SENSOR STAND ALONE (TYPICAL)
E811 NOT TO SCALE



12 CONDUIT PENETRATION THRU EXTERIOR WALL
E811 SCALE = 1/8" = 1'-0"



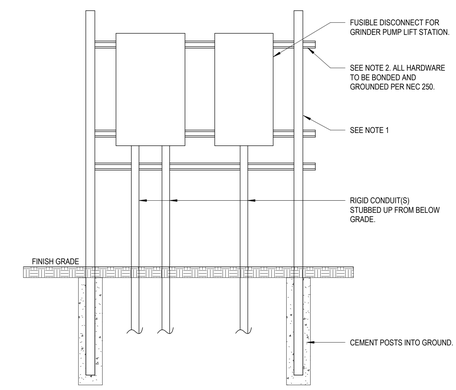
APPROVED MANUFACTURERS:

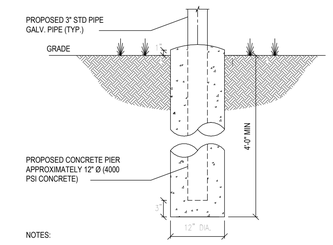
1. WATTSTOPPER
2. ACUITY nLIGHT
3. HUBBELL NX
4. COOPER

SEQUENCE OF OPERATION:

1. ALL CONTROLS TO BE COMPLIANT WITH MICHIGAN ENERGY CODE, BASED UPON ASHRAE 90.1, 2019.
2. MANUAL ON, LOCAL ON/OFF OVERRIDE, AUTOMATIC OFF.
3. PROVIDE SINGLE (1) COVERPLATE. SIZE BASED ON SWITCHES REQUIRED.
4. SEE PLANS FOR SPECIFIC QUANTITY AND LOCATION OF SWITCH TYPES.

9 LIGHTING CONTROL ON/OFF DETAILS
E811 NOT TO SCALE





NOTES:

1. SUPPORT POST FOR METER AND PANELBOARD: 2-3" STD GALVANIZED PIPE WITH CAP CEMENTED IN GROUND. BOND POSTS TO GROUND FIELD. BOND POSTS TO GROUND FIELD.

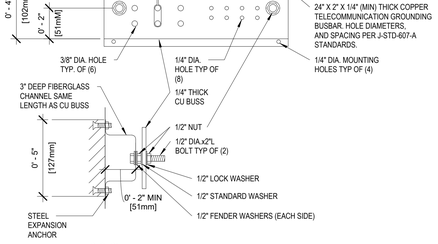
2. MOUNTING HARDWARE- 12 GAUGE 1-5/8" X 1-5/8" CONTINUOUS SLOT HOT DIPPED GALVANIZED CHANNEL (e.g., UNISTRUT) COMPLETE WITH 1-1/4" X 5/16" DIA. 13 THD SPRING NUT (2 PER CHANNEL), 5/16" HEX NUT, AND LOCK WASHER SECURELY MOUNTED TO SUPPORT POSTS.

3. ALL ABOVE GROUND CONDUITS SHALL BE RIGID GALVANIZED STEEL. PROVIDE PVC TO RGS COUPLER FOR TRANSITION.

4. POSTS AND CABINETS SHALL BE GROUNDED WITH #2 BARE TINNED COPPER TO TWO (2) GROUND RODS, BOND TO MAIN ELECTRICAL GEAR GROUND SYSTEM.

5. ALL CUT POST & UNISTRUT ENDS SHALL BE FILED, GALVANIZED AND CAPPED.

6 EXTERIOR UNISTRUT RACK SYSTEM
E811 NOT TO SCALE



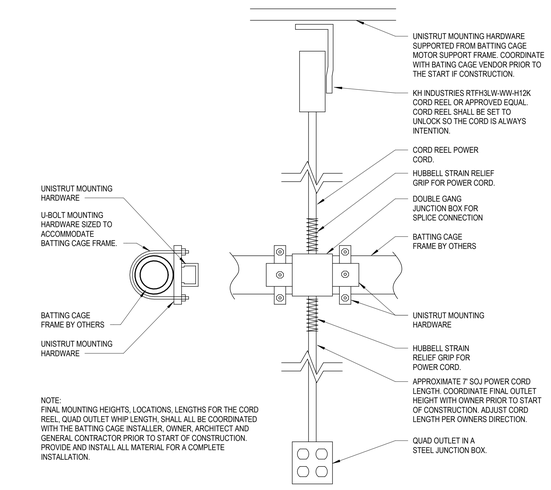
SECTION

GENERAL NOTES:

1. ALL HARDWARE SHOWN SHALL BE STAINLESS STEEL
2. PROVIDE (2) MOUNTING POINTS PER 12" OF BAR LENGTH
3. HOLES MAY BE ADDED AS REQUIRED

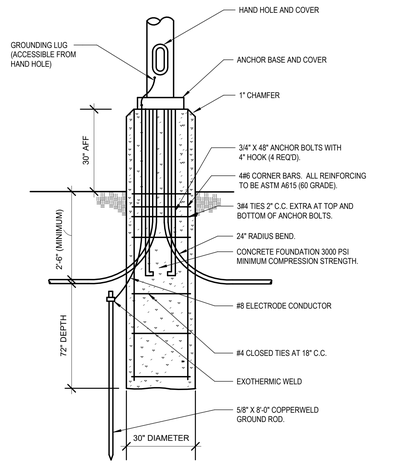
3 GROUND BAR DETAIL
E811 NOT TO SCALE

13 MIRO ROOF SUPPORT
E811 SCALE = 1/8" = 1'-0"



NOTE:
FINAL MOUNTING HEIGHTS, LOCATIONS, LENGTHS FOR THE CORD REEL, QUAD OUTLET WHIP LENGTH, SHALL ALL BE COORDINATED WITH THE BATTING CAGE INSTALLER, OWNER, ARCHITECT AND GENERAL CONTRACTOR PRIOR TO START OF CONSTRUCTION. PROVIDE AND INSTALL ALL MATERIAL FOR A COMPLETE INSTALLATION.

10 BATTING CAGE MOUNTED OUTLET
E811 SCALE = 1/8" = 1'-0"



REFER TO SHEET E113 FOR POLE BASE LOCATIONS.

4 POLE BASE DETAIL 30"
E811 NOT TO SCALE

544 CHERRONDO DRIVE
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MATRIX
CONSULTING ENGINEERS, INC

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

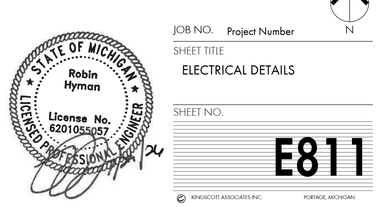
Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. Project Number

N

SHEET TITLE
ELECTRICAL DETAILS

SHEET NO.
E811

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LIGHT FIXTURE SCHEDULE

ID	MANUFACTURER	MODEL NO.	VOLTAGE	REQUIRED LAMPS QTY	WATT	TYPE	DESCRIPTION	NOTES
A1	WILLIAMS	BP-2-2-LS-8-CS-DIM-UNV	MVOLT	1	42 W	LED, 3500K, 3560LM	2'X2' LED FLAT PANEL, 0-10V DIMMING, WITH SWITCHABLE COLOR TEMPERATURE AND LUMEN OUTPUT. LUMEN OUTPUT SHALL BE SET TO MID SETTING.	FOR FIXTURES IN GYP BOARD CEILING, PROVIDE DFK-2424W
A1EM	WILLIAMS	BP-2-2-LS-8-CS-DIM-UNV	MVOLT	1	42 W	LED, 3500K, 3560LM	2'X2' LED FLAT PANEL, 0-10V DIMMING, WITH SWITCHABLE COLOR TEMPERATURE AND LUMEN OUTPUT. LUMEN OUTPUT SHALL BE SET TO MID SETTING.. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR EM POWER.	
A2	WILLIAMS	BP-2-2-LS-8-CS-DIM-UNV	MVOLT	1	42 W	LED, 3500K, 4543LM	2'X2' LED FLAT PANEL, 0-10V DIMMING, WITH SWITCHABLE COLOR TEMPERATURE AND LUMEN OUTPUT. LUMEN OUTPUT SHALL BE SET TO HIGH SETTING.	FOR FIXTURES IN GYP BOARD CEILING, PROVIDE DFK-2424W
A2EM	WILLIAMS	BP-2-2-LS-8-CS-DIM-UNV	MVOLT	1	42 W	LED, 3500K, 4543LM	2'X2' LED FLAT PANEL, 0-10V DIMMING, WITH SWITCHABLE COLOR TEMPERATURE AND LUMEN OUTPUT. LUMEN OUTPUT SHALL BE SET TO HIGH SETTING. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR EM POWER.	FOR FIXTURES IN GYP BOARD CEILING, PROVIDE DFK-2424W
A3	WILLIAMS	BP-2-2-LS-8-CS-DIM-UNV	MVOLT	1	42 W	LED, 3500K, 2443LM	2'X2' LED FLAT PANEL, 0-10V DIMMING, WITH SWITCHABLE COLOR TEMPERATURE AND LUMEN OUTPUT. LUMEN OUTPUT SHALL BE SET TO LOW SETTING.	FOR FIXTURES IN GYP BOARD CEILING, PROVIDE DFK-2424W
A3EM	WILLIAMS	BP-2-2-LS-8-CS-DIM-UNV	MVOLT	1	42 W	LED, 3500K, 2443LM	2'X2' LED FLAT PANEL, 0-10V DIMMING, WITH SWITCHABLE COLOR TEMPERATURE AND LUMEN OUTPUT. LUMEN OUTPUT SHALL BE SET TO LOW SETTING. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR EM POWER.	FOR FIXTURES IN GYP BOARD CEILING, PROVIDE DFK-2424W
AEM	WILLIAMS	BP-2-4-LS-8-CS-DIM-UNV	MVOLT	1	47 W	LED, 3500K, 6000LM	2'X4' LED TO SERVE AS EMERGENCY LIGHTING SOURCE ONLY NOT GENERAL ILLUMINATION.	FOR FIXTURES IN GYP BOARD CEILING, PROVIDE DFK-2448W
B	STARTEK	STS-4-750-SD-35K-80-PW-SMCT-U-1C	MVOLT	1	56 W	LED, 3500K, 6000LM	8' LINEAR LED VANDAL RESISTANT LIGHT FIXTURE, 0-10V DIMMING.	
B3	STARTEK	STS-4-750-SD-35K-80-PW-SMCT-U-1C	MVOLT	1	29 W	LED, 3500K, 3000LM	4' LINEAR LED VANDAL RESISTANT LIGHT FIXTURE, 0-10V DIMMING.	
B3EM	STARTEK	STS-4-750-SD-35K-80-PW-SMCT-U-1C	MVOLT	1	29 W	LED, 3500K, 3000LM	4' LINEAR LED VANDAL RESISTANT LIGHT FIXTURE, 0-10V DIMMING. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR POWER.	
B4EM	STARTEK	STS-4-1000-SD-35K-80-PW-SMCT-U-1C	MVOLT	1	32 W	LED, 3500K, 4000LM	4' LINEAR LED VANDAL RESISTANT LIGHT FIXTURE, 0-10V DIMMING. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR POWER.	
BEM	STARTEK	STS-4-750-SD-35K-80-PW-SMCT-U-1C	MVOLT	1	56 W	LED, 3500K, 6000LM	8' LINEAR LED VANDAL RESISTANT LIGHT FIXTURE, 0-10V DIMMING. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR POWER.	
C1	WILLIAMS	75R-4-L50-840-(L40)-ACF/96-DIM-UNV-WH	MVOLT	1	28 W	LED, 4000K, 5000LM	4' LED SUSPENDED STRIP, SUSPENDED WITH ADJUSTABLE AIRCRAFT CABLE. FIXTURE SHALL BE LOCATED BELOW ALL MECHANICAL AND PLUMBING SYSTEMS LOCATED WITHIN THE SPACE. PROVIDE ALL NECESSARY UNISTRUT AND MOUNTING HARDWARE TO SUPPORT THE LIGHT FIXTURE.	
C1EM	WILLIAMS	75R-4-L50-840-(L40)-ACF/96-DIM-UNV-WH	MVOLT	1	28 W	LED, 4000K, 4000LM	4' LED INDUSTRIAL STRIP, SUSPENDED WITH ADJUSTABLE AIRCRAFT CABLE. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA A GTD AND GENERATOR. FIXTURE SHALL BE LOCATED BELOW ALL MECHANICAL AND PLUMBING SYSTEMS LOCATED WITHIN THE SPACE. PROVIDE ALL NECESSARY UNISTRUT AND MOUNTING HARDWARE TO SUPPORT THE LIGHT FIXTURE.	
C2	WILLIAMS	75R-4-L65-840-(L55)-ACF/96-DIM-UNV-WH	MVOLT	1	39 W	LED, 4000K, 5500LM	4' LED SUSPENDED STRIP, SUSPENDED WITH ADJUSTABLE AIRCRAFT CABLE.	
C2EM	WILLIAMS	75R-4-L65-840-(L55)-ACF/96-DIM-UNV-WH	MVOLT	1	39 W	LED, 4000K, 5500LM	4' LED INDUSTRIAL STRIP. FIXTURE CABLE SUSPENDED. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA A GTD AND GENERATOR.	
D	JESCO	P22-1-RM-010-210MA-08W-P22-35S-3590-VW-LC-RD-BS-TW	MVOLT	1	8 W	LED, 3500K, 720LM	3.5" DOWNLIGHT, WHITE FLANGE, 0-10V DIMMING, WET LOCATION LISTED.	
D1	WILLIAMS	4PR-TL-L15-8-35-DIM1-UNV-L-W-OF-CS-N-F1	MVOLT	1	17 W	LED, 3500K, 1500LM	4.5" ROUND DOWNLIGHT, 0-10V DIMMING 1%, WHITE FLANGE.	
D1EM	WILLIAMS	4PR-TL-L15-8-35-DIM1-UNV-L-W-OF-CS-N-F1	MVOLT	1	17 W	LED, 3500K	4.5" ROUND DOWNLIGHT, 0-10V DIMMING 1%, WHITE FLANGE. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR.	
D2	WILLIAMS	4PR-TL-L20-8-35-DIM1-UNV-L-W-OF-CS-N-F1	MVOLT	1	23 W	LED, 3500K, 2000LM	4.5" ROUND DOWNLIGHT, 0-10V DIMMING 1%, WHITE FLANGE.	
D2EM	WILLIAMS	4PR-TL-L20-8-35-DIM1-UNV-L-W-OF-CS-N-F1	MVOLT	1	23 W	LED, 3500K, 2000LM	4.5" ROUND DOWNLIGHT, 0-10V DIMMING 1%, WHITE FLANGE. FIXTURE WILL BE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR.	
D4EM	ELITE	RL792-1000LDINTR120-30/40/50-90-RL792-RT-BN	MVOLT	1	11 W	LED, 4000K, 1000LM	6" LED SURFACE MOUNTED DOWNLIGHT, DIMMABLE. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT.	
E	NULITE	RG2-D-STF-06-L3S-UNV-D-1-1-WH-6	MVOLT	1	30 W	LED, 3500K, 3624LM	2" WIDE LINEAR RECESSED LED LIGHT, 0-10V DIMMING.	
E1	NULITE	RG2-D-STF-06-L3S-UNV-D-1-1-WH-4	MVOLT	1	20 W	LED, 3500K, 2416LM	2" WIDE LINEAR RECESSED LED LIGHT, 0-10V DIMMING.	
E1EM	NULITE	RG2-D-STF-06-L3S-UNV-D-1-1-WH-4	MVOLT	1	20 W	LED, 3500K, 2416LM	2" WIDE LINEAR RECESSED LED LIGHT, 0-10V DIMMING. FIXTURE CONNECTED TO AN EMERGENCY SOURCE VIA GTD AND GENERATOR.	
EEM	NULITE	RG2-D-STF-06-L3S-UNV-D-1-1-WH-6	MVOLT	1	30 W	LED, 3500K, 3624LM	2" WIDE LINEAR RECESSED LED LIGHT, 0-10V DIMMING. FIXTURE CONNECTED TO AN EMERGENCY SOURCE VIA GTD AND GENERATOR.	
F	NULITE	RG2-D-STF-03-L3S-UNV-D-1-1-WH-14'	MVOLT	1	31 W	LED, 3500K, 300LM/FT	2" WIDE LINEAR RECESSED LED LIGHT FIXTURE, 0-10V DIMMING 1%.	
F1	NULITE	RF2-D-STF-05-L3S-UNV-D-1-1-WH-10'	MVOLT	1	40 W	LED, 3500K, 500LM/FT	2" WIDE LINEAR RECESSED LED LIGHT FIXTURE, 0-10V DIMMING. ARROWS INDICATE DISTRIBUTION OF LIGHT.	
F2	NULITE	RF2-D-STF-05-L3S-UNV-D-1-1-WH-20'	MVOLT	1	80 W	LED, 3500K, 500LM/FT	2" WIDE LINEAR RECESSED LED LIGHT FIXTURE, 0-10V DIMMING 1%.	
F3EM	NULITE	RG2-D-STF-05-L3S-UNV-D-1-1-WH-8'	MVOLT	1	32 W	LED, 3500K, 500LM/FT	2" WIDE LINEAR RECESSED LED LIGHT FIXTURE, 0-10V DIMMING. FIXTURE TO BE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR.	
F5EM	NULITE	RG2-D-STF-05-L3S-UNV-D-1-1-WH-12'	MVOLT	1	48 W	LED, 3500K, 500LM/FT	2" WIDE LINEAR RECESSED LED LIGHT FIXTURE, 0-10V DIMMING 1%. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR.	
P1	HOLOPHANE	HOLO1-60000LM-WD-MVOLT-40K-80CRI-QD-HA-DL-NLTAIR2KO-UPL-WGX-DWHXD-RFD359126	MVOLT	1	421 W	LED, 4000K, 60000LM	RIGID SUSPENDED ROUND LED HIGHBAY WITH DIRECT AND INDIRECT LIGHTING, 0-10V DIMMING, WITH METAL WIREGUARD. FIXTURE SHALL HAVE WIRELESS CONTROLS FOR COMMUNICATION BETWEEN FIXTURES AND BACK TO TIME CLOCK. DIRECT LIGHTING AND UP LIGHTING SHALL BE CONTROLLED TOGETHER.	ALTERNATES MUST BE PREAPPROVED PRIOR TO ISSUING BIDS
P1EM	HOLOPHANE	HOLO1-60000LM-WD-MVOLT-40K-80CRI-QD-HA-DL-NLTAIREM2KO-UPL-WGX-DWHXD-RFD359127	MVOLT	1	421 W	LED, 4000K, 60000LM DN	RIGID SUSPENDED ROUND LED HIGHBAY WITH DIRECT AND INDIRECT LIGHTING, 0-10V DIMMING, WITH METAL WIREGUARD. FIXTURE SHALL HAVE WIRELESS CONTROLS FOR COMMUNICATION BETWEEN FIXTURES AND BACK TO TIME CLOCK. FIXTURE CONNECTED TO AN EMERGENCY SOURCE VIA GTD AND GENERATOR. DIRECT LIGHTING AND UP LIGHTING SHALL BE CONTROLLED TOGETHER.	ALTERNATES MUST BE PREAPPROVED PRIOR TO ISSUING BIDS
P2	HOLOPHANE	HOLO1-30000LM-WD-MVOLT-40K-80CRI-QD-SPD20KV-DL-NLTAIR2KO-UPL-WGX-DWHXD-RFD359128	MVOLT	1	208 W	LED, 4000K, 30000LM DN	RIGID SUSPENDED ROUND LED HIGHBAY WITH DIRECT AND INDIRECT LIGHTING, 0-10V DIMMING, WITH METAL WIREGUARD. FIXTURE SHALL HAVE WIRELESS CONTROLS FOR COMMUNICATION BETWEEN FIXTURES AND BACK TO TIME CLOCK. DIRECT LIGHTING AND UP LIGHTING SHALL BE CONTROLLED TOGETHER.	ALTERNATES MUST BE PREAPPROVED PRIOR TO ISSUING BIDS
P2EM	HOLOPHANE	HOLO1-30000LM-WD-MVOLT-40K-80CRI-QD-SPD20KV-DL-NLTAIREM2KO-UPL-WGX-DWHXD-RFD329130	MVOLT	1	208 W	LED, 4000K, 30000LM DN	RIGID SUSPENDED ROUND LED HIGHBAY WITH DIRECT AND INDIRECT LIGHTING, 0-10V DIMMING, WITH METAL WIREGUARD. FIXTURE SHALL HAVE WIRELESS CONTROLS FOR COMMUNICATION BETWEEN FIXTURES AND BACK TO TIME CLOCK. FIXTURE CONNECTED TO AN EMERGENCY SOURCE VIA GTD AND GENERATOR. DIRECT LIGHTING AND UP LIGHTING SHALL BE CONTROLLED TOGETHER.	ALTERNATES MUST BE PREAPPROVED PRIOR TO ISSUING BIDS
P3	HOLOPHANE	HOLO1-15000LM-WD-MVOLT-40K-80CRI-QD-SPD20KV-DL-NLTAIR2-APIRM-UPL-WGX-DWHXD-RFD329131	MVOLT	1	104 W	LED, 4000K, 15000LM	RIGID SUSPENDED ROUND LED HIGHBAY WITH DIRECT AND INDIRECT LIGHTING, INBEDDED COMBINATION OCCUPANCY AND DAYLIGHT SENSOR, 0-10V DIMMING, WITH METAL WIRE GAURD. DIRECT LIGHTING AND UP LIGHTING SHALL BE CONTROLLED TOGETHER.	ALTERNATES MUST BE PREAPPROVED PRIOR TO ISSUING BIDS
P3EM	HOLOPHANE	HOLO1-15000LM-WD-MVOLT-40K-80CRI-QD-SPD20KV-NLTAIR2-APIRM-HA-UPL-WGX-DWHXD	MVOLT	1	104 W	LED, 4000K, 15000LM	RIGID SUSPENDED ROUND LED HIGHBAY WITH DIRECT AND INDIRECT LIGHTING, INBEDDED COMBINATION OCCUPANCY AN DAYLIGHT SENSOR, 0-10V DIMMING, WITH METAL WIRE GAURD. FIXTURE CONNECTED TO AN EMERGENCY SOURCE VIA GTD AND GENERATOR. DIRECT LIGHTING AND UP LIGHTING SHALL BE CONTROLLED TOGETHER.	ALTERNATES MUST BE PREAPPROVED PRIOR TO ISSUING BIDS

LIGHT FIXTURE SCHEDULE

ID	MANUFACTURER	MODEL NO.	VOLTAGE	REQUIRED LAMPS QTY	WATT	TYPE	DESCRIPTION	NOTES
P4	ALW	CSP6-20-90-35-55-NN-N-V01-BA-CB-RSLENGTH (CANOPY FINISH TO MATCH FIXTURE HOUSING FINISH).	MVOLT	1	16 W	LED, 3500K, 2000LM	6" SQUARE LED PENDANT CYLINDER WITH BRAIDED CORD.	
P4A	ALW	CSP3-05-90-35-55-NN-R-V01-BA-CB-RSLENGTH (CANOPY FINISH TO MATCH FIXTURE HOUSING FINISH).	MVOLT	1	3 W	LED, 3500K, 500LM	3.5" SQUARE LED PENDANT DOWN LIGHT, 0-10V DIMMING 1%.	
P4B	ALW	CSP6-20-90-35-55-NN-N-V01-COLOR-RSLENGTH	MVOLT	1	16 W	LED, 3500K, 2000LM	6" SQUARE LED PENDANT CYLINDER WITH RIGID STEM, 0-10V DIMMING 1%.	
P4EM	ALW	CSP6-20-90-35-55-NN-N-V01-BA-CB-RSLENGTH (CANOPY FINISH TO MATCH FIXTURE HOUSING FINISH).	MVOLT	1	16 W	LED, 3500K, 2000LM	6" SQUARE LED PENDANT CYLINDER WITH RIGID STEM. FIXTURE CONNECTED TO AN EMERGENCY SOURCE VIA GTD AND GENERATOR.	
P5	NULITE	RP24-B-STF-ASYM-03-03-L3S-UNV-D-11-WH-SR-W-240-RECT(3'X3')-CMC	MVOLT	1	35 W	LED, 3500K, 3540LM	3'X3' SQUARE LED PENDANT, 0-10V DIMMING. MOUNTING SHALL BE CENTER POINT WITH CABLE SUPPORT FROM ALL 4 CORNERS.	
P5EM	NULITE	RP24-B-STF-ASYM-03-03-L3S-UNV-D-11-WH-SR-W-240-RECT(3'X3')-CMC	MVOLT	1	35 W	LED, 3500K, 3540LM	3'X3' SQUARE LED PENDANT, 0-10V DIMMING. MOUNTING SHALL BE CENTER POINT WITH CABLE SUPPORT FROM ALL 4 CORNERS. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR.	
P6	NULITE	RP24-D-STF-05-L3S-UNV-D-1-1-SW6111 "COCONUT HUSK"-SR-B-SL-8'	MVOLT	1	32 W	LED, 3500K, 500LM/FT	4" HIGH LINEAR LED PENDANT LIGHT, 0-10V DIMMING 1%.	
P9	NULITE	RP24-D-STF-05-L3S-UNV-D-1-1-SW6111 "COCONUT HUSK"-SR-B-SL-13'	MVOLT	1	52 W	LED, 3500K, 500LM/FT	4" HIGH LINEAR LED PENDANT LIGHT, 0-10V DIMMING 1%.	
P9EM	NULITE	RP24-D-STF-05-L3S-UNV-D-1-1-SW6111 "COCONUT HUSK"-SR-B-SL-13'	MVOLT	1	51 W	LED, 3500K, 500LM/FT	4" LED LINEAR PENDANT LIGHT, 0-10V DIMMING. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR.	
P10EM	NULITE	RP24-D-STF-05-L3S-UNV-D-1-1-SW6111 "COCONUT HUSK"-SR-B-SL-14'	MVOLT	1	56 W	LED, 3500K	4" HIGH LINEAR LED PENDANT LIGHT, 0-10V DIMMING 1%.	
P11	NULITE	RP24-D-STF-05-L3S-UNV-D-1-1-SW6111 "COCONUT HUSK"-SR-B-SL-19'	MVOLT	1	76 W	LED, 3500K, 500LM/FT	4" HIGH LINEAR LED PENDANT LIGHT, 0-10V DIMMING 1%.	
P12	NULITE	RP44-B-STBW-BW-05-03-L3S-UNV-D-1-1-DERBYSHIRE SW 6741-SR-LENGTH-RECT96"X96"-CMC	MVOLT	1	204 W	LED,3500K, 500LM/FT DN, 300LM/FT UP	8' SQUARE OPEN LED PENDANT WITH DIRECT/INDIRECT DISTRIBUTION, 0-10V DIMMING 1%. MOUNTING SHALL BE CENTER POINT WITH CABLE SUPPORT FROM ALL 4 CORNERS.	
P12EM	NULITE	RP44-B-STBW-BW-05-03-L3S-UNV-D-1-1-DERBYSHIRE SW 6741-SR-LENGTH-RECT96"X96"-CMC	MVOLT	1	204 W	LED,3500K, 500LM/FT DN, 300LM/FT UP	8' SQUARE OPEN LED PENDANT WITH DIRECT/INDIRECT DISTRIBUTION, 0-10V DIMMING 1%. MOUNTING SHALL BE CENTER POINT WITH CABLE SUPPORT FROM ALL 4 CORNERS. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR.	
P13EM	NULITE	RP44-B-STBW-BW-05-03-L3S-UNV-D-1-1-DERBYSHIRE SW 6741-SR-LENGTH-RECT60"X60"	MVOLT	1	120 W	LED, 3500K, 500LM/FT DN, 300LM/FT UP	5' SQUARE OPEN LED PENDANT WITH DIRECT/INDIRECT DISTRIBUTION, 0-10V DIMMING 1%. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR.	
P14	NULITE	RP24-B-STF-BW-03-03-L3S-UNV-D-1-1-BK-SR-B-LENGTH-8'	MVOLT	1	39 W	LED, 3500K, 4800LM	2" WIDE LINEAR PENDANT, 0-10V DIMMING 1%.	
SA	LUMENCON	FIXTURE: (DUAL) LDS-SAL-95-CCTBD-T4-2-40-MAS OCCUPANCY SENSOR: PSC-ZKV-I-11-W-BLE-SR-COLOR ONE FIXTURE WILL HOUSE A WIRELESS ANTENNA FROM MW CONNECT. REFER TO SITE PLAN SHEET E113 FOR ANTENNA SPEC, QUANTITY AND LOCATIONS.	HMVOLT	1	95 W	LED, 4000K, 14567LM	(DUAL HEAD) TYPE 4 DISTRIBUTION LED AREA LIGHTS MOUNTED AT 30'-0" A.F.G. ORIENTED ON POLE AT 180 DEGRESS. EACH FIXTURE MOUNTED TO THE POLE WILL RECEIVE AN OCCUPANCY SENSOR NOTED IN THE PART NUMBER LOCATED ON THE BOTTOM OF THE FIXTURE. MOUNT TO A 4" SQUARE STRAIGHT STEEL POLE. PROVIDE FUSING FOR 480V FEED IN THE HANDHOLE LOCATED NEAR THE BOTTOM OF THE HOLE.	NO ALTERNATES ALLOWED
SD	LUMENCON	FIXTURE: (DUAL) LDS-SAL-95-CCTBD-T4-2-40-MAS OCCUPANCY SENSOR: PSC-ZKV-I-11-W-BLE-SR-COLOR ONE FIXTURE WILL HOUSE A WIRELESS ANTENNA FROM MW CONNECT. REFER TO SITE PLAN SHEET E113 FOR ANTENNA SPEC, QUANTITY AND LOCATIONS.	HMVOLT	1	95 W	LED, 4000K, 14567LM	(DUAL HEAD) TYPE 4 THROW LED AREA LIGHTS MOUNTED AT 30'-0" A.F.G. ORIENTED ON POLE AT 180 DEGRESS. EACH FIXTURE MOUNTED TO THE POLE WILL RECEIVE AN OCCUPANCY SENSOR NOTED IN THE PART NUMBER LOCATED ON THE BOTTOM OF THE FIXTURE. MOUNT TO A 4" SQUARE STRAIGHT STEEL POLE. PROVIDE FUSING FOR 480V FEED IN THE HANDHOLE LOCATED NEAR THE BOTTOM OF THE HOLE.	NO ALTERNATES ALLOWED
SE	LUMENCON	(SINGLE) LDS-SAL-95-CCTBD-T3-2-40-MAS ONE FIXTURE WILL HOUSE A WIRELESS ANTENNA FROM MW CONNECT. REFER TO SITE PLAN SHEET E113 FOR ANTENNA SPEC, QUANTITY AND LOCATIONS.	MVOLT	1	95 W	LED, 4000K, 14989LM	(SINGLE HEAD) TYPE III DISTRIBUTION LED AREA LIGHT MOUNTED AT 30'-0" A.F.G. EACH FIXTURE MOUNTED TO THE POLE WILL RECEIVE AN OCCUPANCY SENSOR NOTED IN THE PART NUMBER LOCATED ON THE BOTTOM OF THE FIXTURE. MOUNT TO A 4" SQUARE STRAIGHT STEEL POLE. PROVIDE FUSING FOR 480V FEED IN THE HANDHOLE LOCATED NEAR THE BOTTOM OF THE HOLE.	NO ALTERNATES ALLOWED
SF	LUMENCON	(DUAL) LDS-SAL-95-CCTBD-T2-2-40-MAS	HMVOLT	1	95 W	LED, 4000K, 14567LM	(DUAL HEAD) TYPE 2 DISTRIBUTION LED AREA LIGHTS MOUNTED AT 30'-0" A.F.G. ORIENTED ON POLE AT 180 DEGRESS. EACH FIXTURE MOUNTED TO THE POLE WILL RECEIVE AN OCCUPANCY SENSOR NOTED IN THE PART NUMBER LOCATED ON THE BOTTOM OF THE FIXTURE. MOUNT TO A 4" SQUARE STRAIGHT STEEL POLE. PROVIDE FUSING FOR 480V FEED IN THE HANDHOLE LOCATED NEAR THE BOTTOM OF THE HOLE.	NO ALTERNATES ALLOWED
SG	LUMENCON	(SINGLE) LDS-SAL-95-CCTBD-T4-2-40-MAS	MVOLT	1	95 W	LED, 4000K, 15300LM	(SINGLE HEAD) TYPE 4 DISTRIBUTION LED AREA LIGHT MOUNTED AT 30'-0" A.F.G. EACH FIXTURE MOUNTED TO THE POLE WILL RECEIVE AN OCCUPANCY SENSOR NOTED IN THE PART NUMBER LOCATED ON THE BOTTOM OF THE FIXTURE. MOUNT TO A 4" SQUARE STRAIGHT STEEL POLE. PROVIDE FUSING FOR 480V FEED IN THE HANDHOLE LOCATED NEAR THE BOTTOM OF THE HOLE.	NO ALTERNATES ALLOWED
W1	INSIGHT LIGHTING	SSM-DN-MO-3500K-55-WM-277-DIM-TBL	MVOLT	1	20 W	LED, 3500K, 1871LM	3" DIAMETER CYLINDER WITH DIRECT ILLUMINATION, 0-10V DIMMING 1%.	
W1AEM	INSIGHT LIGHTING	SSM-UD-MO-4000K-ASY-4000K-ASYM-WM-277V-DIM-TBL	MVOLT	1	40 W	LED, 4000K, 1034 LM UP AND 1034 DN	3" DIAMETER CYLINDER WITH DIRECT ILLUMINATION, 0-10V DIMMING 1%. FIXTURES CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR.	
W2	NULITE	RW24-B-STF-ASYM-09-03-L3S-UNV-D-1-1-BK-10'	MVOLT	1	101 W	LED,3500K, 900LM/FT DN, 300LM/FT UP	10' LINEAR LED WALL MOUNTED LIGHT WITH DIRECT/INDIRECT LIGHTING, 0-10V DIMMING 1%.	
W2EM	NULITE	RW24-B-STF-ASYM-09-03-L3S-UNV-D-1-1-BK-10'	MVOLT	1	101 W	LED, 3500K, 900LM/FT DN 300LM/FT UP	10' LINEAR LED WALL MOUNTED LIGHT WITH DIRECT/INDIRECT LIGHTING, 0-10V DIMMING 1%. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR.	
W3	NULITE	RW24-D-STASYM-03-L3S-UNV-D-1-1-WH-13'	MVOLT	1	32 W	LED, 3500K, 300LM/FT	2' DEEP LINEAR LED WALL MOUNTED LIGHT, 0-10V DIMMING 1%.	
W4EM	NULITE	RW24-D-STASYM-03-L3S-UNV-D-1-1-WH-21'	MVOLT	1	51 W	LED, 3500K, 300LM/FT	2' WIDE LINEAR LED WALL MOUNTED LIGHT, 0-10V DIMMING 1%. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR EM POWER.	
W5EM	NULITE	RW24-D-STASYM-03-L3S-UNV-D-1-1-WH-27'	MVOLT	1	65 W	LED, 3500K, 300LM/FT	2' WIDE LINEAR LED WALL MOUNTED LIGHT, 0-10V DIMMING 1%. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR EM POWER.	
W6	PINNACLE	M-WHE-35K-17'-WH18-U-FSD-1-W	MVOLT	1	118 W	LED, 3500K, 750LM/FT	17' LINEAR LED ARM MOUNTED WALL WASHER, 0-10V DIMMING 1%. FIXTURE SHALL STAND OFF THE WALL 18" FOR PROPER DISTRIBUTION OF LIGHT.	
W7	NULITE	RW24-D-STASYM-03-L3S-UNV-D-1-1-COLOR-6'	MVOLT	1	15 W	LED, 3500K, 300LM/FT	2' WIDE LINEAR LED WALL MOUNTED LIGHT, 0-10V DIMMING 1%.	
W8	NULITE	RW24-D-STASYM-03-L3S-UNV-D-1-1-COLOR-4'	MVOLT	1	10 W	LED, 3500K, 300LM/FT	2' WIDE LINEAR LED WALL MOUNTED LIGHT, 0-10V DIMMING 1%.	
W9	NULITE	RW24-D-STASYM-03-L3S-UNV-D-1-1-COLOR-8'	MVOLT	1	20 W	LED, 3500K, 300LM/FT	2' WIDE LINEAR LED WALL MOUNTED LIGHT, 0-10V DIMMING 1%. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR EM POWER.	
W10	NULITE	RW24-D-STF-03-L3S-UNV-D-1-1-WH-7	MVOLT	1	17 W	LED, 3500K, 300LM/FT DN	2' DEEP LINEAR LED WALL MOUNTED LIGHT, 0-10V DIMMING 1%.	
WE	SPITZER LIGHTING	WPFP-M-71L-U-CC-T3-C0P-DB	MVOLT	1	45 W	LED, 4000K, 7100LM	LED EXTERIOR MOUNTED WALL SCONCE. WITH BUTTON TYPE PHOTOCELL. FIXTURE SHALL BE MOUNTED TO A FLAT MOUNTING PLATE LOCATED BEHIND THE FIXTURE. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION ABOUT THE FLAT MOUNTING PLATE.	
WEEM	SPITZER LIGHTING	WPFP-S-37LC-U-CC-TG-CMB-DB	MVOLT	1	30 W	LED, 4000K, 3700LM	LED EXTERIOR MOUNTED WALL SCONCE. 0-10V DIMMING. FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT VIA GTD AND GENERATOR. FIXTURE SHALL BE MOUNTED TO A FLAT MOUNTING PLATE LOCATED BEHIND THE FIXTURE. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION ABOUT THE FLAT MOUNTING PLATE.	
XA	BEGHELLI	EPX-HT	UNV	1	3 W	LED	UNIVERSAL MOUNTED LED EXIT SIGN. PROVIDE QUANTITY OF FACEPLATES AND CHEVRONS AS NOTED ON LIGHTING PLANS. WHITE HOUSING WITH RED LETTERING.	
XB	BEGHELLI	FTZ-HT-BB	UNV	1	3 W	LED	HIGH ABUSE LED UNIVERSAL MOUNTED EXIT SIGN. PROVIDE THE CORRECT QUANTITY OF FACEPLATES AND CHEVRONS AS NOTED ON THE PLANS. BLACK HOUSING WITH RED LETTERING.	

SEQUENCE OF OPERATIONS:

A. LOBBY, VESTIBULE
LIGHTS SHALL BE CONTROLLED VIA PROGRAMMED SCHEDULE BY AN ASTRONOMICAL TIME CLOCK.
- THE ASTRONOMICAL TIME CLOCK SHALL TURN LIGHTS ON AT 7:00 AM TO 70% UNTIL 4:00 PM. WHICH LIGHTS WILL REDUCE DOWN TO 50% UNTIL 10:00PM WHEN THE LIGHTS WILL TURN OFF.
- A MULTI-BUTTON CONTROL STATION WILL ALLOW AN OCCUPANT TO ADJUST LIGHT LEVELS VIA DIMMABLE SWITCH.
- DURING THE HOURS OF 8:00PM-6:00AM LIGHTS WILL BE OFF UNLESS LIGHTS ARE ACTIVATED VIA A MULTI-BUTTON CONTROL STATION LOCATED EITHER AT THE FRONT RECEPTION DESK 1314, VESTIBULE 1301, OR VESTIBULE 1302. LIGHTS ACTIVATED BETWEEN HOURS OF 8PM-6:00AM WILL TURN ON TO 70% FOR A 2HR OVERRIDE. AFTER THE 2HR PRESET LIGHTS WILL DIM DOWN TO 30% AND AFTER AN ADDITIONAL 20 MINUTES LIGHTS WILL TURN OFF.
- CONTROL STATIONS LOCATED AT EITHER VESTIBULE LOCATIONS 1301 OR 1302 SHALL BE A MULTI BUTTON THAT ONLY TURNS LIGHTS ON TO 70% OR LIGHTS OFF. THE SPACE MUST BE NETWORKED BACK TO A PROCESSOR USING BRIDGES. PROVIDE ABILITY TO CHANGE SCHEDULES FROM COMPUTER ON THE BUILDING NETWORK.
- DISPLAY CASE LIGHTING LOCATED IN LOBBY SHALL TURN ON AT 7:00 AM UNTIL 8PM WHEN THE LIGHTS WILL TURN OFF.

B. CORRIDOR
WHEN OCCUPANT ENTERS SPACE, OCCUPANCY SENSOR SHALL AUTOMATICALLY TURN ON LIGHTS. OCCUPANCY SENSOR SHALL MAINTAIN LIGHTS ON WHILE SPACE IS OCCUPIED, AND AUTOMATICALLY TURN THEM OFF AFTER 20 MINUTES OF ALL OCCUPANTS VACATING SPACE. LIGHTS TO BE MANUALLY CONTROLLED BY KEYED ON/OFF WALL SWITCH CONTROLS.

C. SPORT ARENA (TRACK AREA AND SEATING)
WHEN OCCUPANT ENTERS SPACE, LIGHTS SHALL REMAIN OFF UNTIL MANUALLY TURNED ON VIA A KEYED WALL SWITCH LOCATED AT (4) DIFFERENT ENTRANCE/EXIT LOCATIONS HAT WILL TURN ON ALL LIGHTING ZONES TO 70%. LIGHTS TO BE MANUALLY CONTROLLED AND DIMMED VIA A 7 " TOUCH SCREEN LOCATED IN ELECTRICAL 1412. ASTRONOMICAL TIME CLOCK INTEGRAL TO AN N-LIGHT LIGHTING PROCESSOR SHALL ALLOW LIGHTS TO BE PROGRAMMED IF LIGHTS ARE LEFT ON AFTER 9:00P

Panel: HPP1

Location: ELEC 1412
Supply From: HDP
Mounting: SURFACE
Enclosure: TYPE 1
Series: PANELBOARD

Volts: 480/277 Wye
Phases: 3
Wires: 4

Sub-Feed Lugs: No

A.I.C. Rating: 35kAIC
Mains Type: MLO
Mains Rating: 200 A
Bus Rating: 200A
Neutral Buss: Yes
Ground Buss: Yes

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	IL - FIELD 1401 AREA A LTG	20	1	3.38	3.37					1	20	IL - FIELD 1401 AREA A LTG	2
3	IL - FIELD 1401 AREA A LTG	20	1			2.95	2.53			1	20	IL - FIELD 1401 AREA B LTG	4
5	IL - FIELD 1401 AREA B LTG	20	1					3.38	2.53	1	20	IL - FIELD 1401 AREA B LTG	6
7	IL - FIELD 1401 AREA C LTG	20	1	3.37	2.95					1	20	IL - FIELD 1401 AREA C LTG	8
9	IL - FIELD 1401 AREA C LTG	20	1			3.37	3.37			1	20	IL - FIELD 1401 AREA D LTG	10
11	IL - FIELD 1401 AREA C LTG	20	1					1.26	4.21	1	20	IL - FIELD 1401 AREA D LTG	12
13	IL - FIELD 1401 AREA D LTG	20	1	2.54	2.95					1	20	IL - FIELD 1401 AREA E LTG	14
15	IL - FIELD 1401 AREA E LTG	20	1			3.37	3.37			1	20	IL - FIELD 1401 AREA F LTG	16
17	IL - FIELD 1401 AREA E LTG	20	1					3.37	3.37	1	20	IL - FIELD 1401 AREA F LTG	18
19	IL - FIELD 1401 AREA F LTG	20	1	2.54	2.91					1	20	IL - SMALL ROOMS TRACK AREA LTG	20
21	IL - GALLERY SEATING 2405 LTG	20	1			2.29	0.23			1	20	EL - N PEMB EXTERIOR BLDG MTD...	22
23	IL - SMALL ROOMS TRACK AREA	20	1					1.07	0.86	2	20	EL - EXTERIOR POLE MTD LTG	24
25	M -FLD 1401 CUH-1, W. TLT, M. TLT...	20	1	2.66	0.86					--	--	--	26
27	M - STORAGE 1417, 1418 CUH-2	20	1			1.66	2.22			1	20	M - STORAGE 1413-1416 CUH-2	28
29	M - FIELD 1401 NORTHEAST CUH-4	20	1					2.00	2.00	1	20	M - FIELD 1401 NORTH CUH-4	30
31	M - FIELD 1401 SOUTH CUH-4	20	1	2.99	1.11					1	20	M - CONC 2402 CUH-2	32
33	M - RMS 1420 CUH-2, 1421 CUH-2	20	1			1.66	2.00			1	20	M - FIELD 1401 EAST CUH-4	34
35	M - FIELD SOUTH EAST CUH-4	20	1					2.00	3.32	3	20	M - UHAC-1	36
37	M - UHAC-2	15	3	1.39	3.32					--	--	--	38
39	--	--	--			1.39	3.32			--	--	--	40
41	--	--	--					1.39	2.77	3	15	M - UHAC-3	42
43	M - HVLS-1.5 & 1.6	20	3	1.66	2.77					--	--	--	44
45	--	--	--			1.66	2.77			--	--	--	46
47	--	--	--					1.66	1.66	3	20	M - HVLS-1.3 & 1.4	48
49	M - HVLS-1.1 & 1.2	20	3	1.66	1.66					--	--	--	50
51	--	--	--			1.66	1.66			--	--	--	52
53	--	--	--					1.66	0.00	3	30	SPD	54
55	M - UHAC-4	15	3	2.77	0.00					--	--	--	56
57	--	--	--			2.77	0.00			--	--	--	58
59	--	--	--					2.77	0.00	1	20	SPARE	60
		Total Load:		47 kW		44 kW		41 kW					
		Total Amps:		171 A		161 A		149 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
LTG	66340 VA	125.00%	82925 VA		
Motor	65991 VA	103.78%	68484 VA	**Total Load:**	132.33 kW
				Demand Load:	151.41 kW
				Connected Amps:	159 A
				Demand Amps:	182 A

Notes:

Switchboard: LDP

Location: ELEC 1412
Supply From: T-LDP
Mounting: SURFACE
Enclosure: TYPE 1

Volts: 208Y/120 Wye
Phases: 3
Wires: 4

Sub-Feed Lugs: No

A.I.C. Rating: 35kAIC
Mains Type: MCB
Mains Rating: 800 A
Buss Rating: 800A
Neutral Buss: Yes
Ground Buss:

Notes:

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	A	B	C	Remarks
1	LRP1	3	200 A	200 A	12884 VA	12888 VA	11044 VA	
2	LRP2	3	200 A	200 A	15704 VA	14550 VA	14618 VA	
3	LRP3	3	200 A	200 A	8660 VA	9278 VA	5994 VA	
4	LRP4	3	200 A	200 A	10660 VA	9350 VA	8882 VA	
5	LRP5	3	200 A	200 A	13376 VA	12148 VA	11406 VA	
6	LRP6	3	100 A	100 A	9552 VA	7168 VA	5664 VA	
7	LRP7	3	100 A	100 A	4836 VA	5900 VA	6140 VA	
8	SPD	3	100 A	100 A	0 VA	0 VA	0 VA	
9	SPARE	3	200 A	200 A	0 VA	0 VA	0 VA	
10	SPARE	3	200 A	200 A	0 VA	0 VA	0 VA	
11	SPARE	3	200 A	200 A	0 VA	0 VA	0 VA	
12	SPARE	3	200 A	200 A	0 VA	0 VA	0 VA	
13	SPARE	3	100 A	100 A	0 VA	0 VA	0 VA	
14	SPARE	3	100 A	100 A	0 VA	0 VA	0 VA	
15	SPACE	1	--	--	--			
16	SPACE	1	--	--	--			
17	SPACE	1	--	--	--			
18	SPACE	1	--	--	--			
19	SPACE	1	--	--	--			
20	SPACE	1	--	--	--			
21	SPACE	1	--	--	--			
22	SPACE	1	--	--	--			
23	SPACE	1	--	--	--			
24	SPACE	1	--	--	--			
25	SPACE	1	--	--	--			
26	SPACE	1	--	--	--			
27	SPACE	1	--	--	--			
28	SPACE	1	--	--	--			
29	SPACE	1	--	--	--			
30	SPACE	1	--	--	--			
				Total Conn. Load:	210702 VA			
				Total Amps:	585 A			

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	34338 VA	105.15%	36106 VA		
Other	134784 VA	100.00%	134784 VA	**Total Conn. Load:**	210702 VA
RECEPT	41580 VA	62.03%	25790 VA	**Total Est. Demand:**	196680 VA
				Total Conn. Current:	585 A
				Total Est. Demand...	546 A

Notes:

Switchboard: HDP - TE

Location: ELEC 1412
Supply From:
Mounting: SURFACE
Enclosure: TYPE 1

Volts: 480/277 Wye
Phases: 3
Wires: 4

Sub-Feed Lugs: No

A.I.C. Rating: 42kAIC
Mains Type: LSIG MCB
Mains Rating: 1600 A
Buss Rating: 2000
Neutral Buss: Yes
Ground Buss:

Notes:

CKT	Circuit Description	# of Poles	Frame Size	Trip Rating	A	B	C	Remarks
1	FP-1 SEP. CABINET TAP SECTION	3	0 A	0 A	8366 VA	8366 VA	8366 VA	
2	EM1	3	200 A	200 A	17915 VA	13886 VA	10470 VA	
3	HPP1	3	200 A	200 A	46838 VA	44229 VA	41264 VA	
4	HVSP	3	400 A	400 A	49668 VA	53308 VA	51155 VA	
5	HPP2	3	200 A	200 A	27646 VA	26648 VA	26648 VA	
6	HPP3	3	100 A	100 A	6161 VA	4771 VA	3491 VA	
7	T-LDP	3	400 A	400 A	75672 VA	71282 VA	63748 VA	
8	M - HTP	3	200 A	200 A	34220 VA	24080 VA	26240 VA	
9	M - DOAS-1 SUPPLY FAN	3	60 A	45 A	11568 VA	11568 VA	11568 VA	
10	M - DOAS-1 EXHAUST FAN	3	60 A	35 A	8003 VA	8003 VA	8003 VA	
11	M - DOAS-1 ENERGY WHEEL	3	30 A	15 A	831 VA	831 VA	831 VA	
12	M - DOAS-2 SUPPLY FAN	3	60 A	45 A	11568 VA	11568 VA	11568 VA	
13	M - DOAS-2 EXHAUST FAN	3	60 A	35 A	8003 VA	8003 VA	8003 VA	
14	M - DOAS-2 ENERGY WHEEL	3	30 A	15 A	831 VA	831 VA	831 VA	
15	M - DOAS-3 SUPPLY FAN	3	60 A	45 A	11568 VA	11568 VA	11568 VA	
16	M - DOAS-3 EXHAUST FAN	3	60 A	35 A	8003 VA	8003 VA	8003 VA	
17	M - DOAS-3 ENERGY WHEEL	3	30 A	15 A	831 VA	831 VA	831 VA	
18	M - DOAS-4 SUPPLY FAN	3	60 A	45 A	11579 VA	11579 VA	11579 VA	
19	M - DOAS-4 EXHAUST FAN	3	60 A	35 A	8003 VA	8003 VA	8003 VA	
20	M - DOAS-4 ENERGY WHEEL	3	30 A	15 A	831 VA	831 VA	831 VA	
21	M - RTU-1N	3	200 A	150 A	40885 VA	40885 VA	40885 VA	
22	M - BP-1	3	30 A	30 A	2105 VA	2105 VA	2105 VA	
23	M - BP-1, BP-2, BP-3	3	30 A	15 A	942 VA	942 VA	942 VA	
24	M - B-3	3	30 A	20 A	5540 VA	5540 VA	5540 VA	
25	M - BP-6	3	30 A	20 A	3047 VA	3047 VA	3047 VA	
26	SPD	3	100 A	100 A	0 VA	0 VA	0 VA	
27	SPARE	3	400 A	400 A	0 VA	0 VA	0 VA	
28	SPARE	3	400 A	200 A	0 VA	0 VA	0 VA	
29	SPARE	3	200 A	200 A	0 VA	0 VA	0 VA	
30	SPARE	3	200 A	100 A	0 VA	0 VA	0 VA	
31	SPARE	3	100 A	100 A	0 VA	0 VA	0 VA	
32	SPARE	3	100 A	100 A	0 VA	0 VA	0 VA	
33	SPARE	3	100 A	100 A	0 VA	0 VA	0 VA	
34	FUTURE SOLAR BREAKER SPACE	3	--	--	--	--	--	
35	FUTURE SOLAR BREAKER SPACE	3	--	--	--	--	--	
36	FUTURE SOLAR BREAKER SPACE	3	--	--	--	--	--	
37	SPACE	1	--	--	--			
38	SPACE	1	--	--	--			
39	SPACE	1	--	--	--			
40	SPACE	1	--	--	--			
41	SPACE	1	--	--	--			
42	SPACE	1	--	--	--			
				Total Conn. Load:	1147145 VA			
				Total Amps:	1380 A			

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
EXISTING	24360 VA	125.00%	30450 VA		
LTG	86318 VA	125.00%	107898 VA	**Total Conn. Load:**	1147145 VA
Motor	686138 VA	104.47%	716802 VA	**Total Est. Demand:**	1189509 VA
Other	308389 VA	100.00%	308389 VA	**Total Conn. Current:**	1380 A
RECEPT	41940 VA	61.92%	25970 VA	**Total Est. Demand...**	1431 A

Notes:

Panel: HTP

Location: ELEC 1412
Supply From: HDP
Mounting: SURFACE
Enclosure: TYPE 1
Series: PANELBOARD

Volts: 480/277 Wye
Phases: 3
Wires: 4

Sub-Feed Lugs: No

A.I.C. Rating: 35kAIC
Mains Type: MLO
Mains Rating: 200 A
Bus Rating: 200A
Neutral Buss: Yes
Ground Buss: Yes

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	GUTTER & DN SPOUT HEAT TRACE	30	1	5.24	4.40					1	30	GUTTER & DN SPOUT HEAT TRACE	2
3	GUTTER & DN SPOUT HEAT TRACE	30	1			4.40	6.56			1	30	GUTTER & DN SPOUT HEAT TRACE	4
5	GUTTER & DN SPOUT HEAT TRACE	30	1					6.56	6.56	1	30	GUTTER & DN SPOUT HEAT TRACE	6
7	GUTTER & DN SPOUT HEAT TRACE	30	1	6.56	6.56					1	30	GUTTER & DN SPOUT HEAT TRACE	8
9	GUTTER & DN SPOUT HEAT TRACE	30	1			6.56	6.56			1	30	GUTTER & DN SPOUT HEAT TRACE	10
11	GUTTER & DN SPOUT HEAT TRACE	30	1					6.56	6.56	1	30	GUTTER & DN SPOUT HEAT TRACE	12
13	GUTTER & DN SPOUT HEAT TRACE	30	1	5.73	5.73					1	30	GUTTER & DN SPOUT HEAT TRACE	14
15	SPARE	30	1			0.00	0.00			1	30	SPARE	16
17	SPARE	30	1					0.00	0.00	1	30	SPARE	18
19	SPARE	30	1	0.00	0.00					1	30	SPARE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		Total Load:		34 kW		24 kW		26 kW					
		Total Amps:		125 A		87 A		96 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	84540 VA	100.00%	84540 VA		
				Total Load:	84.54 kW
				Demand Load:	84.54 kW
				Connected Amps:	102 A
				Demand Amps:	102 A

Notes:

Panel: HPP3

Location: JAN 2306
Supply From: HDP
Mounting: SURFACE
Enclosure: TYPE 1
Series: PANELBOARD

Volts: 480/277 Wye
Phases: 3
Wires: 4

Sub-Feed Lugs: No

A.I.C. Rating: 10kAIC
Mains Type: MLO
Mains Rating: 100 A
Bus Rating: 100 A
Neutral Buss: Yes
Ground Buss: Yes

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	IL - 2ND FLOOR LTG	20	1	1.46	2.21					1	20	IL - 1ST FLR LTG	2
3	EL - EXTERIOR CANOPY LTG	20	1			0.03	2.25			1	20	IL - 1ST FLR LTG	4
5	M - TEF-1	15	3					1.11	1.39	3	15	M - SKID MTD SNOWMELT SYSTEM	6
7	--	--	--	1.11	1.39					--	--	--	8
9	--	--	--			1.11	1.39			--	--	--	10
11	M - VEST 1301 CUH-1	20	1					1.00	0.00	3	30	SPD	12
13	SPARE	20	1	0.00	0.00					--	--	--	14
15	SPARE	20	1			0.00	0.00			--	--	--	16
17	SPARE	20	1					0.00	0.00	1	20	SPARE	18
19	SPARE	20	1	0.00	0.00					1	20	SPARE	20
21	SPARE	20	1			0.00	0.00			1	20	SPARE	22
23	SPARE	20	1					0.00	0.00	1	20	SPARE	24
25	SPARE	20	1	0.00	0.00					1	20	SPARE	26
27	SPARE	20	1			0.00	0.00			1	20	SPARE	28
29	SPARE	20	1					0.00	0.00	1	20	SPARE	30
31	SPARE	20	1	0.00	0.00					1	20	SPARE	32
33	SPARE	20	1			0.00	0.00			1	20	SPARE	34
35	SPARE	20	1					0.00	0.00	1	20	SPARE	36
37	SPARE	20	1	0.00	0.00					1	20	SPARE	38
39	SPARE	20	1			0.00	0.00			1	20	SPARE	40
41	SPARE	20	1					0.00	0.00	1	20	SPARE	42
		Total Load:		6 kW		5 kW		3 kW					
		Total Amps:		23 A		18 A		13 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
LTG	5946 VA	125.00%	7433 VA		
Motor	8477 VA	112.25%	9516 VA	**Total Load:**	14.42 kW
				Demand Load:	16.95 kW
				Connected Amps:	17 A
				Demand Amps:	20 A

Notes:

Panel: HPP2

Location: ELEC 1319
Supply From: HDP
Mounting: SURFACE
Enclosure: TYPE 1
Series: PANELBOARD

Volts: 480/277 Wye
Phases: 3
Wires: 4

Sub-Feed Lugs: No

A.I.C. Rating: 10kAIC
Mains Type: MLO
Mains Rating: 200 A
Bus Rating: 200A
Neutral Buss: Yes
Ground Buss: Yes

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	M - HVLS-2.1 / 2.2 / 2.3 / 2.4	15	3	2.22	22.91					3	100	M - RTU-2N	2
3	--	--	--			2.22	22.91			--	--	--	4
5	--	--	--					2.22	22.91	--	--	--	6
7	M-CUH-1	20	1	1.00	0.00					3	30	SPD	8
9	WEST LIFT STATION S2.1	20	3			1.52	0.00			--	--	--	10
11	--	--	--					1.52	0.00	--	--	--	12
13	--	--	--	1.52	0.00					1	20	SPARE	14
15	SPARE	20	1			0.00	0.00			1	20	SPARE	16
17	SPARE	20	1					0.00	0.00	1	20	SPARE	18
19	SPARE	20	1	0.00	0.00					1	20	SPARE	20
21	SPARE	20	1			0.00	0.00			1	20	SPARE	22
23	SPARE	20	1					0.00	0.00	1	20	SPARE	24
25	SPARE	20	1	0.00	0.00					1	20	SPARE	26
27	SPARE	20	1			0.00	0.00			1	20	SPARE	28
29	SPARE	20	1					0.00	0.00	1	20	SPARE	30
31	SPARE	20	1	0.00	0.00					1	20	SPARE	32
33	SPARE	20	1			0.00	0.00			1	20	SPARE	34
35	SPARE	20	1					0.00	0.00	1	20	SPARE	36
37	SPARE	20	1	0.00	0.00					1	20	SPARE	38
39	SPARE	20	1			0.00	0.00			1	20	SPARE	40
41	SPARE	20	1					0.00	0.00	1	20	SPARE	42
		Total Load:		28 kW		27 kW		27 kW					
		Total Amps:		100 A		96 A		96 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	80941 VA	121.23%	98122 VA		
				Total Load:	80.94 kW
				Demand Load:	98.12 kW
				Connected Amps:	97 A
				Demand Amps:	118 A

Notes:

GENERAL NOTE:

PER MICHIGAN ENERGY CODE ELECTRICAL MONITORING REQUIREMENTS: ABBREVIATIONS NOTED BELOW DESIGNATED LOAD CLASSIFICATIONS FOR ENERGY MONITORING. REFERENCE SPEC SECTION 260913.

TE - TOTAL ELECTRICAL ENERGY M - HVAC IL - INTERIOR LIGHTING EL - EXTERIOR LIGHTING R - RECEPTACLE

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. Project Number

SHEET TITLE
ELECTRICAL SCHEDULES

SHEET NO.
E912

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Panel: LRP2

Location: ELEC 1319 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LRP2 | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: TYPE 1 | **Bus Rating:** 200 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes: BREAKERS SHOWN BOLD SHALL BE GFCI TYPE CIRCUIT BREAKERS.

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
49	R - 1317 IRRIGATION CONTROLLER	20	1	1.50	1.25					1	20	WOMENS 1307 HAND DRYER	50
51	MENS 1306 HAND DRYER	20	1			1.25	1.25			1	20	WOMENS 1307 HAND DRYER	52
53	MENS 1306 HAND DRYER	20	1					1.25	0.83	2	15	POOL LOBBY 1001 FIRE DOOR	54
55	M - MEN 1114 AUTO FV AND FAUCET	20	1	0.40	0.83					--	--	--	56
57	**N LOBBY 1113 DRINKING FOUNTAIN**	**20**	**1**			0.48	0.45			1	20	M - WOM. 1115 FV AND FAUCET	58
59	MULTI-PURPOSE 1312 B-BALL HOOP	20	1					1.38	1.38	1	20	MULTI-PURPOSE 1313 B-BALL HOOP	60
61	MULTI-PURPOSE 1313 B-BALL HOOP	20	1	1.38	1.38					1	20	MULTI-PURPOSE 1313 B-BALL HOOP	62
63	MULTI-PURPOSE 1312 B-BALL HOOP	20	1			1.38	0.60			1	20	SW SANITARY LIFT STATION	64
65	MULTI-PURPOSE 1312 B-BALL HOOP	20	1					1.38	1.20	1	20	VEST 1302 ADA DOOR OPEARTOR	66
67	VEST 1302 ADA DOOR OPEARTOR	20	1	1.20	1.66					1	20	GYM 1313 DIV. CURTAIN	68
69	STORAGE 1315 SMOKE DAMPERS	20	1			0.60	0.60			1	20	STRORAGE 2005 SMOKE DAMPERS	70
71	STORAGE 2006 SMOKE DAMPERS	20	1					0.60	0.00	1	20	SPARE	72
73	SPARE	20	1	0.00	0.00					1	20	SPARE	74
75	SPARE	20	1			0.00	0.00			1	20	SPARE	76
77	SPARE	20	1					0.00	0.00	1	20	SPARE	78
79	SPARE	20	1	0.00	0.00					1	20	SPARE	80
81	SPARE	20	1			0.00	0.00			1	20	SPARE	82
83	SPARE	20	1					0.00	0.00	1	20	SPARE	84
85	SPARE	20	1	0.00	0.00					1	20	SPARE	86
87	SPARE	20	1			0.00	0.00			1	20	SPARE	88
89	SPARE	20	1					0.00	0.00	1	20	SPARE	90
			Total Load:	10 kW		7 kW		8 kW					
			Total Amps:	82 A		55 A		69 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Motor	2256 VA	118.35%	2670 VA	
Other	21966 VA	100.00%	21966 VA	**Total Load:** 24.22 kW
				Demand Load: 24.64 kW
				Connected Amps: 67 A
				Demand Amps: 68 A

Notes:

Panel: LRP5

Location: FIELD 1401 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: RECESSED | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: TYPE 1 | **Bus Rating:** 200 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes: BREAKERS SHOWN BOLD SHALL BE GFCI TYPE CIRCUIT BREAKER.

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	R - FIELD 1401 NORTHWEST REC	20	1	0.54	0.54					1	20	R - NORTH EXTERIOR REC	2
3	R - RM 1418, 1419 REC	20	1			0.72	0.30			1	20	WOMENS 1421 AUTO VALVES	4
5	**M - FIELD 1401 NORTHWEST DF**	**20**	**1**					0.48	1.25	1	20	WOMENS 1421 HAND DRYER	6
7	WOMENS 1421 HAND DRYER	20	1	1.25	0.60					1	20	ROOMS 1418, 1419 AUTO VALVES	8
9	WOMENS 1419 HAND DRYER	20	1			1.25	1.25			1	20	WOMENS 1419 HAND DRYER	10
11	MEN 1418 HAND DRYER	20	1					1.25	1.25	1	20	MEN 1418 HAND DRYER	12
13	M - DOAS-1 BURNER	20	1	1.20	0.54					1	20	R - FIELD 1401 NORTH INGRADE REC	14
15	M - DOAS-2 BURNER	20	1			1.20	0.00			1	20	SPARE	16
17	M - DOAS-3 BURNER	20	1					1.20	1.20	1	20	M - DOAS-1 BURNER	18
19	M - DOAS-4 BURNER	20	1	1.20	1.20					1	20	M - DOAS-2 BURNER	20
21	R - FIELD 1401 NORTH REC	20	1			0.54	1.20			1	20	M - DOAS-3 BURNER	22
23	M - JC 1422 UH-1	15	1					0.12	1.20	1	20	M - DOAS-4 BURNER	24
25	FIELD 1401 OH DOOR	20	1	1.66	0.15					1	20	M - EF-1419 & 1421	26
27	WEST PARKING MOTORIZED GATE	15	1			0.72	1.66			1	20	FIELD 1401 OH DOOR	28
29	WEST PARKING MOTORIZED GATE	15	1					0.72	0.72	1	15	EAST PARKING MOTORIZED GATE	30
31	LIFT STOR 1423 ELECTRIC LIFT REC	20	1	1.50	0.72					1	15	EAST PARKING MOTORIZED GATE	32
33	LIFT STOR 1423 COILING DOOR	20	1			1.66	1.66			1	20	LIFT STOR 1423 SECTIONAL DOOR	34
35	N.E. FIELD 1401 NETTING	20	1					1.66	0.36	1	20	FIELD 1401 BATTING CAGE REC	36
37	N.E. FIELD 1401 NETTING	20	1	1.92	0.36					1	20	FIELD 1401 BATTING CAGE REC	38
39	SPARE	20	1			0.00	0.00			1	20	SPARE	40
41	SPARE	20	1					0.00	0.00	1	20	SPARE	42
43	SPARE	20	1	0.00	0.00					1	20	SPARE	44
45	SPARE	20	1			0.00	0.00			1	20	SPARE	46
47	SPARE	20	1					0.00	0.00	1	20	SPARE	48
49	SPARE	20	1	0.00	0.00					1	20	SPARE	50
51	SPARE	20	1			0.00	0.00			1	20	SPARE	52
53	SPARE	20	1					0.00	0.00	1	20	SPARE	54
55	SPARE	20	1	0.00	0.00					3	30	SPD	56
57	SPARE	20	1			0.00	0.00			--	--	--	58
59	SPARE	20	1					0.00	0.00	--	--	--	60
			Total Load:	13 kW		12 kW		11 kW					
			Total Amps:	112 A		102 A		95 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Motor	9870 VA	103.04%	10170 VA	
Other	20580 VA	100.00%	20580 VA	**Total Load:** 36.93 kW
RECEPT	6480 VA	100.00%	6480 VA	**Demand Load:** 37.23 kW
				Connected Amps: 103 A
				Demand Amps: 103 A

Notes:

Panel: LRP2

Location: ELEC 1319 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: TYPE 1 | **Bus Rating:** 200 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: Yes | **Ground Buss:** Yes

Notes: BREAKERS SHOWN BOLD SHALL BE GFCI TYPE CIRCUIT BREAKERS.

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	R - STOR 1315 REC	20	1	0.18	0.18					1	20	R - ELEC 1319 REC	2
3	M - 1017 & 1018 AUTO VALVES	20	1			0.20	1.80			1	20	FAMILY T. 1017 HAND DRYER	4
5	FAMILY T. 1018 HAND DRYER	20	1					1.80	0.00	1	20	SPARE	6
7	M - MENS 1306 AUTO VALVES	20	1	0.55	0.70					1	20	M - WOMENS 1307 AUTO VALVES	8
9	R - OFFICE 1304 REC	20	1			1.08	0.36			1	20	R - 1306 & 1307 REC	10
11	R - CONF 1308 REC	20	1					0.90	0.18	1	20	R- CONF 1308 COUNTER REC	12
13	R - CHECK IN REC	20	1	0.72	0.72					1	20	R - CHECK IN REC	14
15	R - GENERAL 1300 CORRIDOR REC	20	1			0.90	0.90			1	20	R - LOBBY 1303 REC	16
17	**M - LOBBY 1303 DRINK FOUNTAIN**	**20**	**1**					0.48	0.90	1	20	R - MULTIPURPOSE 1313 GEN REC	18
19	R - NW MULTIPURPOSE AV REC	20	1	0.36	0.36					1	20	R - NE MULTIPURPOSE AV REC	20
21	R - SNOW MELT 1317 REC	20	1			0.18	0.36			1	20	R - VEST. 1301 REC	22
23	R - RECEPTION 1311 SE REC	20	1					0.54	0.54	1	20	R - RECEPTION 1311 E REC	24
25	R - OFFICE 1310 REC	20	1	1.26	0.72					1	20	R - OPEN OFFICE 1309 E REC	26
27	R - OPEN OFFICE 1309 W REC	20	1			0.72	0.36			1	20	R - VEST 1302 REC	28
29	R - CONF 1308 COUNTER REC	20	1					0.18	0.18	1	20	R - CONF 1308 S COUNT REC	30
31	R - JAN 1305 REC	20	1	0.18	0.18					1	20	R - RTU 2N REC	32
33	R - AEROBICS 2004 REC	20	1			0.54	0.54			1	20	R - AEROBICS SE REC	34
35	R - STORAGE 2005 REC	20	1					0.18	0.72	1	20	M - EF-1017 & 1315	36
37	SPARE	20	1	0.00	0.00					1	20	SPARE	38
39	SPARE	20	1			0.00	0.00			1	20	SPARE	40
41	SPARE	20	1					0.00	0.00	1	20	SPARE	42
43	SPD	30	3	0.00	0.00					1	20	SPARE	44
45	--	--	--			0.00	0.00			1	20	SPARE	46
47	--	--	--					0.00	0.00	1	20	SPARE	48
			Total Load:	16 kW		15 kW		15 kW					
			Total Amps:	131 A		121 A		122 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Motor	2976 VA	113.91%	3390 VA	
Other	27496 VA	100.00%	27496 VA	**Total Load:** 44.87 kW
RECEPT	14400 VA	84.72%	12200 VA	**Demand Load:** 43.09 kW
				Connected Amps: 125 A
				Demand Amps: 120 A

Notes:

Panel: LRP4

Location: FIELD 1401 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: RECESSED | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: TYPE 1 | **Bus Rating:** 200 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes: BREAKERS SHOWN BOLD SHALL BE GFCI TYPE BREAKERS.

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	R - TRAINER 1407 REC	20	1	0.54	0.36					1	20	R - TRAINER 1407 COUNTER REC	2
3	1405, 1406 AUTO F.V. AND FAUCETS	20	1			0.60	1.25			1	20	MENS 1406 HAND DRYER	4
5	MENS 1406 HAND DRYER	20	1					1.25	0.36	1	20	R - WOEMNS 1405, MENS 1406 REC	6
7	WOMENS 1405 HAND DRYER	20	1	1.25	1.25					1	20	WOMENS 1405 HAND DRYER	8
9	**M - FIELD 1401 DRINK FOUNTAIN**	**20**	**1**			0.48	0.72			1	20	R - PROGRAM 1404 REC	10
11	R - PROGRAM 1402 REC	20	1					0.90	0.54	1	20	R - FIELD 1401 RECP SW CORNER	12
13	R - PROGRAM 1402 REC	20	1	1.08	0.18					1	20	SPRINKLER SYS. CONTROL PANEL	14
15	SPARE	20	1			0.00	1.92			1	20	FIELD 1401 AV EQUIPMENT PWR	16
17	M - EF-2202	20	1					0.29	0.68	1	15	M - EF-1406, 1409, & 1411	18
19	R - TIMING 2404 REC	20	1	0.72	0.36					1	20	R - CONC 2402 REC	20
21	R - TIMING 2404 REC	20	1			0.54	0.36			1	20	R - CONC 2402 REC	22
23	R - SPACE 2401, 2404 REC	20	1					0.54	1.20	1	20	R - CONC 2402 REC	24
25	R - CONC 2402 REC	20	1	1.20	0.54					1	20	R - FIELD 1401 SW WALL REC	26
27	R - SPACE 2402, 2403 REC	20	1			0.36	1.92			1	20	R - FIELD 1401 NETTING MTR REC	28
29	**M - SPACE 2401 DRINK FOUNTAIN**	**20**	**1**					0.48	1.92	1	20	R - FIELD 1401 NETTING MTR REC	30
31	R - CONC STORAGE REFRIGER REC	20	1	1.38	1.80					1	20	EL - WEST EXTERIOR BLDG MTD...	32
33	R - CONC STORAGE FREEZER REC	20	1			1.20	0.00			1	20	SPARE	34
35	FIELD 1401 INGRADE BOX W/ REC	20	1					0.36	0.36	1	20	FIELD 1401 INGRADE BOX W/ REC	36
37	SPARE	20	1	0.00	0.00					1	20	SPARE	38
39	SPARE	20	1			0.00	0.00			1	20	SPARE	40
41	SPARE	20	1					0.00	0.00	1	20	SPARE	42
43	SPARE	20	1	0.00	0.00					1	20	SPARE	44
45	SPARE	20	1			0.00	0.00			1	20	SPARE	46
47	SPARE	20	1					0.00	0.00	1	20	SPARE	48
49	SPARE	20	1	0.00	0.00					1	20	SPARE	50
51	SPARE	20	1			0.00	0.00			1	20	SPARE	52
53	SPARE	20	1					0.00	0.00	1	20	SPARE	54
55	SPARE	20	1	0.00	0.00					3	30	SPD	56
57	SPARE	20	1			0.00	0.00			--	--	--	58
59	SPARE	20	1					0.00	0.00	--	--	--	60
			Total Load:	11 kW		9 kW		9 kW					
			Total Amps:	89 A		79 A		74 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Motor	972 VA	107.56%	1046 VA	
Other	18920 VA	100.00%	18920 VA	**Total Load:** 28.89 kW
RECEPT	9000 VA	100.00%	9000 VA	**Demand Load:** 28.97 kW
				Connected Amps: 80 A
				Demand Amps: 80 A

Notes:

Panel: LRP1

Location: ELEC 1412 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 22kAIC
Supply From: LDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: TYPE 1 | **Bus Rating:** 200 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes: BREAKERS SHOWN BOLD SHALL BE A GFCI TYPE CIRCUIT BREAKER.

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	R - RMS 1413-1416 REC	20	1	0.90	0.36					1	20	FIELD 1401 AV EQUIPMENT PWR	2
3	R - OUTDOOR SERVICE CU-3 REC	20	1			0.18	0.00			1	20	SPARE	4
5	R - FIELD 1401 REC	20	1					0.18	0.90	1	20	R - RMS 1408-1412 REC	6
7	M - ELEC 1412 CU-3	45	2	3.54	0.96					2	15	M - MECH 1411 P-BF1	8
9	--	--	--			3.54	0.96			--	--	--	10
11	M - CO DETECTION SYSTEM PANEL	20	1					1.20	0.48	1	15	M - MECH 1411 UH-1	12
13	FIRE ALARM CONTROL PANEL	20	1	0.50	0.96					2	20	M - MECH 1410 DWP-1	14
15	M - FIELD 1401 LARGE FANS CTRL...	20	1			0.50	0.96			--	--	--	16
17	FIELD 1401 NETTING CTRL PNL	20	1					1.92	0.59	2	20	M - MECH 1410 RCP-1	18
19	ROLL UP GEN BATTERY CHARGER	20	1	1.80	0.59					--	--	--	20
21	**ROLL UP GEN BLOCK HEATER**	**30**	**2**			1.00	1.18			1	20	M - MECH 1411 B-3 DAMPER	22
23	**--**	**--**	**--**					1.00	1.20	1	20	GENERATOR BATTERY CHARGER	24
25	ELEC 1412 AV RACK	20	1	0.36	1.00					2	20	GENERATOR BLOCK HEATER	26
27	R - FIELD 1401 NETTING MTR REC	20	1			1.92	1.00			--	--	--	28
29	R - FIELD 1401 NETTING MTR REC	20	1					1.92	1.66	1	20	R - FIELD 1401 NETTING MTR REC	30
31	R - FIELD 1401 NETTING MTR REC	20	1	1.92	0.00					1	20	SPARE	32
33	SPARE	20	1			0.00	1.66			1	20	R - FIELD 1401 NETTING MTR REC	34
35	SPARE	20	1					0.00	0.00	1	20	SPARE	36
37	SPARE	20	1	0.00	0.00					1	20	SPARE	38
39	SPARE	20	1			0.00	0.00			1	20	SPARE	40
41	SPARE	20	1					0.00	0.00	1	20	SPARE	42
43	SPARE	20	1	0.00	0.00					1	20	SPARE	44
45	SPARE	20	1			0.00	0.00			1	20	SPARE	46
47	SPARE	20	1					0.00	0.00	1	20	SPARE	48
49	SPARE	20	1	0.00	0.00					1	20	SPARE	50
51	SPARE	20	1			0.00	0.00			1	20	SPARE	52
53	SPARE	20	1					0.00	0.00	1	20	SPARE	54
55	SPD	30	3	0.00	0.00					1	20	SPARE	56
57	--	--	--			0.00	0.00			1	20	SPARE	58
59	--	--	--					0.00	0.00	1	20	SPARE	60
			Total Load:	13 kW		13 kW		11 kW					
			Total Amps:	110 A		110 A		92 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Motor	13744 VA	112.86%	15512 VA	
Other	20732 VA	100.00%	20732 VA	**Total Load:** 36.82 kW
RECEPT	2340 VA	100.00%	2340 VA	**Demand Load:** 38.58 kW
				Connected Amps: 102 A
				Demand Amps: 107 A

Notes:

Panel: LRP3

Location: JAN 2306 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: TYPE 1 | **Bus Rating:** 200 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes: BREAKERS SHOWN BOLD SHALL BE GFCI TYPE CIRCUIT BREAKERS.

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	R - OFFICE 2302 REC	20	1	0.72	0.36					1	20	R - NORTH IT TECH 2303 REC	2
3	R - CENTRAL IT TECH 2303 REC	20	1			0.36	0.36			1	20	R - SOUTH IT TECH 2303 REC	4
5	M - SNOW MELT UH-1	20	1					0.12	0.50	1	20	M - 2304 AUTO F.V. AND FAUCETS	6
7	MENS 2304 HAND DRYER	20	1	1.25	1.25					1	20	MENS 2304 HAND DRYER	8
9	M - 2305 AUTO F.V. AND FAUCETS	20	1			0.50	1.25			1	20	WOMENS 2305 HAND DRYER	10
11	WOMENS 2305 HAND DRYER	20	1					1.25	0.36	1	20	R - 2304 & 2305 REC	12
13	R - FIELD 1401 CLOCK	20	1	0.50	0.18					1	20	R - JAN 2306 REC	14
15	TG	20	1			0.90	0.18			1	20	R - LOUNGE 2307 COUNTER REC	16
17	R - LOUNGE 2307 COUNTER REC	20	1					0.18	0.36	1	20	R - RTU-1N & CU-1 REC	18
19	R - RTU-1 REC	20	1	0.36	1.66					2	20	M - CU-2	20
21	M - CU-1	20	2			1.66	1.66			--	--	--	22
23	--	--	--					1.66	0.36	1	20	R - UPPER LOBBY 2301 GEN. REC	24
25	M - FA DRYPIPE COMPRESSOR	20	1	1.18	1.20					1	20	VEST 1301 ADA DOOR OPERATOR	26
27	M - FIRE/SMOKE DAMPER	20	1			0.60	1.80			1	20	EL - EAST EXTER. BLDG MTD SIGN	28
29	VEST 1301 ADA DOOR OPERATOR	20	1					1.20	0.00	1	20	SPARE	30
31	SPARE	20	1	0.00	0.00					1	20	SPARE	32
33	SPARE	20	1			0.00	0.00			1	20	SPARE	34
35	SPARE	20	1					0.00	0.00	1	20	SPARE	36
37	SPARE	20	1	0.00	0.00					1	20	SPARE	38
39	SPARE	20	1			0.00	0.00			1	20	SPARE	40
41	SPARE	20	1					0.00	0.00	1	20	SPARE	42
43	SPARE	20	1	0.00	0.00					1	20	SPARE	44
45	SPARE	20	1			0.00	0.00			1	20	SPARE	46
47	SPARE	20	1					0.00	0.00	1	20	SPARE	48
49	SPARE	20	1	0.00	0.00					1	20	SPARE	50
51	SPARE	20	1			0.00	0.00			1	20	SPARE	52
53	SPARE	20	1					0.00	0.00	1	20	SPARE	54
55	SPARE	20	1	0.00	0.00					3	30	SPD	56
57	SPARE	20	1			0.00	0.00			--	--	--	58
59	SPARE	20	1					0.00	0.00	--	--	--	60
			Total Load:	9 kW		9 kW		6 kW					
			Total Amps:	76 A		81 A		50 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Motor	6776 VA	112.28%	7608 VA	
Other	12476 VA	100.00%	12476 VA	**Total Load:** 23.93 kW
RECEPT	4680 VA	100.00%	4680 VA	**Demand Load:** 24.76 kW
				Connected Amps: 66 A
				Demand Amps: 69 A

Notes:

GENERAL NOTE:

PER ASHRAE 90.1 2019 8.4.3 ELECTRICAL MONITORING, ABBREVIATIONS NOTED BELOW DESIGNATED LOAD CLASSIFICATIONS FOR ENERGY MONITORING:

TE - TOTAL ELECTRICAL ENERGY M - HVAC IL - INTERIOR LIGHTING EL - EXTERIOR LIGHTING R - RECEPTACLE

544 CHERRY DIAG DRIVE
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PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
PROFESSIONAL ENGINEER

JOB NO. Project Number

SHEET TITLE
ELECTRICAL SCHEDULES

SHEET NO.
E913

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Last Plotted: 2026-07-30 at 12:23:00 PM
Autodesk Docs://Howell Community Center/Howell Community Center - Electrical - R25.rvt

Panel: DP1C1

Location: MECH 1127 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 10kAIC
Supply From: HVSP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: TYPE 1 | **Bus Rating:** 200 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	EXISTING TCAC	20	3	4.43	5.81		3	30	EXISTING WELDER	2
3	--	--	--		4.43	5.81	--	--	--	4
5	--	--	--			4.43	5.81	--	--	--	6
7	EXISTING P4	20	3	1.74	1.74		3	20	EXISTING P3	8
9	--	--	--		1.74	1.74	--	--	--	10
11	--	--	--			1.74	1.74	--	--	--	12
13	SPARE	20	1	0.00	0.00		3	30	SPD	14
15	SPARE	20	1		0.00	0.00	--	--	--	16
17	SPARE	20	1			0.00	0.00	--	--	--	18
19	SPARE	20	1	0.00	0.00		1	20	SPARE	20
21	SPARE	20	1		0.00	0.00	1	20	SPARE	22
23	SPARE	20	1			0.00	0.00	1	20	SPARE	24
25	SPARE	20	1	0.00	0.00		1	20	SPARE	26
27	SPARE	20	1		0.00	0.00	1	20	SPARE	28
29	SPARE	20	1			0.00	0.00	1	20	SPARE	30
31	SPARE	20	1	0.00	0.00		1	20	SPARE	32
33	SPARE	20	1		0.00	0.00	1	20	SPARE	34
35	SPARE	20	1			0.00	0.00	1	20	SPARE	36
37	SPARE	20	1	0.00	0.00		1	20	SPARE	38
39	SPARE	20	1		0.00	0.00	1	20	SPARE	40
41	SPARE	20	1			0.00	0.00	1	20	SPARE	42
			Total Load:	14 kW	14 kW	14 kW				
			Total Amps:	50 A	50 A	50 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Other	41190 VA	100.00%	41190 VA		
				Total Load:	41.19 kW
				Demand Load:	41.19 kW
				Connected Amps:	50 A
				Demand Amps:	50 A

Notes:

Panel: LVSP

Location: ELEC 1412 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: T-LVSP | **Phases:** 3 | **Mains Type:** MCB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: TYPE 1 | **Bus Rating:** 200 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	IT1	60	3	0.96	10.03		3	100	BP1C3A	2
3	--	--	--			2.25	10.88	--	--	--	4
5	--	--	--				2.25	12.57	--	--	6
7	MCP1	60	3	1.20	1.20		3	60	MCP2	8
9	--	--	--		0.60	1.80	--	--	--	10
11	--	--	--			0.00	0.60	--	--	--	12
13	SPD	30	3	0.00	0.00		1	20	SPARE	14
15	--	--	--		0.00	1.18	1	20	M - MECH 1411 B-1 MOTORIZED...	16
17	--	--	--			0.00	1.18	1	20	M - MECH 1411 B-2 MOTORIZED...	18
19	SPARE	20	1	0.00	0.00		1	20	SPARE	20
21	SPARE	20	1		0.00	0.00	1	20	SPARE	22
23	SPARE	20	1			0.00	0.00	1	20	SPARE	24
25	SPARE	20	1	0.00	0.00		1	20	SPARE	26
27	SPARE	20	1		0.00	0.00	1	20	SPARE	28
29	SPARE	20	1			0.00	0.00	1	20	SPARE	30
31	SPARE	20	1	0.00	0.00		1	20	SPARE	32
33	SPARE	20	1		0.00	0.00	1	20	SPARE	34
35	SPARE	20	1			0.00	0.00	1	20	SPARE	36
37	SPARE	20	1	0.00	0.00		1	20	SPARE	38
39	SPARE	20	1		0.00	0.00	1	20	SPARE	40
41	SPARE	20	1			0.00	0.00	1	20	SPARE	42
			Total Load:	13 kW	17 kW	17 kW				
			Total Amps:	112 A	143 A	142 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	4128 VA	107.12%	4422 VA		
Other	17835 VA	100.00%	17835 VA	**Total Load:**	46.68 kW
RECEPT	360 VA	100.00%	360 VA	**Demand Load:**	53.07 kW
EXISTING	24360 VA	125.00%	30450 VA	**Connected Amps:**	130 A
				Demand Amps:	147 A

Notes:

Panel: EM1

Location: ELEC 1412 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 35kAIC
Supply From: HDP | **Phases:** 3 | **Mains Type:** MCB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: TYPE 1 | **Bus Rating:** 200 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	IL - FIELD 1401 AREA A&B EM LTG	20	1	3.04	2.59		1	20	IL - FIELD 1401 AREA C&D EM LTG	2
3	IL - FIELD 1401 AREA E&F EM LTG	20	1		1.32	1.25	1	20	IL - GALLERY SEATING EM LTG	4
5	IL - SMALL ROOMS TRACK EM LTG	20	1			1.06	9.41	3	100	LPEM1C1	6
7	EM2	60	3	2.88	9.41		--	--	--	8
9	--	--	--		1.90	9.41	--	--	--	10
11	--	--	--			0.00	0.00	3	30	SPD	12
13	SPARE	20	1	0.00	0.00		--	--	--	14
15	SPARE	20	1		0.00	0.00	--	--	--	16
17	SPARE	20	1			0.00	0.00	1	20	SPARE	18
19	SPARE	20	1	0.00	0.00		1	20	SPARE	20
21	SPARE	20	1		0.00	0.00	1	20	SPARE	22
23	SPARE	20	1			0.00	0.00	1	20	SPARE	24
25	SPARE	20	1	0.00	0.00		1	20	SPARE	26
27	SPARE	20	1		0.00	0.00	1	20	SPARE	28
29	SPARE	20	1			0.00	0.00	1	20	SPARE	30
31	SPARE	20	1	0.00	0.00		1	20	SPARE	32
33	SPARE	20	1		0.00	0.00	1	20	SPARE	34
35	SPARE	20	1			0.00	0.00	1	20	SPARE	36
37	SPARE	20	1	0.00	0.00		1	20	SPARE	38
39	SPARE	20	1		0.00	0.00	1	20	SPARE	40
41	SPARE	20	1			0.00	0.00	1	20	SPARE	42
			Total Load:	18 kW	14 kW	10 kW				
			Total Amps:	67 A	52 A	38 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
LTG	14032 VA	125.00%	17540 VA		
Other	28240 VA	100.00%	28240 VA	**Total Load:**	42.27 kW
				Demand Load:	45.78 kW
				Connected Amps:	51 A
				Demand Amps:	55 A

Notes:

Distr. Panel: HVSP

Location: ELEC 1412 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 35kAIC
Supply From: HDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 400 A
Enclosure: TYPE 1 | **MCB Rating:** 400 A
Series: DISTRIBUTION... | **Sub-Feed Lugs:** No | **Neutral Buss:** Yes
Ground Buss: Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C
1	T-LVSP	100 A	3	13388		
2	--	--	--		16704	
3	--	--	--			16591
4	HVSP2	100 A	3	3792		
5	--	--	--		3816	
6	--	--	--			1776
7	M - B-1	20 A	3	5540		
8	--	--	--		5540	
9	--	--	--			5540
10	M - B-2	20 A	3	5540		
11	--	--	--		5540	
12	--	--	--			5540
13	M - BP-4	20 A	3	3047		
14	--	--	--		3047	
15	--	--	--			3047
16	M - BP-5	20 A	3	3047		
17	--	--	--		3047	
18	--	--	--			3047
19	M - BP-1 & BP-2	15 A	3	1884		
20	--	--	--		1884	
21	--	--	--			1884
22	SPARE	30 A	3	0		
23	--	--	--		0	
24	--	--	--			0
25	SPARE	20 A	1	0		
26	SPARE	20 A	1		0	
27	SPARE	20 A	1			0
28	SPARE	20 A	1	0		
29	SPARE	20 A	1		0	
30	SPARE	20 A	1			0
31	SPARE	20 A	1	0		
32	SPARE	20 A	1		0	
33	SPARE	20 A	1			0
34	SPARE	20 A	1	0		
35	SPARE	20 A	1		0	
36	SPARE	20 A	1			0
37	SPARE	20 A	1	0		
38	SPARE	20 A	1		0	
39	SPARE	20 A	1			0
40	DP1C1	200 A	3	13730		
41	--	--	--		13730	
42	--	--	--			13730
			Total Load:	50 kVA	53 kVA	51 kVA
			Total Amps:	180 A	193 A	185 A

Legend:

Load Classification	Connected Load	Demand...	Estimated Demand	Panel Totals	
Motor	68886 VA	106.03%	73041 VA		
Other	60825 VA	100.00%	60825 VA	**Total Load:**	154 kVA
RECEPT	360 VA	100.00%	360 VA	**Total Demand:**	165 kVA
EXISTING	24360 VA	125.00%	30450 VA	**Total Current:**	186 A
				Current...	198 A

Notes:

Panel: LVSP2

Location: STORAGE 1202 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: T-LVSP2 | **Phases:** 3 | **Mains Type:** MCB
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: TYPE 1 | **Bus Rating:** 100 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	P-14	20	2	1.44	1.18		2	20	P-15	2
3	--	--	--		1.44	1.18	--	--	--	4
5	P-16	20	2			0.59	0.59	2	20	P-17	6
7	--	--	--	0.59	0.59		--	--	--	8
9	BMS PNL	20	1		0.60	0.60	1	20	BMS PNL	10
11	BMS PNL	20	1			0.60	0.00	3	30	SPD	12
13	SPARE	20	1	0.00	0.00		--	--	--	14
15	SPARE	20	1		0.00	0.00	--	--	--	16
17	SPARE	20	1			0.00	0.00	1	20	SPARE	18
19	SPARE	20	1	0.00	0.00		1	20	SPARE	20
21	SPARE	20	1		0.00	0.00	1	20	SPARE	22
23	SPARE	20	1			0.00	0.00	1	20	SPARE	24
25	SPARE	20	1	0.00	0.00		1	20	SPARE	26
27	SPARE	20	1		0.00	0.00	1	20	SPARE	28
29	SPARE	20	1			0.00	0.00	1	20	SPARE	30
31	SPARE	20	1	0.00	0.00		1	20	SPARE	32
33	SPARE	20	1		0.00	0.00	1	20	SPARE	34
35	SPARE	20	1			0.00	0.00	1	20	SPARE	36
37	SPARE	20	1	0.00	0.00		1	20	SPARE	38
39	SPARE	20	1		0.00	0.00	1	20	SPARE	40
41	SPARE	20	1			0.00	0.00	1	20	SPARE	42
			Total Load:	4 kW	4 kW	2 kW				
			Total Amps:	34 A	34 A	15 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	7584 VA	109.49%	8304 VA		
Other	1800 VA	100.00%	1800 VA	**Total Load:**	9.38 kW
				Demand Load:	10.10 kW
				Connected Amps:	26 A
				Demand Amps:	28 A

Notes:

Panel: EM2

Location: JAN 2306 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 10kAIC
Supply From: EM1 | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 60 A
Enclosure: TYPE 1 | **Bus Rating:** 100 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	IL - 2ND FLOOR LTG	20	1	1.90	0.98		1	20	IL - 1ST FLOOR LTG	2
3	EL - EXTERIOR CANOPY LTG	20	1		0.88	1.02	1	20	IL - 1ST FLOOR LTG	4
5	SPD	30	3			0.00	0.00	1	20	SPARE	6
7	--	--	--	0.00	0.00		1	20	SPARE	8
9	--	--	--		0.00	0.00	1	20	SPARE	10
11	SPARE	20	1			0.00	0.00	1	20	SPARE	12
13	SPARE	20	1	0.00	0.00		1	20	SPARE	14
15	SPARE	20	1		0.00	0.00	1	20	SPARE	16
17	SPARE	20	1			0.00	0.00	1	20	SPARE	18
19	SPARE	20	1	0.00	0.00		1	20	SPARE	20
21	SPARE	20	1		0.00	0.00	1	20	SPARE	22
23	SPARE	20	1			0.00	0.00	1	20	SPARE	24
25	SPARE	20	1	0.00	0.00		1	20	SPARE	26
27	SPARE	20	1		0.00	0.00	1	20	SPARE	28
29	SPARE	20	1			0.00	0.00	1	20	SPARE	30
31	SPARE	20	1	0.00	0.00		1	20	SPARE	32
33	SPARE	20	1		0.00	0.00	1	20	SPARE	34
35	SPARE	20	1			0.00	0.00	1	20	SPARE	36
37	SPARE	20	1	0.00	0.00		1	20	SPARE	38
39	SPARE	20	1		0.00	0.00	1	20	SPARE	40
41	SPARE	20	1			0.00	0.00	1	20	SPARE	42
			Total Load:	3 kW	2 kW	0 kW				
			Total Amps:	11 A	8 A	0 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
LTG	4778 VA	125.00%	5973 VA		
				Total Load:	4.78 kW
				Demand Load:	5.97 kW
				Connected Amps:	6 A
				Demand Amps:	7 A

Notes:

GENERAL NOTE:

PER ASHRAE 90.1 2019 8.4.3 ELECTRICAL MONITORING, ABBREVIATIONS NOTED BELOW DESIGNATED LOAD CLASSIFICATIONS FOR ENERGY MONITORING:

TE - TOTAL ELECTRICAL ENERGY M - HVAC IL - INTERIOR LIGHTING EL - EXTERIOR LIGHTING R - RECEPTACLE

544 CHERRY DIAG DRIVE
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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

STATE OF MICHIGAN
Robin Hyman
License No. 6201055057
LICENSED PROFESSIONAL ENGINEER

JOB NO. Project Number

SHEET TITLE
ELECTRICAL SCHEDULES

SHEET NO.
E914

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Panel: IT1

Location: TECH 2303 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LVSP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 60 A
Enclosure: TYPE 1 | **Bus Rating:** 100 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	R - TECH 2303 RECEP	20	1	0.36 0.60			1	20	M - JAN 2306 BMS PANEL	2
3	SPARE	20	1	0.00 2.25			2	30	R - TECH 2303 UPS	4
5	SPARE	20	1			0.00 2.25	--	--	--	6
7	SPARE	20	1	0.00 0.00			1	20	SPARE	8
9	SPD	30	3	0.00 0.00			1	20	SPARE	10
11	--	--	--			0.00 0.00	1	20	SPARE	12
13	--	--	--	0.00 0.00			1	20	SPARE	14
15	SPARE	20	1	0.00 0.00			1	20	SPARE	16
17	SPARE	20	1			0.00 0.00	1	20	SPARE	18
19	SPARE	20	1	0.00 0.00			1	20	SPARE	20
21	SPARE	20	1	0.00 0.00			1	20	SPARE	22
23	SPARE	20	1			0.00 0.00	1	20	SPARE	24
25	SPARE	20	1	0.00 0.00			1	20	SPARE	26
27	SPARE	20	1	0.00 0.00			1	20	SPARE	28
29	SPARE	20	1			0.00 0.00	1	20	SPARE	30
		Total Load:		1 kW	2 kW	2 kW				
		Total Amps:		8 A	20 A	20 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Other	5100 VA	100.00%	5100 VA	
RECEPT	360 VA	100.00%	360 VA	**Total Load:** 5.46 kW
				Demand Load: 5.46 kW
				Connected Amps: 15 A
				Demand Amps: 15 A

Notes:

Panel: LRP7

Location: FIELD 1401 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: TYPE 1 | **Bus Rating:** 100 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	R - FIELD 1401 EAST GEN. REC	20	1	0.54 0.36			1	20	R - SE FIELD 1401 20 YD LINE REC	2
3	R - FIELD 1401 RECP SE CORNER	20	1		0.54 1.76		1	20	R - FIELD 1401 VIDEO WALL REC	4
5	R - FIELD 1401 SE WALL REC	20	1			0.54 1.76	1	20	R - FIELD 1401 VIDEO WALL REC	6
7	R - FIELD 1401 VIDEO WALL REC	20	1	1.76 1.66			1	20	R - FIELD 1401 NETTING MTR REC	8
9	R - FIELD 1401 VIDEO WALL REC	20	1		1.68 1.92		1	20	R - FIELD 1401 NETTING MTR REC	10
11	R - FIELD 1401 NETTING MTR REC	20	1			1.92 1.92	1	20	R - FIELD 1401 NETTING MTR REC	12
13	FIELD 1401 SOUTH SCOREBOARD	20	1	0.26 0.26			1	20	FIELD 1401 CENTER SCOREBOARD	14
15	SPARE	20	1		0.00 0.00		1	20	SPARE	16
17	SPARE	20	1			0.00 0.00	1	20	SPARE	18
19	SPARE	20	1	0.00 0.00			1	20	SPARE	20
21	SPARE	20	1		0.00 0.00		1	20	SPARE	22
23	SPARE	20	1			0.00 0.00	1	20	SPARE	24
25	SPARE	20	1	0.00 0.00			1	20	SPARE	26
27	SPARE	20	1		0.00 0.00		1	20	SPARE	28
29	SPARE	20	1			0.00 0.00	1	20	SPARE	30
31	SPARE	20	1	0.00 0.00			1	20	SPARE	32
33	SPARE	20	1		0.00 0.00		1	20	SPARE	34
35	SPARE	20	1			0.00 0.00	1	20	SPARE	36
37	SPARE	20	1	0.00 0.00			3	30	SPD	38
39	SPARE	20	1		0.00 0.00		--	--	--	40
41	SPARE	20	1			0.00 0.00	--	--	--	42
		Total Load:		5 kW	6 kW	6 kW				
		Total Amps:		40 A	51 A	53 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Other	14896 VA	100.00%	14896 VA	
RECEPT	1980 VA	100.00%	1980 VA	**Total Load:** 16.88 kW
				Demand Load: 16.88 kW
				Connected Amps: 47 A
				Demand Amps: 47 A

Notes:

Panel: LRP6

Location: FIELD 1401 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: TYPE 1 | **Bus Rating:** 100 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	R - N.W. FIELD 1401 NETTING	20	1	1.66 0.83			2	15	R- NORTH BATTING CAGE LIFT	2
3	R - N.W. FIELD 1401 NETTING	20	1		1.92 0.83		--	--	--	4
5	R - NORTH BATTING CAGE LIFT	15	2			0.83 0.36	1	20	R -FIELD 1401 NE CORNER REC	6
7	--	--	--	0.83 0.54			1	20	R - FIELD 1401 E WALL REC	8
9	R- FIELD 1401 NE CORNER REC	20	1		0.54 0.36		1	20	R - FIELD 1401 BATTING CAGE REC	10
11	R - FIELD 1401 NORTHEAST REC	20	1			0.54 0.36	1	20	R - FIELD 1401 BATTING CAGE REC	12
13	R - FIELD 1401 VIDEO WALL REC	20	1	1.76 1.76			1	20	R - FIELD 1401 VIDEO WALL REC	14
15	R - FIELD 1401 VIDEO WALL REC	20	1		1.76 1.76		1	20	R - FIELD 1401 VIDEO WALL REC	16
17	R - FIELD 1401 NETTING MTR REC	20	1			1.66 1.92	1	20	R - FIELD 1401 NETTING MTR REC	18
19	R - FIELD 1401 NETTING MTR REC	20	1	1.92 0.26			1	20	FIELD 1401 NORTH SCOREBOARD	20
21	SPARE	20	1		0.00 0.00		1	20	SPARE	22
23	SPARE	20	1			0.00 0.00	1	20	SPARE	24
25	SPARE	20	1	0.00 0.00			1	20	SPARE	26
27	SPARE	20	1		0.00 0.00		1	20	SPARE	28
29	SPARE	20	1			0.00 0.00	1	20	SPARE	30
31	SPARE	20	1	0.00 0.00			1	20	SPARE	32
33	SPARE	20	1		0.00 0.00		1	20	SPARE	34
35	SPARE	20	1			0.00 0.00	1	20	SPARE	36
37	SPARE	20	1	0.00 0.00			3	30	SPD	38
39	SPARE	20	1		0.00 0.00		--	--	--	40
41	SPARE	20	1			0.00 0.00	--	--	--	42
		Total Load:		10 kW	7 kW	6 kW				
		Total Amps:		82 A	62 A	47 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Other	19684 VA	100.00%	19684 VA	
RECEPT	2700 VA	100.00%	2700 VA	**Total Load:** 22.38 kW
				Demand Load: 22.38 kW
				Connected Amps: 62 A
				Demand Amps: 62 A

Notes:

Panel: BP1C3A

Location: MECH 1127 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LVSP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 200 A
Enclosure: TYPE 1 | **Bus Rating:** 200 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	EXISTING SPECIALTY REC (OFF)	20	2	0.00 0.50			1	20	EXISTING FA PANEL	2
3	--	--	--		0.00 1.20		1	20	EXISTING BOILER	4
5	EXISTING RECP WEIGHT RM	20	1			0.72 0.54	1	20	EXISTING MEZZ REC	6
7	EXISTING SPECIALTY REC (OFF)	20	2	0.00 0.54			1	20	EXISTING CEILING RECP WEIGHT RM	8
9	--	--	--		0.00 0.54		1	20	EXISTING CEILING RECP WEIGHT RM	10
11	EXISTING REC WEIGHT RM	20	1			0.72 0.54	1	20	EXISTING CEILING RECP WEIGHT RM	12
13	EXISTING REC WEIGHT RM	20	1	0.72 0.72			1	20	EXISTING RECP TRAINING RM	14
15	EXISTING REC WEIGHT RM	20	1		0.72 0.50		1	20	EXISTING MASTER CLOCK	16
17	EXISTING REC WEIGHT RM	20	1			0.72 1.00	1	20	EXISTING BOILER PUMP	18
19	EXISTING REC WEIGHT RM	20	1	0.72 1.20			1	20	EXISTING DHW BOILER	20
21	EXISTING REC WEIGHT RM	20	1		0.72 1.20		1	20	EXISTING BOILER 1	22
23	EXISTING REC WEIGHT RM	20	1			0.72 1.20	1	20	EXISTING BOILER 2	24
25	EXISTING REC WEIGHT RM	20	1	0.72 1.08			3	15	EXISTING P1	26
27	EXISTING CEILING FAN WEIGHT RM	20	1		1.00 1.08		--	--	--	28
29	EXISTING REC TRAINING RM	20	1			0.72 1.08	--	--	--	30
31	RCP-25	15	2	0.59 1.08			3	15	EXISTING P2	32
33	--	--	--		0.59 1.08		--	--	--	34
35	WOMENS 1125 AUTO FV AND...	20	1			1.28 1.08	--	--	--	36
37	IT 1163 MDF QUAD REC	20	1	0.36 1.80			1	20	BMS PNL	38
39	SPARE	20	1		0.00 2.25		2	30	IT 1163 UPS	40
41	SPARE	20	1			0.00 2.25	--	--	--	42
43	SPARE	20	1	0.00 0.00			1	20	SPARE	44
45	SPARE	20	1		0.00 0.00		1	20	SPARE	46
47	SPARE	20	1			0.00 0.00	1	20	SPARE	48
49	SPARE	20	1	0.00 0.00			1	20	SPARE	50
51	SPARE	20	1		0.00 0.00		1	20	SPARE	52
53	SPARE	20	1			0.00 0.00	1	20	SPARE	54
55	SPARE	20	1	0.00 0.00			1	20	SPARE	56
57	SPARE	20	1		0.00 0.00		1	20	SPARE	58
59	SPARE	20	1			0.00 0.00	1	20	SPARE	60
		Total Load:		10 kW	11 kW	13 kW				
		Total Amps:		84 A	92 A	106 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Motor	1176 VA	125.00%	1470 VA	
Other	7935 VA	100.00%	7935 VA	**Total Load:** 33.47 kW
EXISTING	24360 VA	125.00%	30450 VA	**Demand Load:** 39.86 kW
				Connected Amps: 93 A
				Demand Amps: 111 A

Notes:

Panel: MCP2

Location: ELEC 1117 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LVSP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 60 A
Enclosure: TYPE 1 | **Bus Rating:** 100 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	P-1, P-2, & P-3	20	1	0.60 0.60			1	20	BMS PNL	2
3	BMS PNL	20	1		1.20 0.60		1	20	BMS PNL	4
5	BMS PNL	20	1			0.60 0.00	3	30	SPD	6
7	SPARE	20	1	0.00 0.00			--	--	--	8
9	SPARE	20	1		0.00 0.00		--	--	--	10
11	SPARE	20	1			0.00 0.00	1	20	SPARE	12
13	SPARE	20	1	0.00 0.00			1	20	SPARE	14
15	SPARE	20	1		0.00 0.00		1	20	SPARE	16
17	SPARE	20	1			0.00 0.00	1	20	SPARE	18
19	SPARE	20	1	0.00 0.00			1	20	SPARE	20
21	SPARE	20	1		0.00 0.00		1	20	SPARE	22
23	SPARE	20	1			0.00 0.00	1	20	SPARE	24
25	SPARE	20	1	0.00 0.00			1	20	SPARE	26
27	SPARE	20	1		0.00 0.00		1	20	SPARE	28
29	SPARE	20	1			0.00 0.00	1	20	SPARE	30
31	SPARE	20	1	0.00 0.00			1	20	SPARE	32
33	SPARE	20	1		0.00 0.00		1	20	SPARE	34
35	SPARE	20	1			0.00 0.00	1	20	SPARE	36
37	SPARE	20	1	0.00 0.00			1	20	SPARE	38
39	SPARE	20	1		0.00 0.00		1	20	SPARE	40
41	SPARE	20	1			0.00 0.00	1	20	SPARE	42
		Total Load:		1 kW	2 kW	1 kW				
		Total Amps:		11 A	16 A	5 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Motor	600 VA	108.33%	650 VA	
Other	3000 VA	100.00%	3000 VA	**Total Load:** 3.60 kW
				Demand Load: 3.65 kW
				Connected Amps: 10 A
				Demand Amps: 10 A

Notes:

Panel: MCP1

Location: ELEC 1412 | **Volts:** 208Y/120 Wye | **A.I.C. Rating:** 10kAIC
Supply From: LVSP | **Phases:** 3 | **Mains Type:** MLO
Mounting: SURFACE | **Wires:** 4 | **Mains Rating:** 60 A
Enclosure: TYPE 1 | **Bus Rating:** 100 A
Series: PANELBOARD | **Neutral Buss:** Yes
Sub-Feed Lugs: No | **Ground Buss:** Yes

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	M - BMS PNLS MECH 1411	20	1	0.60 0.60			1	20	M - BMS PNLS MECH 1411	2
3	M - BMS PNL LIFT STOR 1423	20	1		0.60 0.00		3	30	SPD	4
5	SPARE	20	1			0.00 0.00	--	--	--	6
7	SPARE	20	1	0.00 0.00			--	--	--	8
9	SPARE	20	1		0.00 0.00		1	20	SPARE	10
11	SPARE	20	1			0.00 0.00	1	20	SPARE	12
13	SPARE	20	1	0.00 0.00			1	20	SPARE	14
15	SPARE	20	1		0.00 0.00		1	20	SPARE	16
17	SPARE	20	1			0.00 0.00	1	20	SPARE	18
19	SPARE	20	1	0.00 0.00			1	20	SPARE	20
21	SPARE	20	1		0.00 0.00		1	20	SPARE	22
23	SPARE	20	1			0.00 0.00	1	20	SPARE	24
25	SPARE	20	1	0.00 0.00			1	20	SPARE	26
27	SPARE	20	1		0.00 0.00		1	20	SPARE	28
29	SPARE	20	1			0.00 0.00	1	20	SPARE	30
31	SPARE	20	1	0.00 0.00			1	20	SPARE	32
33	SPARE	20	1		0.00 0.00		1	20	SPARE	34
35	SPARE	20	1			0.00 0.00	1	20	SPARE	36
37	SPARE	20	1	0.00 0.00			1	20	SPARE	38
39	SPARE	20	1		0.00 0.00		1	20	SPARE	40
41	SPARE	20	1			0.00 0.00	1	20	SPARE	42
		Total Load:		1 kW	1 kW	0 kW				
		Total Amps:		11 A	6 A	0 A				

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
Other	1800 VA	100.00%	1800 VA	
				Total Load: 1.80 kW
				Demand Load: 1.80 kW
				Connected Amps: 5 A
				Demand Amps: 5 A

Notes:

GENERAL NOTE:

PER ASHRAE 90.1 2019 8.4.3 ELECTRICAL MONITORING, ABBREVIATIONS NOTED BELOW DESIGNATED LOAD CLASSIFICATIONS FOR ENERGY MONITORING:

TE - TOTAL ELECTRICAL ENERGY M - HVAC IL - INTERIOR LIGHTING EL - EXTERIOR LIGHTING R - RECEPTACLE

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. Project Number

SHEET TITLE
ELECTRICAL SCHEDULES

SHEET NO.
E915

KINGSCOTT ASSOCIATES INC. PORTAGE, MICHIGAN

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Panel: HVSP2

Location: STORAGE 1202
Supply From: HVSP
Mounting: SURFACE
Enclosure: TYPE 1
Series: PANELBOARD

Volts: 480/277 Wye
Phases: 3
Wires: 4
Sub-Feed Lugs: No

A.I.C. Rating: 10kAIC
Mains Type: MLO
Mains Rating: 100 A
Bus Rating: 100 A
Neutral Buss: Yes
Ground Buss: Yes

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	T-LVSP2	45	3	3.79	0.00					3	30	SPD	2
3	--	--	--			3.82	0.00			--	--	--	4
5	--	--	--					1.78	0.00	--	--	--	6
7	SPARE	20	1	0.00	0.00					1	20	SPARE	8
9	SPARE	20	1			0.00	0.00			1	20	SPARE	10
11	SPARE	20	1					0.00	0.00	1	20	SPARE	12
13	SPARE	20	1	0.00	0.00					1	20	SPARE	14
15	SPARE	20	1			0.00	0.00			1	20	SPARE	16
17	SPARE	20	1					0.00	0.00	1	20	SPARE	18
19	SPARE	20	1	0.00	0.00					1	20	SPARE	20
21	SPARE	20	1			0.00	0.00			1	20	SPARE	22
23	SPARE	20	1					0.00	0.00	1	20	SPARE	24
25	SPARE	20	1	0.00	0.00					1	20	SPARE	26
27	SPARE	20	1			0.00	0.00			1	20	SPARE	28
29	SPARE	20	1					0.00	0.00	1	20	SPARE	30
31	SPARE	20	1	0.00	0.00					1	20	SPARE	32
33	SPARE	20	1			0.00	0.00			1	20	SPARE	34
35	SPARE	20	1					0.00	0.00	1	20	SPARE	36
37	SPARE	20	1	0.00	0.00					1	20	SPARE	38
39	SPARE	20	1			0.00	0.00			1	20	SPARE	40
41	SPARE	20	1					0.00	0.00	1	20	SPARE	42
			Total Load:	4 kW		4 kW		2 kW					
			Total Amps:	15 A		15 A		6 A					

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Motor	7584 VA	109.49%	8304 VA		
Other	1800 VA	100.00%	1800 VA	**Total Load:**	9.38 kW
				Demand Load:	10.10 kW
				Connected Amps:	11 A
				Demand Amps:	12 A

Notes:

Distr. Panel: SWBD1C

Location: ELEC 1117
Supply From:
Mounting: SURFACE
Enclosure: TYPE 1
Series: DISTRIBUTION...

Volts: 480/277 Wye
Phases: 3
Wires: 4
Sub-Feed Lugs: No

A.I.C. Rating: 22kAIC
Mains Type: LSIG MCB
Mains Rating: 1200 A
MCB Rating: 1000 A
Neutral Buss: Yes
Ground Buss: Yes

Notes: PANEL SHALL BE PROVIDED WITH PHASE MONITORING METER.

CKT	Circuit Description	Trip	Poles	A	B	C
1	RTU-14 SUPPLY	30 A	3	8144		
2	--	--	--		8144	
3	--	--	--			8144
4	RTU-14 EXHAUST	25 A	3	6759		
5	--	--	--		6759	
6	--	--	--			6759
7	RTU-14 ENERGY WHEEL	15 A	3	443		
8	--	--	--		443	
9	--	--	--			443
10	AHU-15	15 A	3	4044		
11	--	--	--		4044	
12	--	--	--			4044
13	RAF-15	20 A	3	3878		
14	--	--	--		3878	
15	--	--	--			3878
16	AHU-16	40 A	3	10747		
17	--	--	--		10747	
18	--	--	--			10747
19	AHU-17	40 A	3	10747		
20	--	--	--		10747	
21	--	--	--			10747
22	LP1C1	60 A	3	11080		
23	--	--	--		11080	
24	--	--	--			11080
25	LP1C2	150 A	3	27700		
26	--	--	--		27700	
27	--	--	--			27700
28	TRANSFORMER T1A1	200 A	3	900		
29	--	--	--		0	
30	--	--	--			700
31	SPARE	200 A	3	0		
32	--	--	--		0	
33	--	--	--			0
34	SPARE	200 A	3	0		
35	--	--	--		0	
36	--	--	--			0
37	SPARE	100 A	3	0		
38	--	--	--		0	
39	--	--	--			0
40	SPARE	100 A	3	0		
41	--	--	--		0	
42	--	--	--			0
			Total Load:	84 kVA	84 kVA	84 kVA
			Total Amps:	305 A	302 A	305 A

Legend:

Load Classification	Connected Load	Demand...	Estimated Demand	Panel Totals	
Motor	134288 VA	106.00%	142349 VA		
Other	117940 VA	100.00%	117940 VA	**Total Load:**	252 kVA
				Total Demand:	260 kVA
				Total Current:	303 A
				Current...	313 A

Notes:

GENERAL NOTE:

PER ASHRAE 90.1 2019 8.4.3 ELECTRICAL MONITORING, ABBREVIATIONS NOTED BELOW DESIGNATED LOAD CLASSIFICATIONS FOR ENERGY MONITORING:

TE - TOTAL ELECTRICAL ENERGY M - HVAC IL - INTERIOR LIGHTING EL - EXTERIOR LIGHTING R - RECEPTACLE

544 CHERBOURG DRIVE
LANSING, MI 48917
PHONE: (517) 487-2611
FAX: (517) 487-2544
administrator@matrixcenc.com

MATRIX
CONSULTING ENGINEERS, INC

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Howell Community Center

Howell Public Schools

1661 N Latson Rd, Howell, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

STATE OF MICHIGAN
LICENSED PROFESSIONAL ENGINEER
Robin Hyman
License No. 6201055057

JOB NO. Project Number

N

SHEET TITLE
ELECTRICAL SCHEDULES

SHEET NO.
E916

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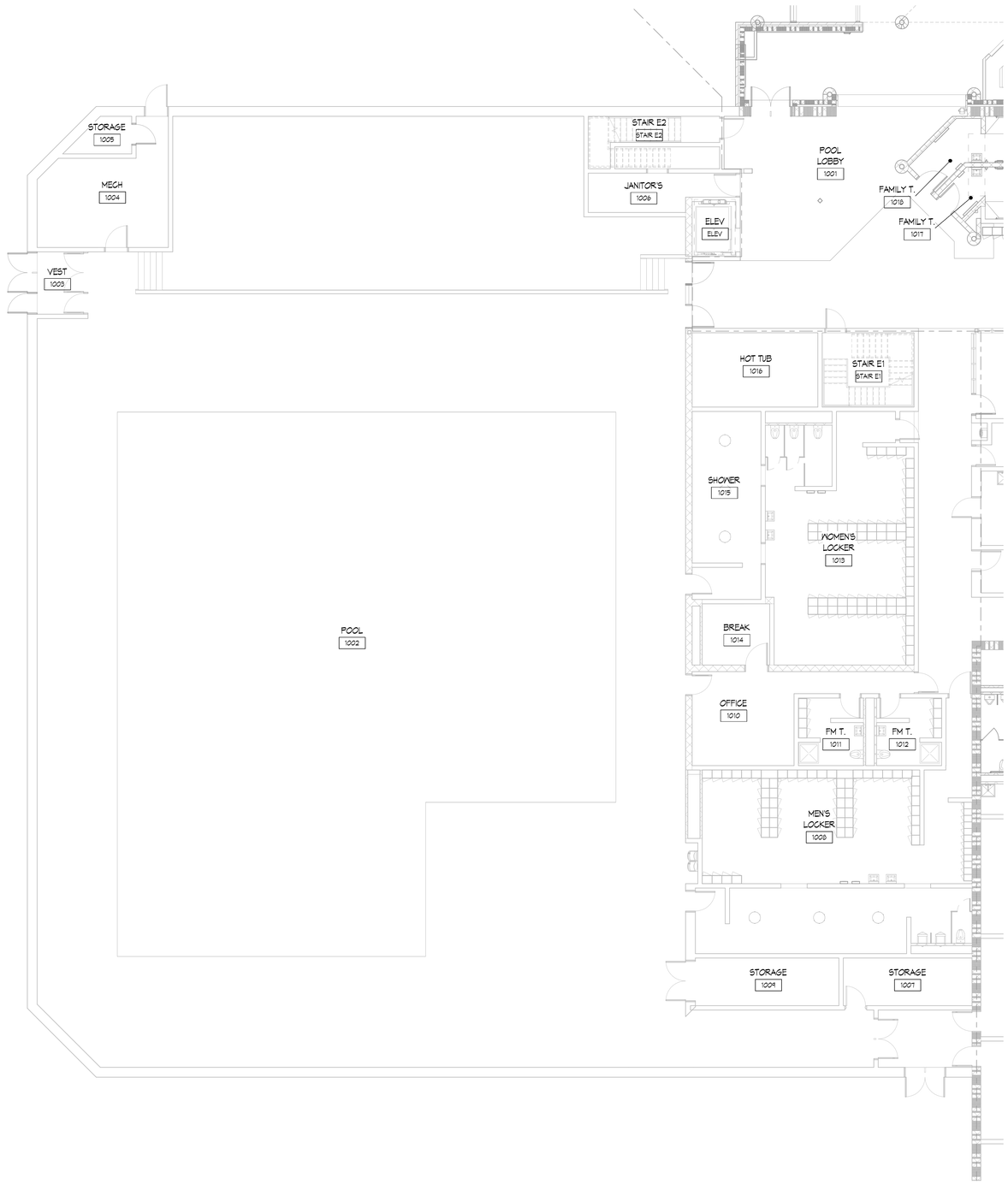

1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1000
1/8" = 1'-0"

STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA

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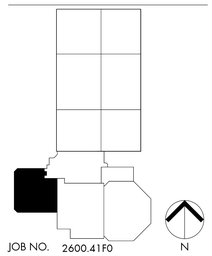
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1000

SHEET NO.
TC210.a

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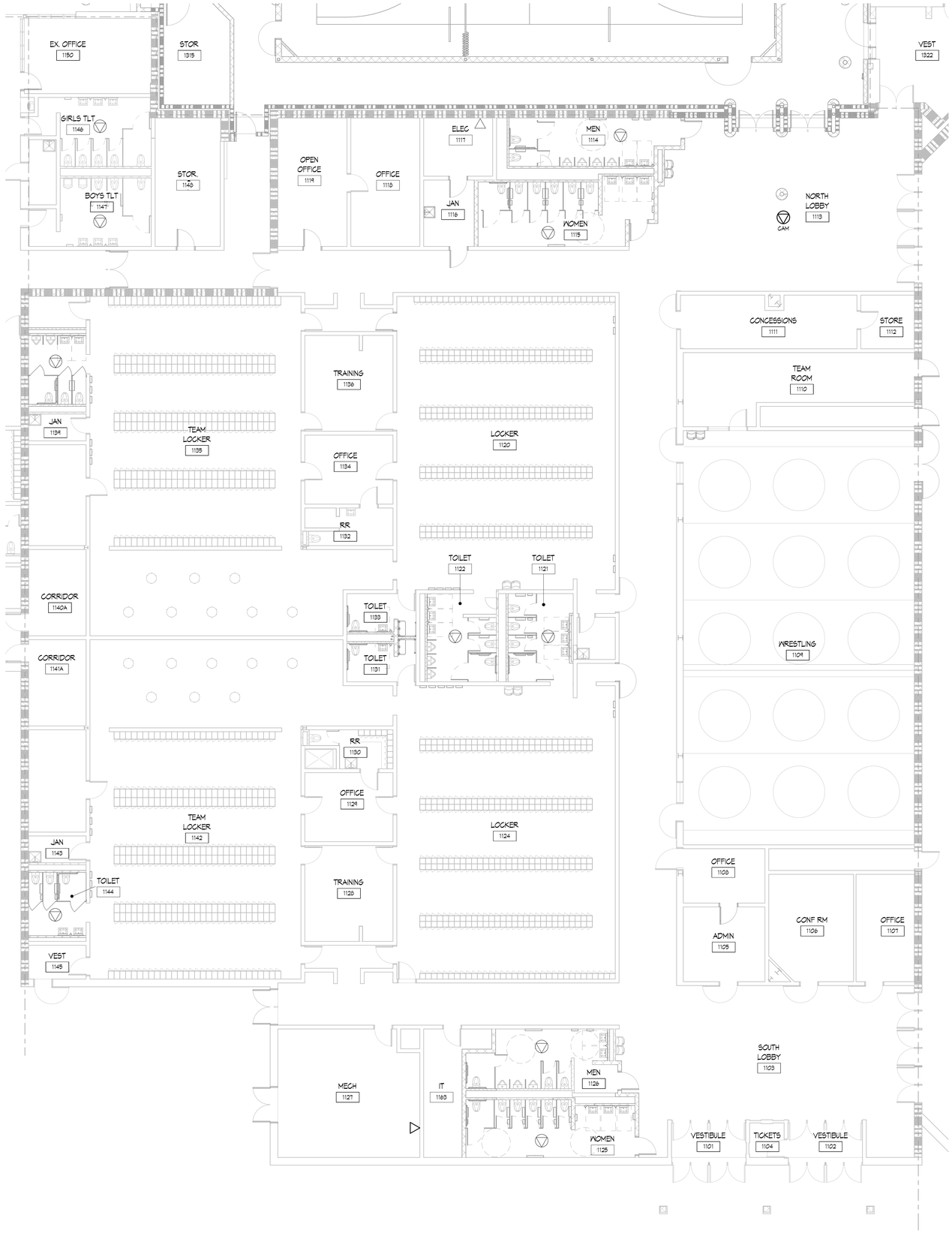

1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1100
1/8" = 1'-0"

STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA

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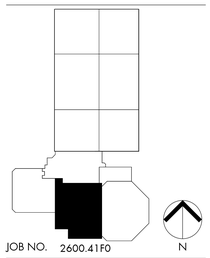
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1100

SHEET NO.
TC210.b

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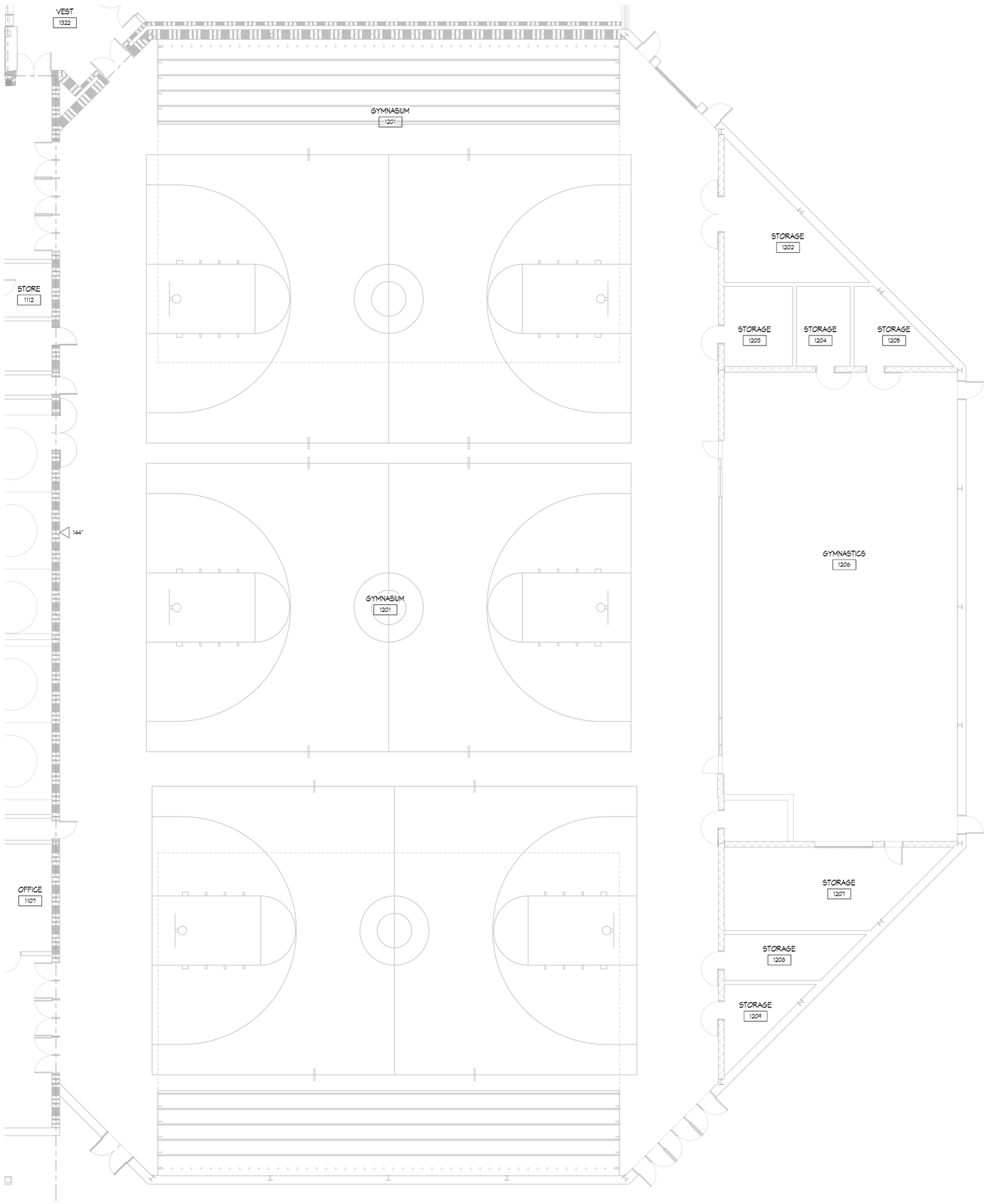

1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1200
1/8" = 1'-0"

STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA

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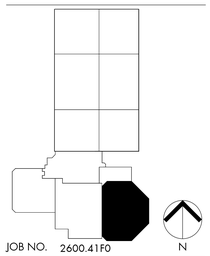

JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1200

SHEET NO.
TC210.c

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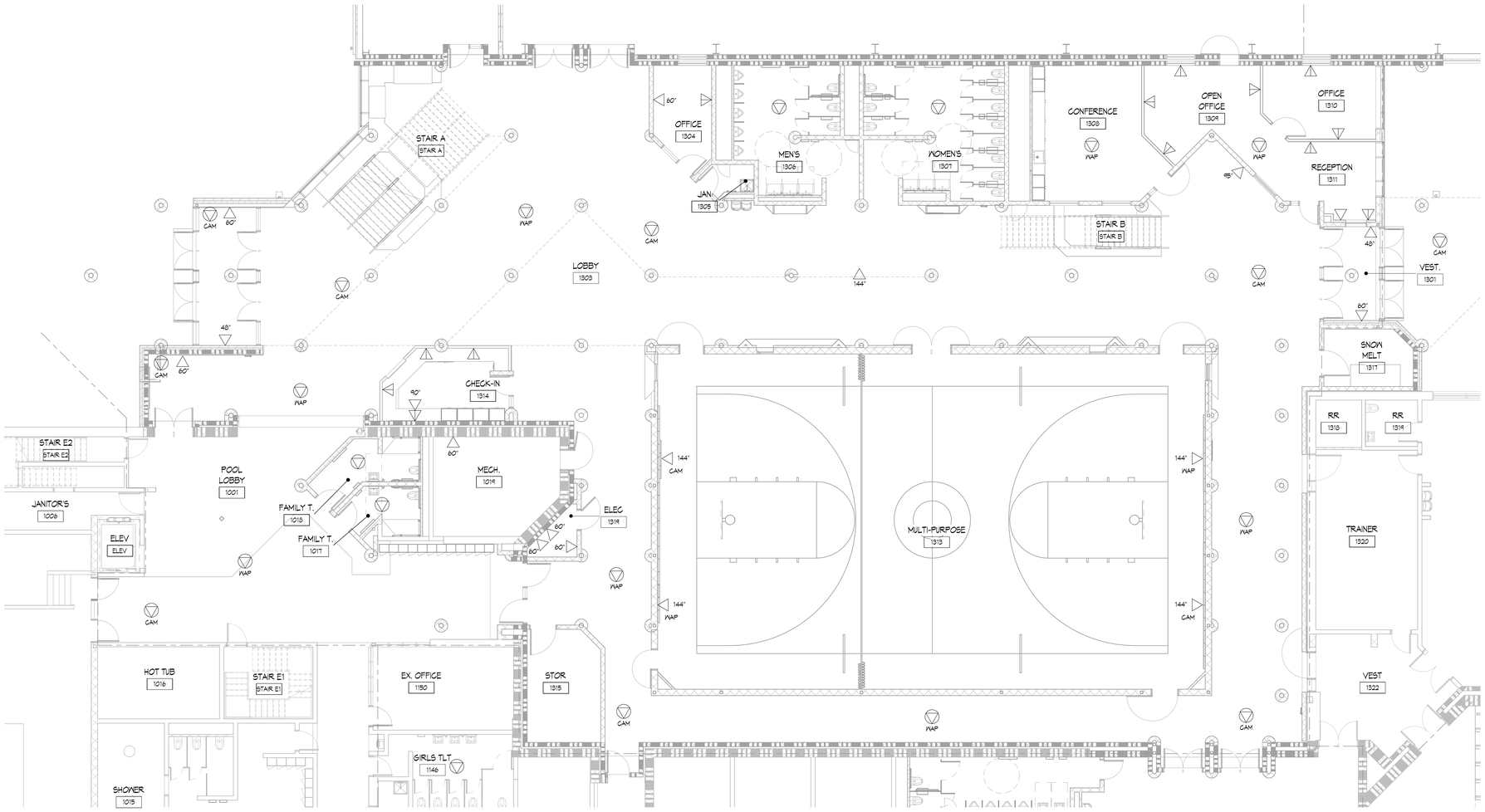
STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- VAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1300A
1/8" = 1'-0"

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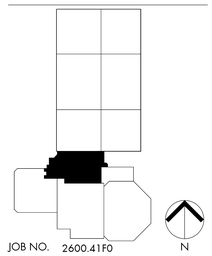

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SHEET TITLE

FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1300A

SHEET NO.

TC210.d

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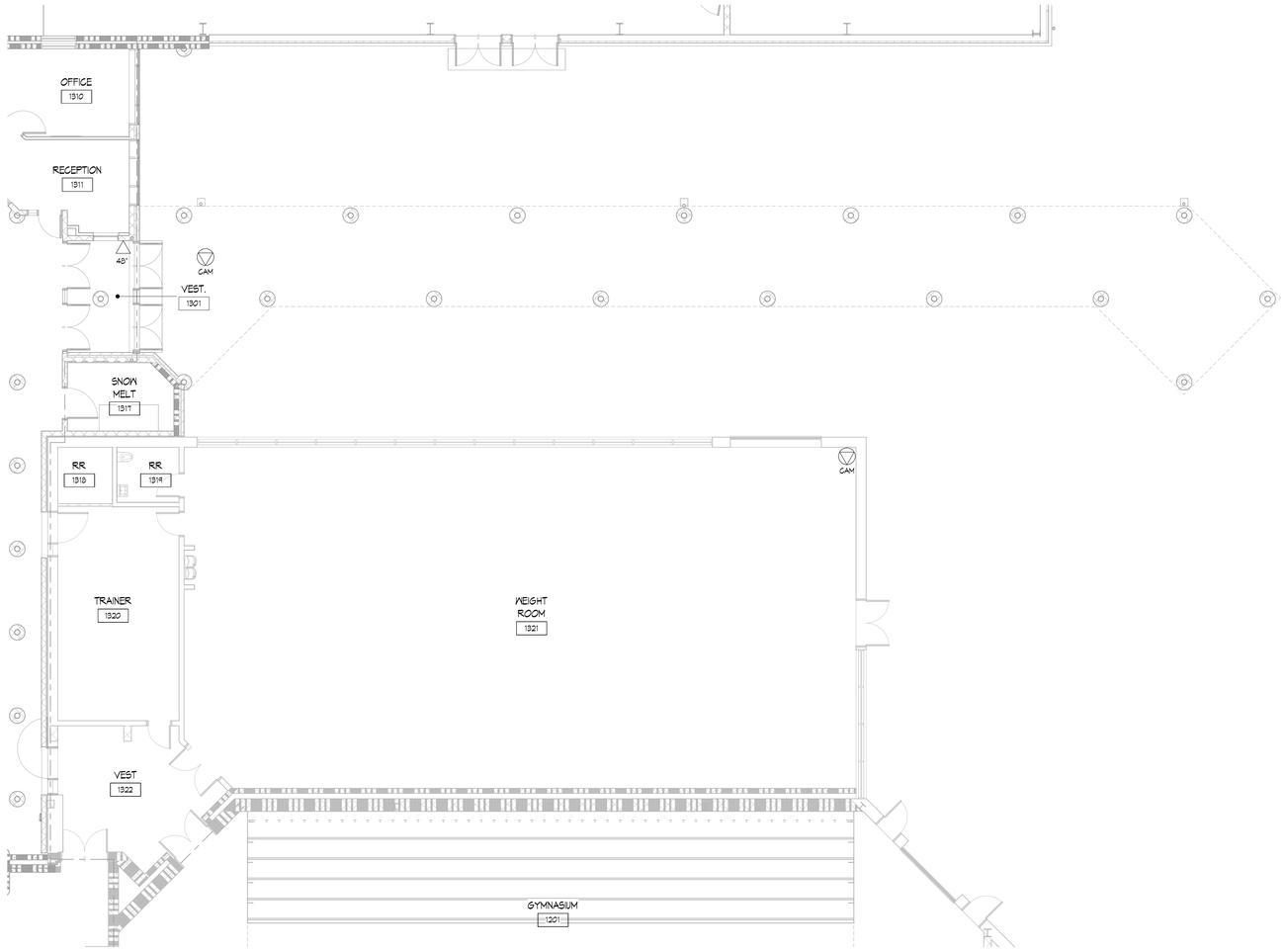
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1300B
1/8" = 1'-0"

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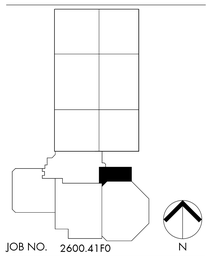

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SHEET TITLE
FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1300B

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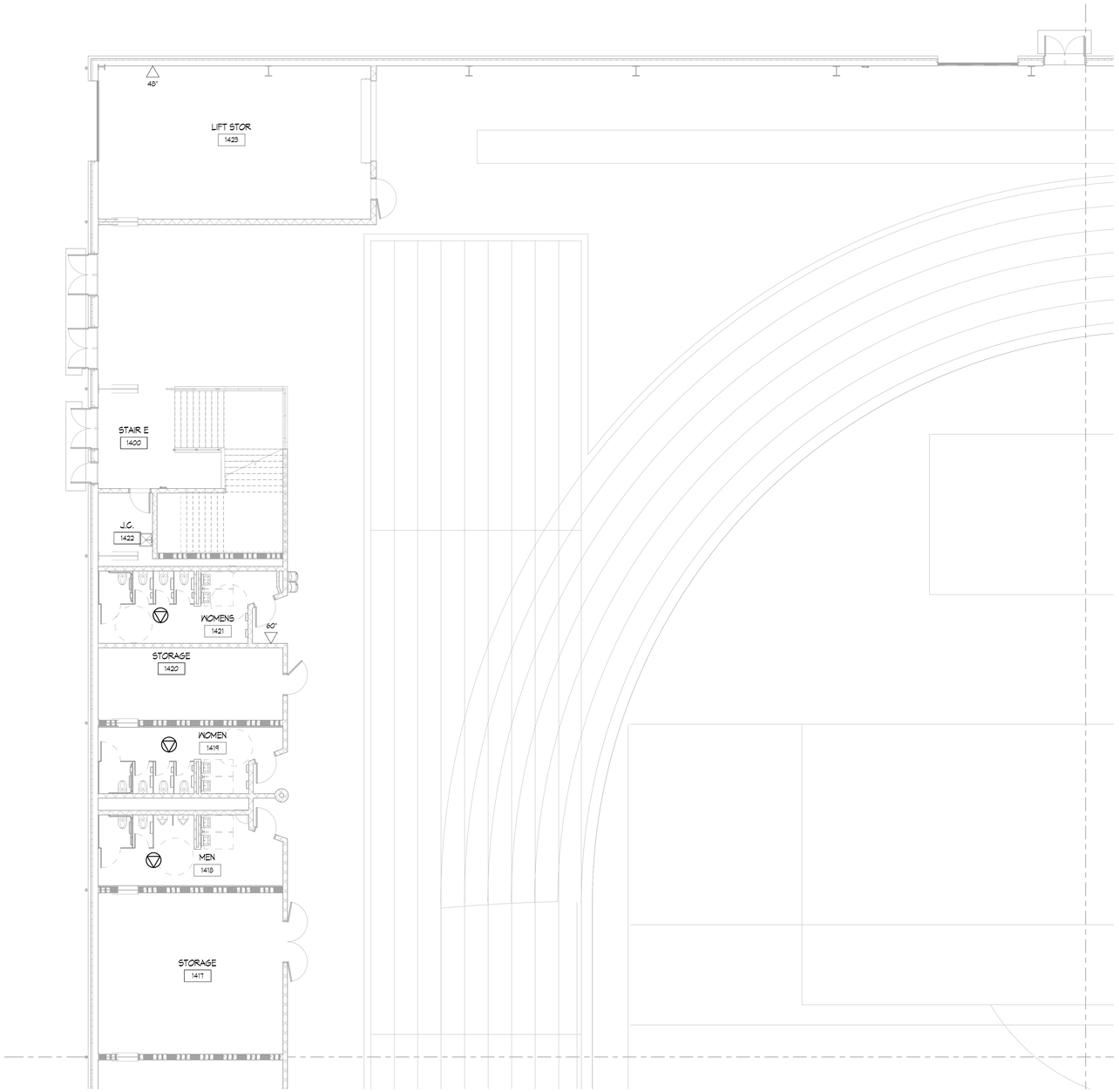
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400A
1/8" = 1'-0"

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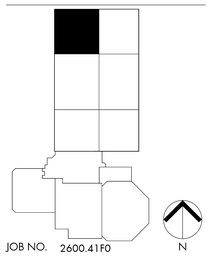

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SHEET TITLE
FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400A

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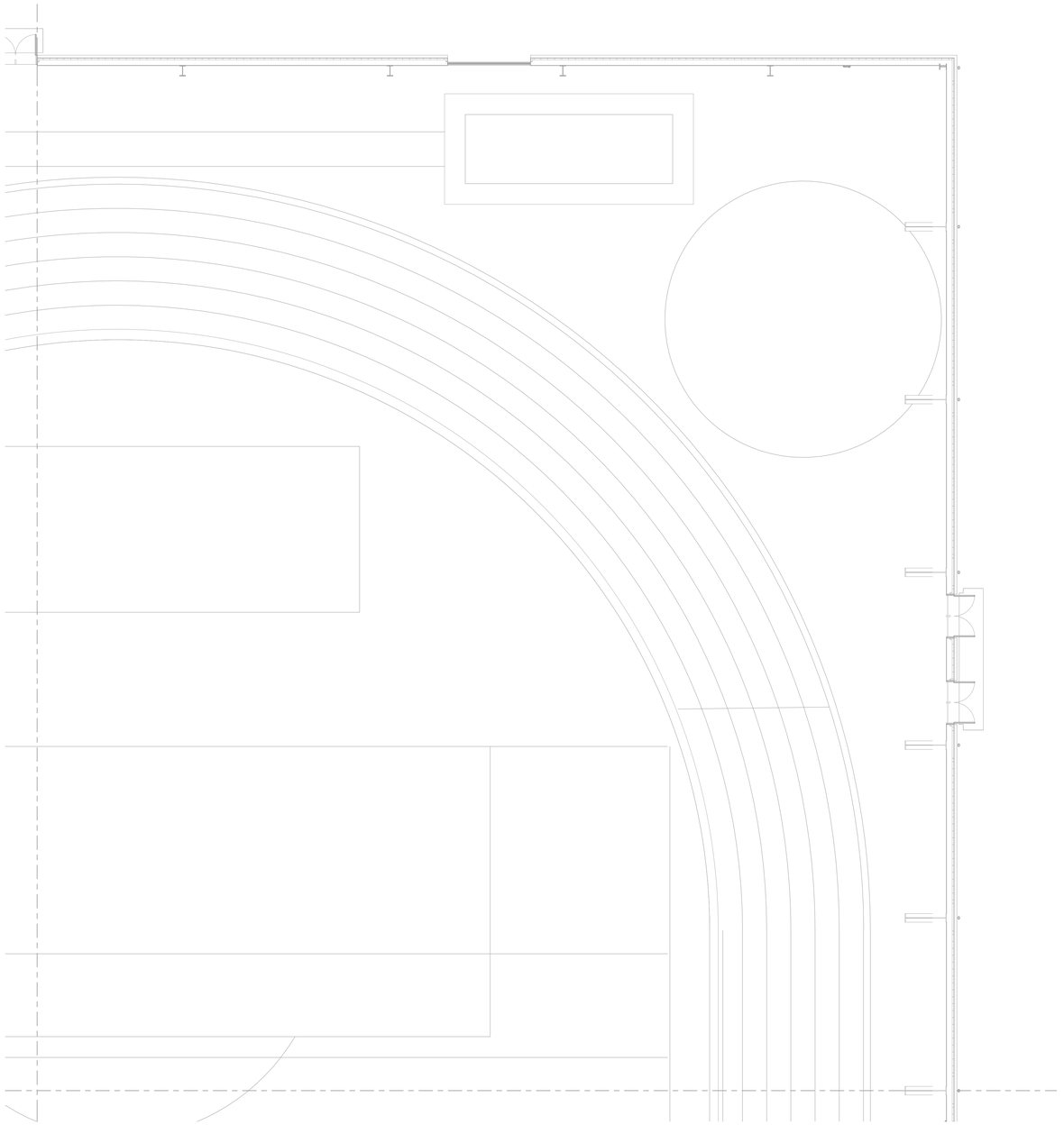
STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400B
1/8" = 1'-0"

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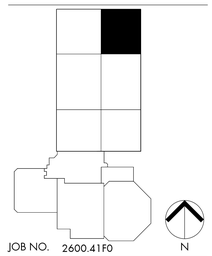

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SHEET TITLE
FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400B

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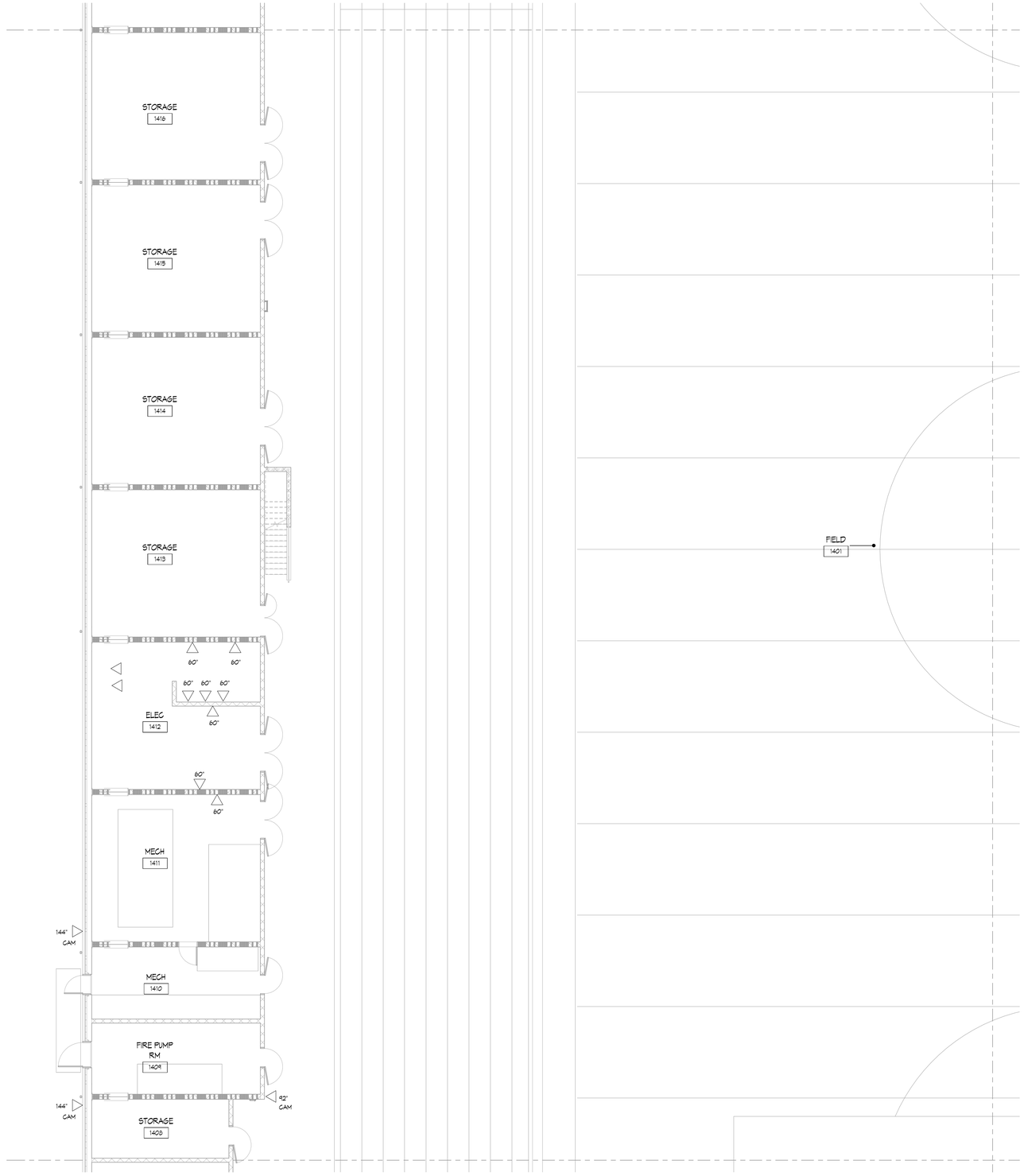

1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400C
1/8" = 1'-0"

STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA

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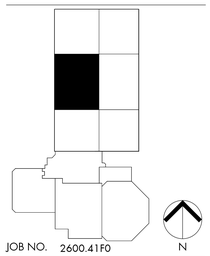

JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400C

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STRUCTURED CABLING SYMBOL LEGEND

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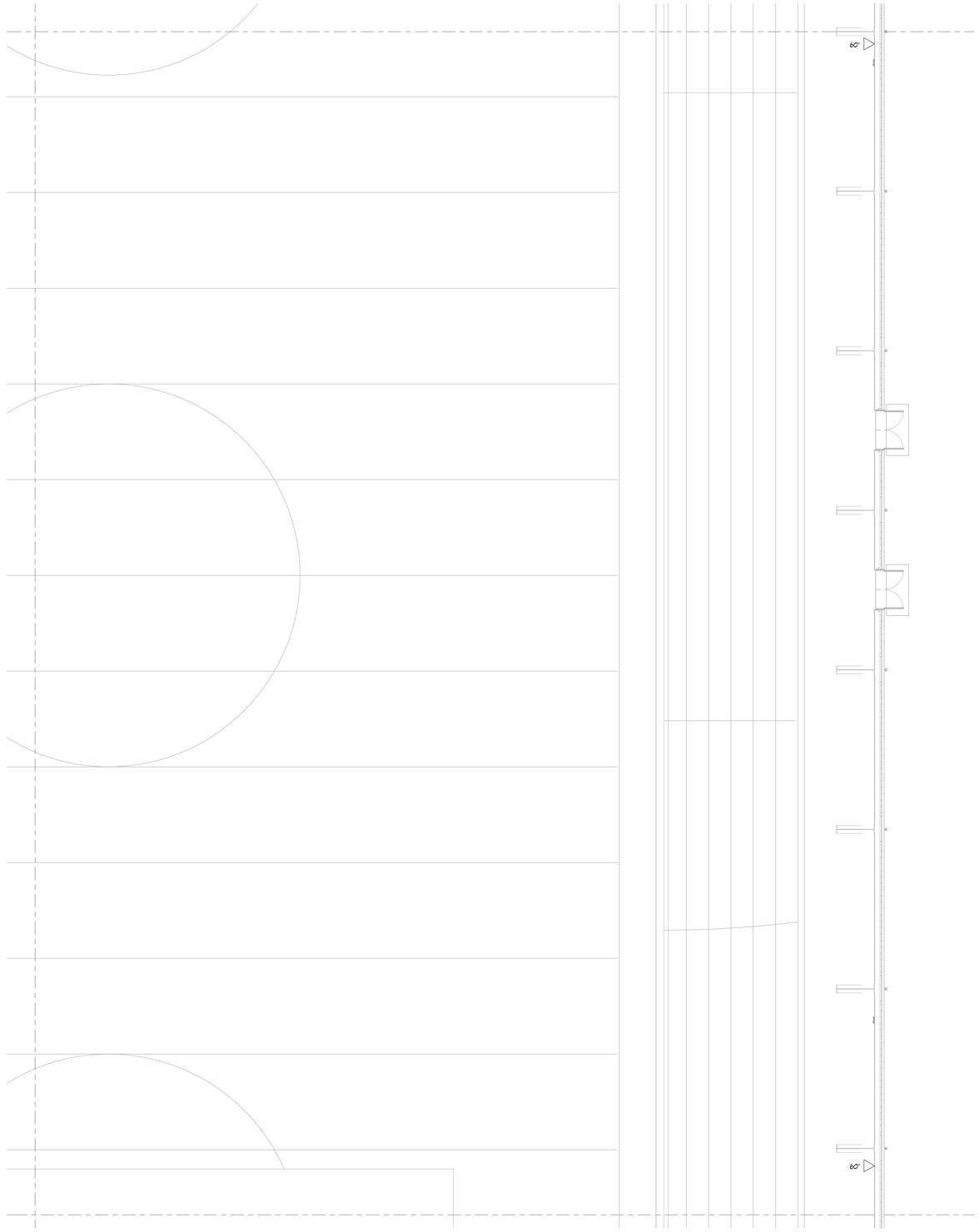
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400D
1/8" = 1'-0"

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HOWELL PUBLIC SCHOOLS

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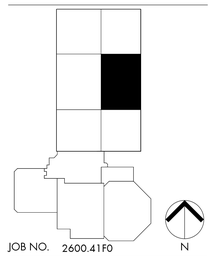
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400D

SHEET NO.
TC210.i

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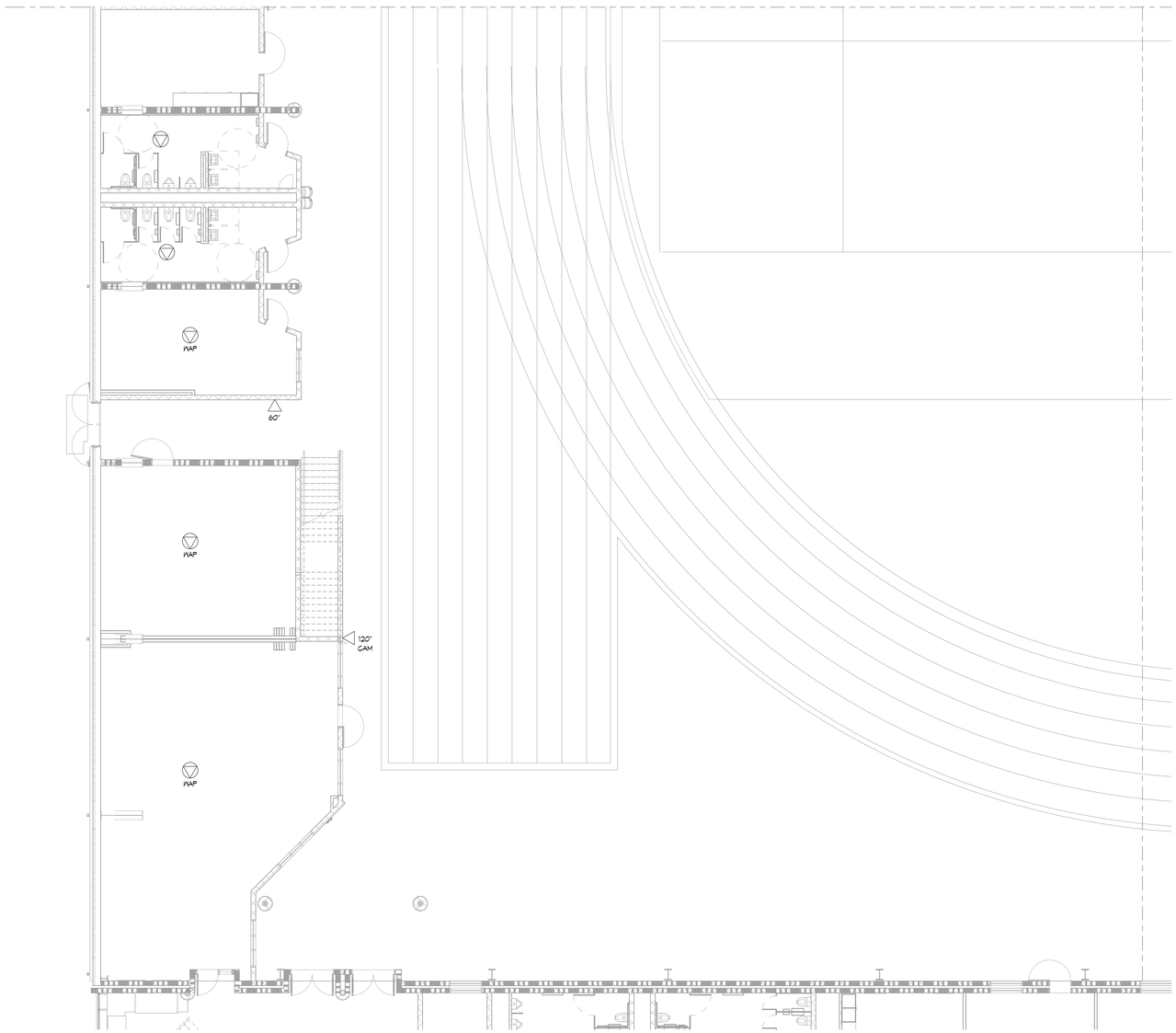
STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- IWAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400E
1/8" = 1'-0"

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JOB NO. 2600.41F0

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SHEET TITLE

FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400E

SHEET NO.

TC210.k

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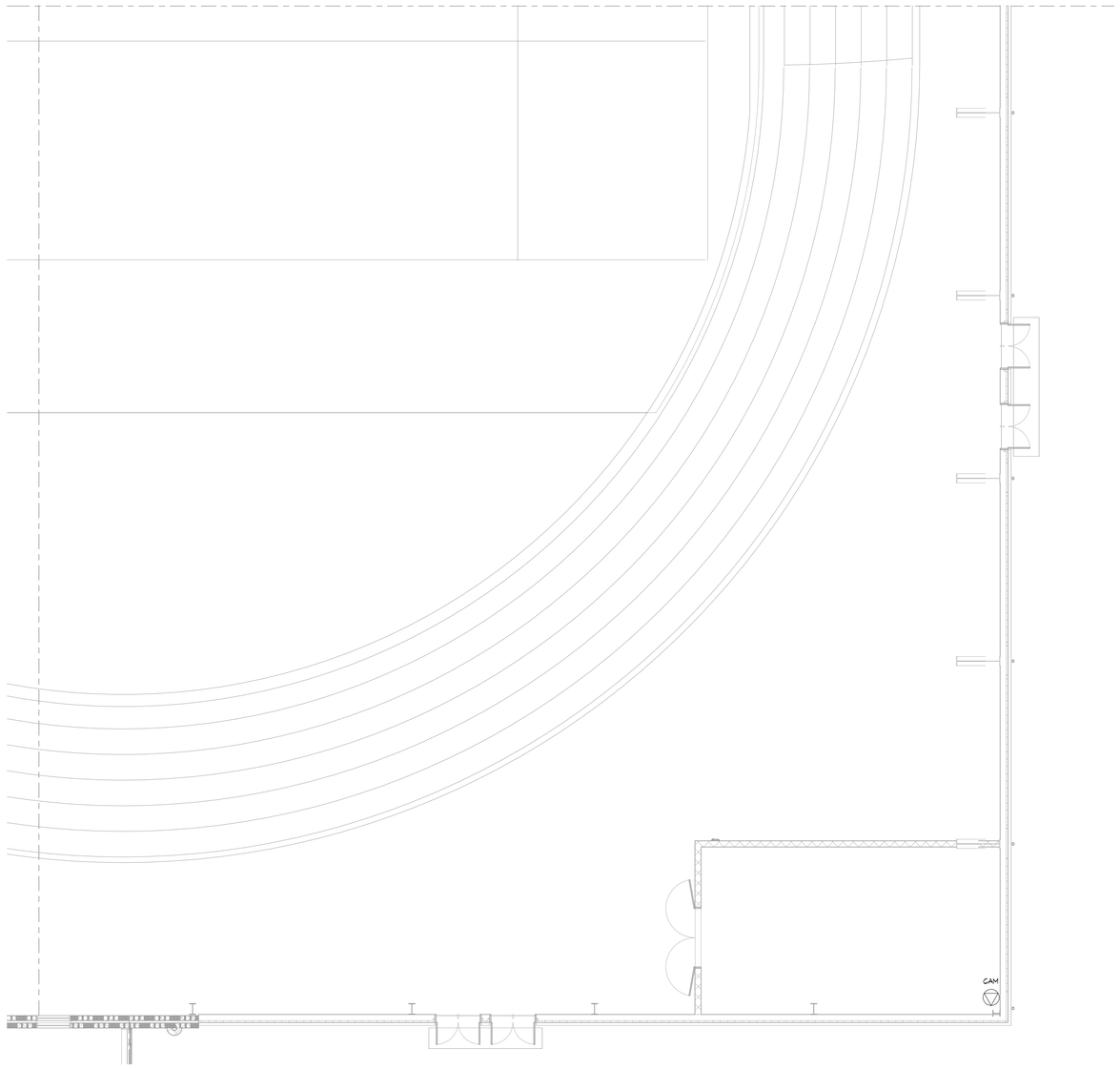
STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400F
1/8" = 1'-0"

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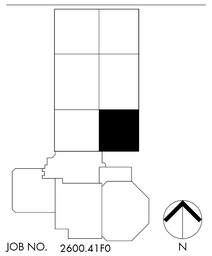

JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR STRUCTURED CABLING PLAN - UNIT 1400F

SHEET NO.
TC210.m

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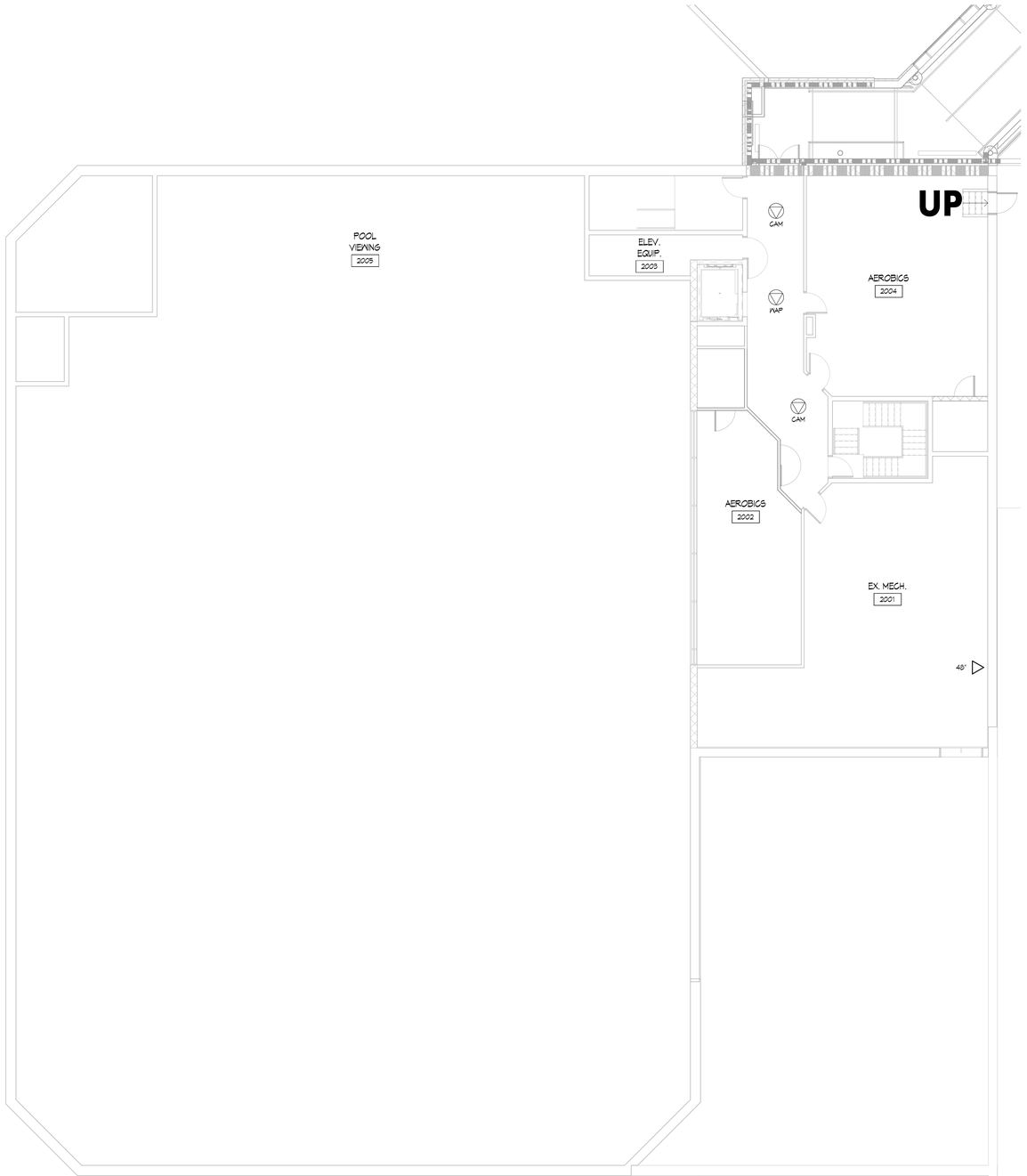

1 SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2000
1/8" = 1'-0"

STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA

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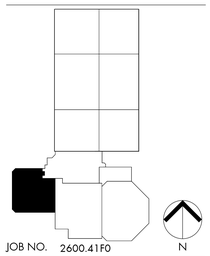

JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2000

SHEET NO.
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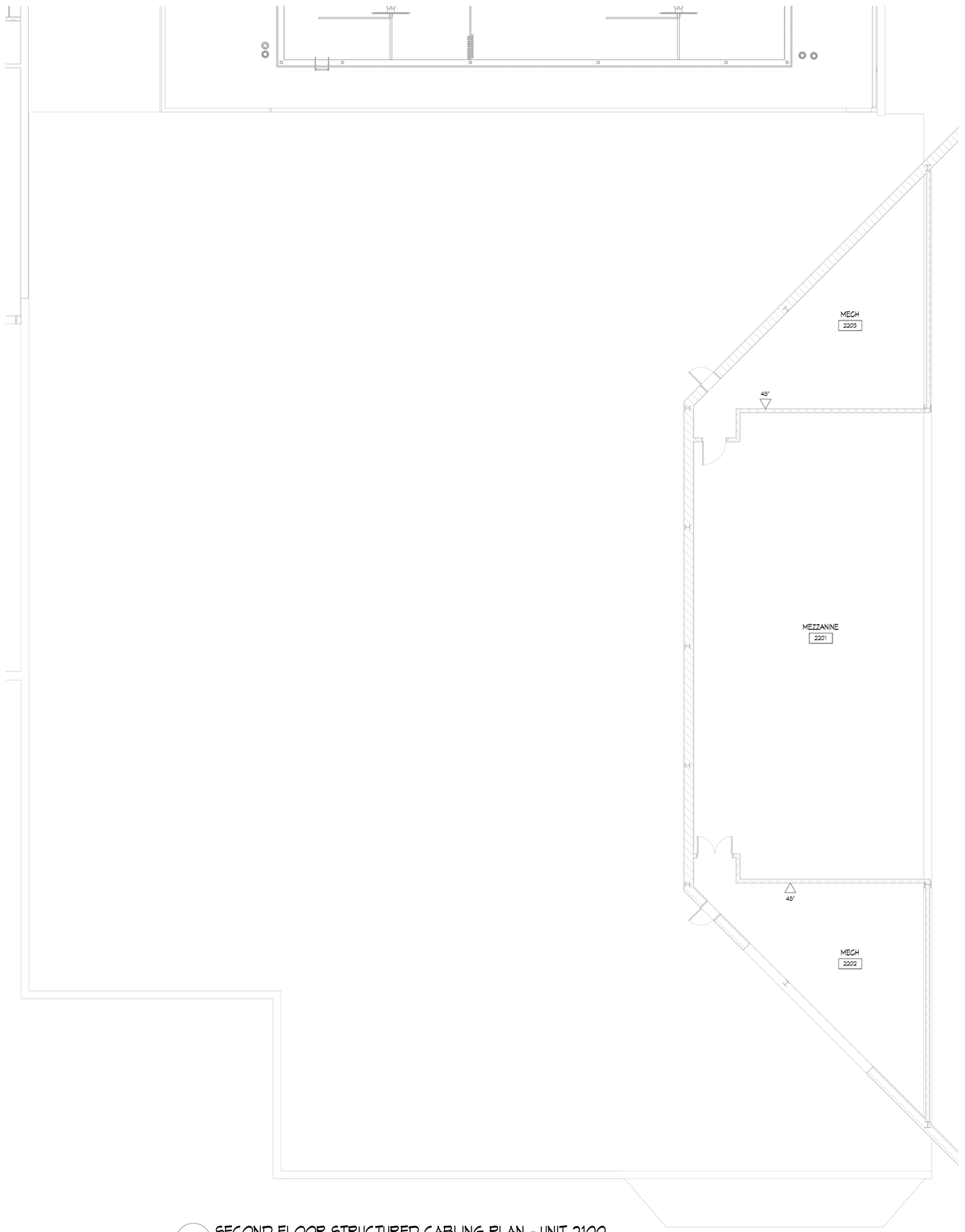
STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2100
1/8" = 1'-0"

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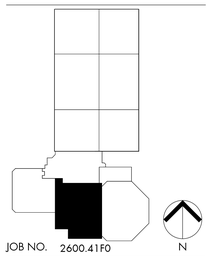
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2100

SHEET NO.
TC220.b

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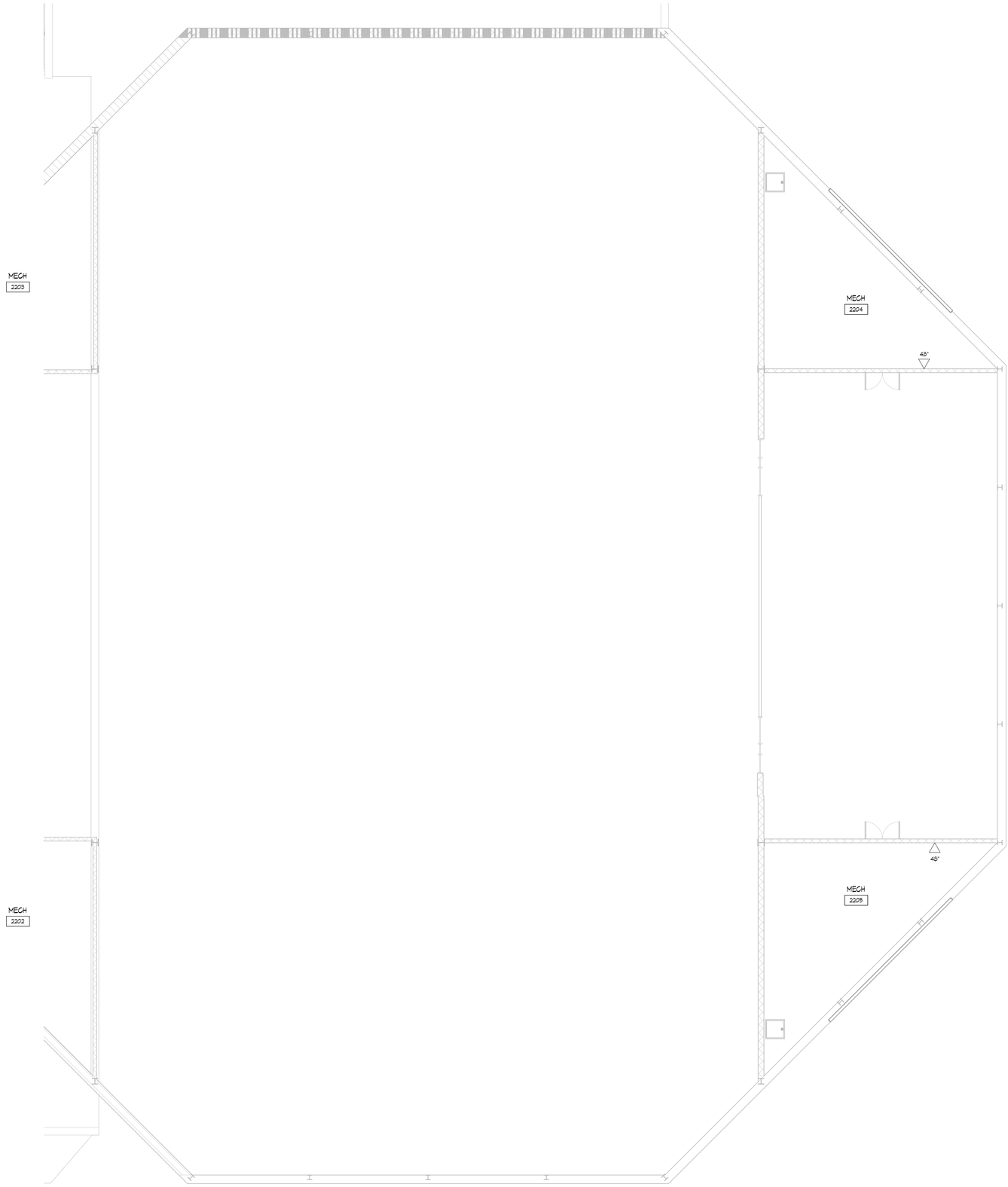

1 SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2200
1/8" = 1'-0"

STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA

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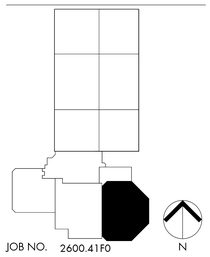
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2200

SHEET NO.
TC220.c

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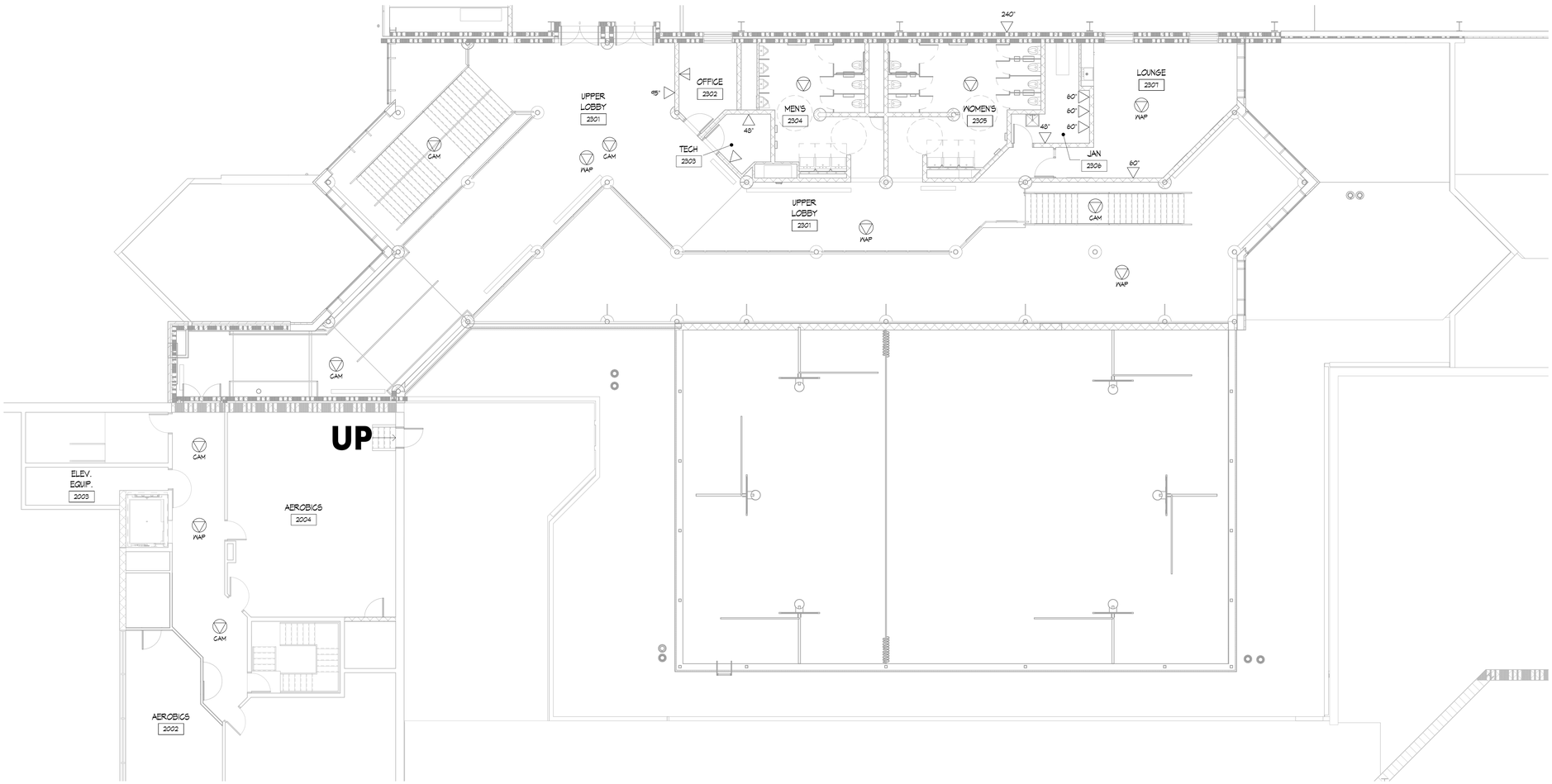
STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- VAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2300A
1/8" = 1'-0"

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JOB NO. 2600.41F0

N

SHEET TITLE
SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2300A

SHEET NO.
TC220.d

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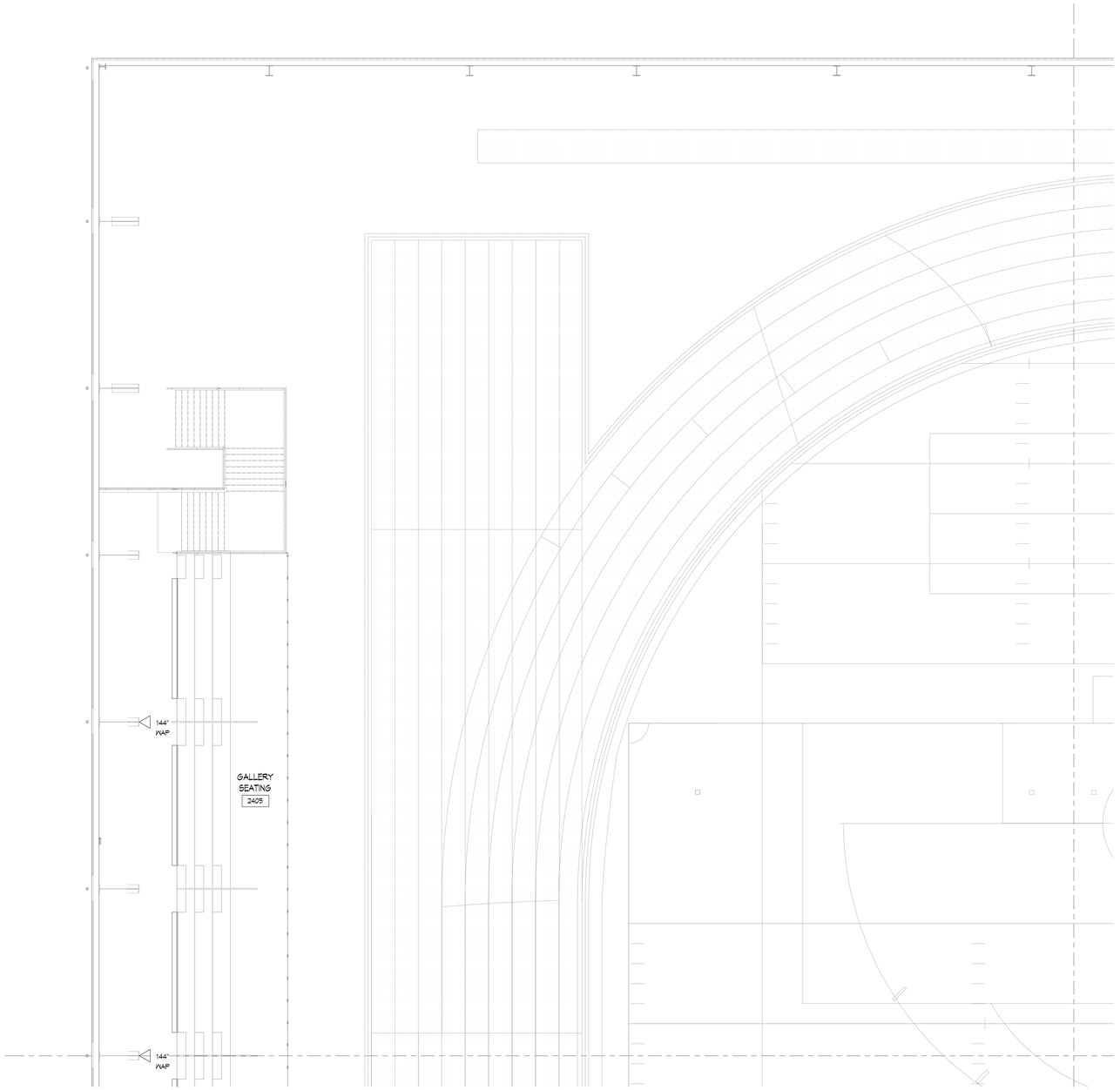
STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400A
1/8" = 1'-0"

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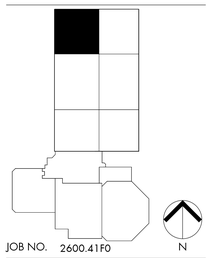
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400A

SHEET NO.
TC220.f

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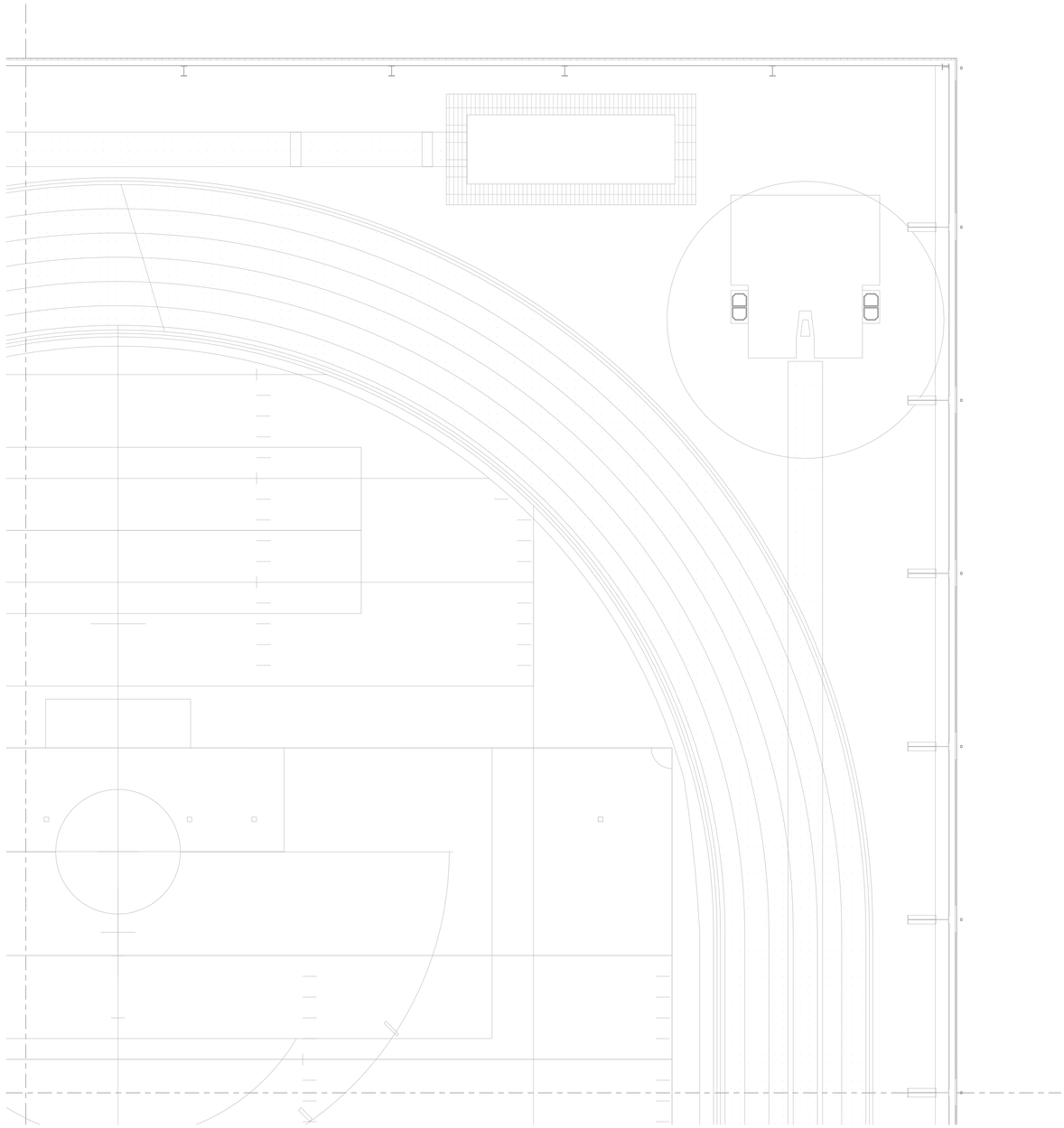

1 SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400B
1/8" = 1'-0"

STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- VAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA

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JOB NO. 2600.41F0

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SHEET TITLE

SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400B

SHEET NO.

TC220.g

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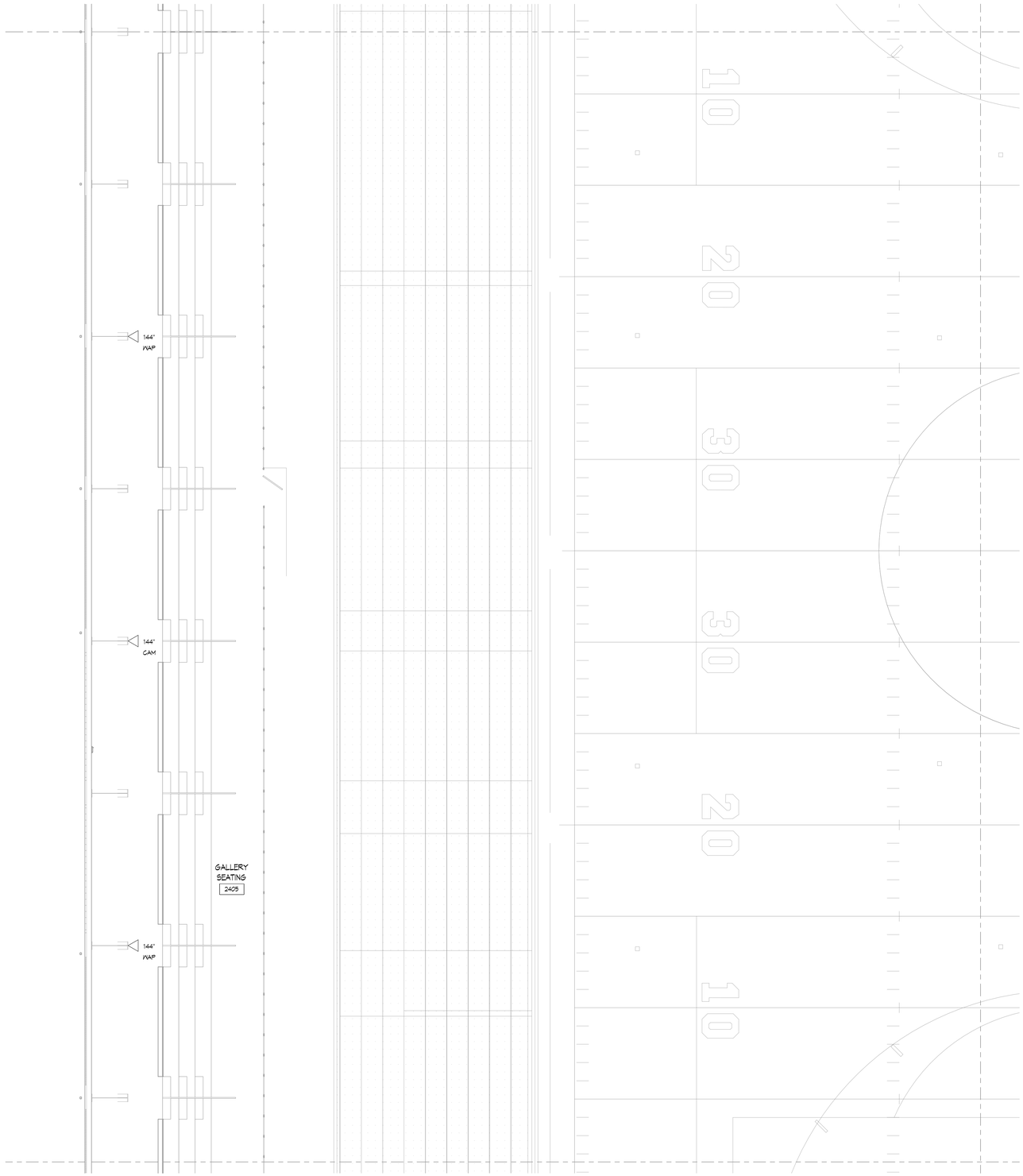

1 SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400C
1/8" = 1'-0"

STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA

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ISSUANCES	DATE
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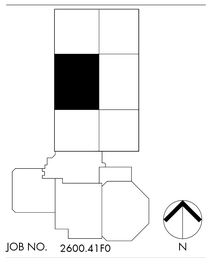

JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400C

SHEET NO.
TC220.h

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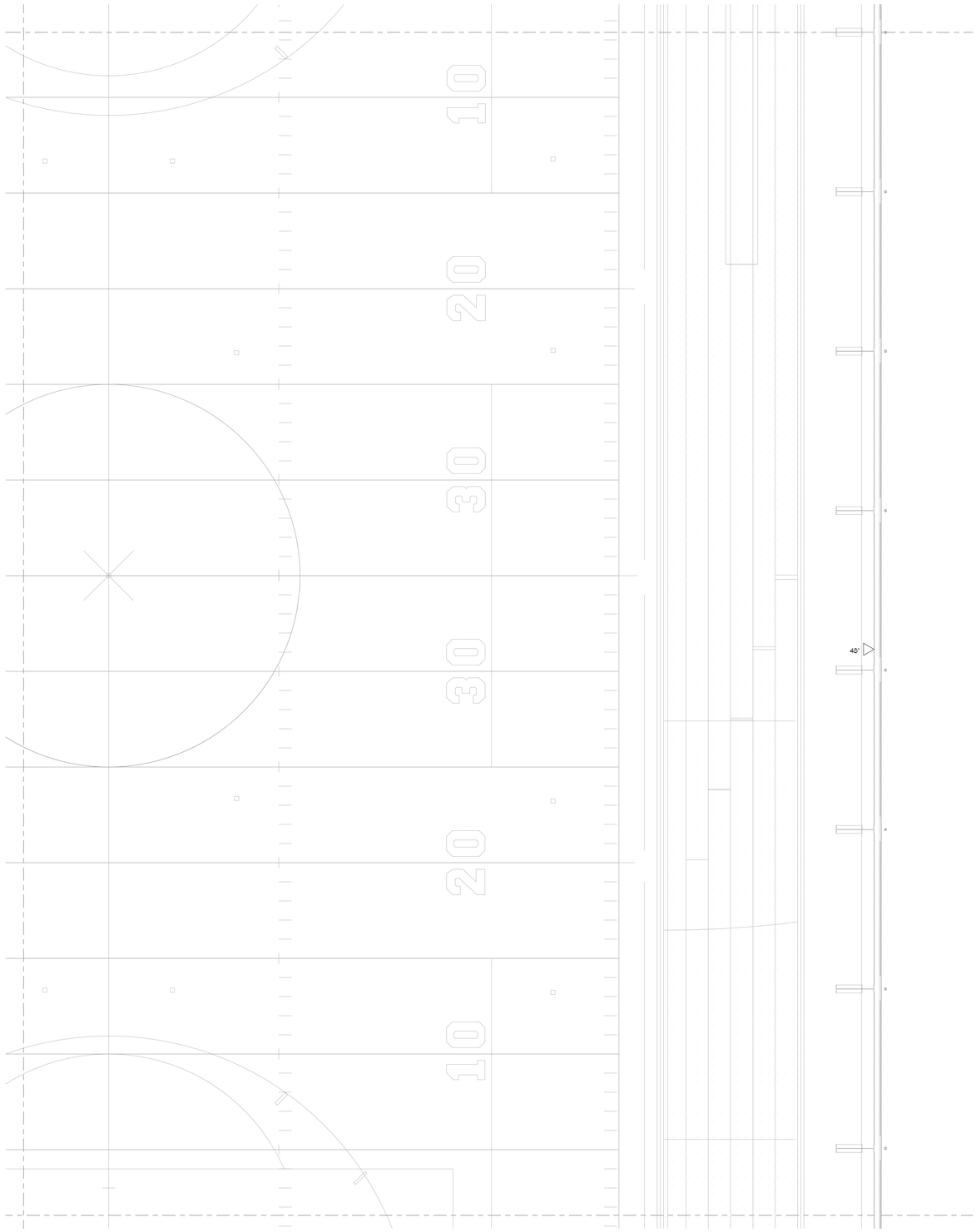

1 SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400D
1/8" = 1'-0"

STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- WAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA

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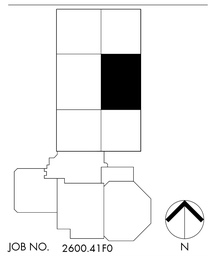

JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400D

SHEET NO.
TC220.i

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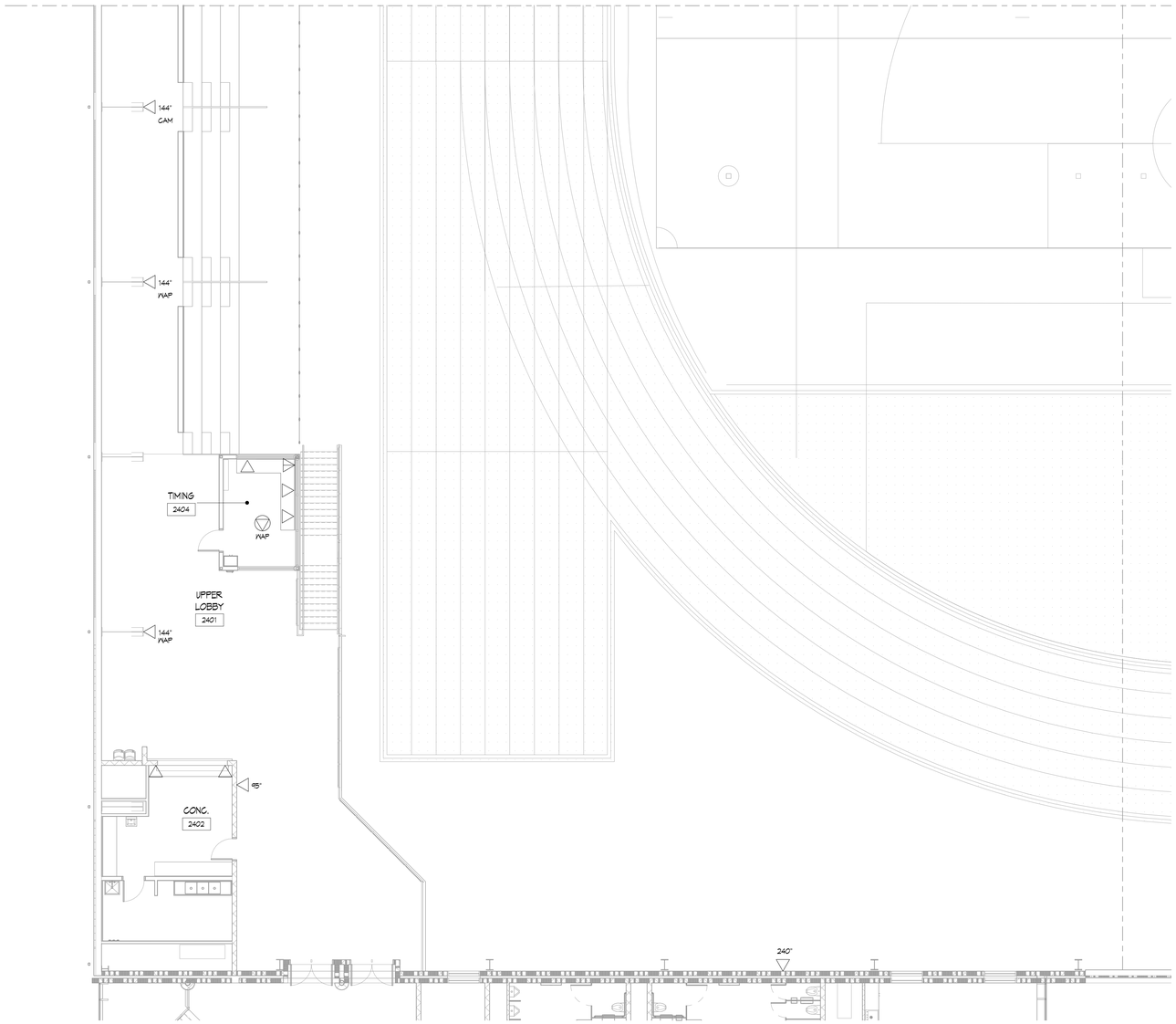
STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- VAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400E
1/8" = 1'-0"

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JOB NO. 2600.41F0

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SHEET TITLE

SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400E

SHEET NO.

TC220.k

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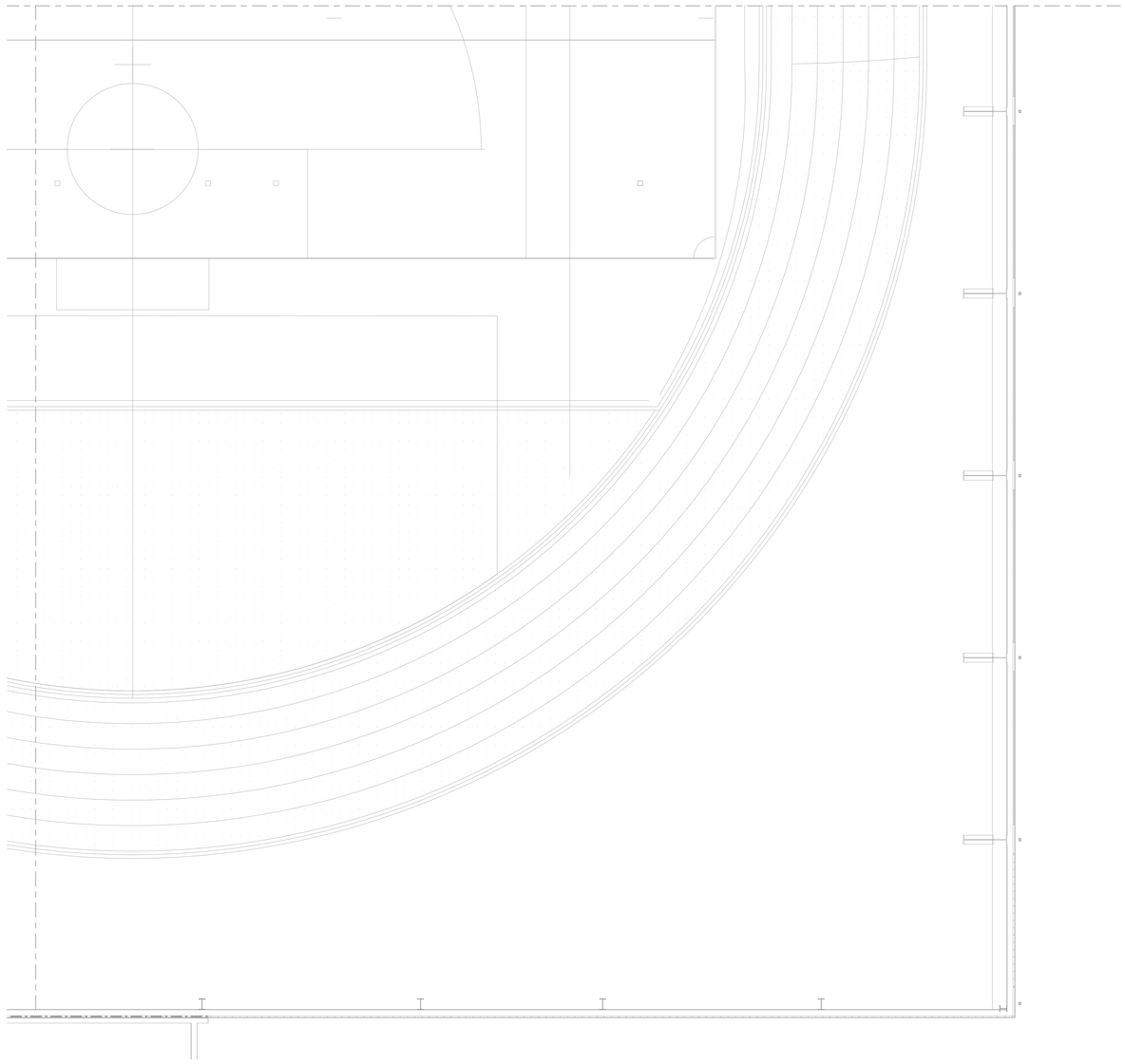
NO SCOPE OF WORK IN THIS AREA

STRUCTURED CABLING SYMBOL LEGEND

- DUAL CAT6a DATA DROP
- SINGLE CAT6a DATA DROP
- CEILING CAT6a DATA DROP FOR VAPE DETECTION DEVICE
- VAP — CEILING DATA DROP FOR WIRELESS ACCESS POINT
- CAM — CEILING DATA DROP FOR CAMERA



1 SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400F
1/8" = 1'-0"

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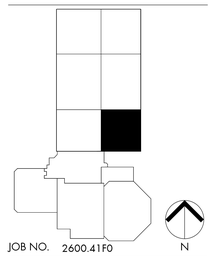

JOB NO. 2600.41F0

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SHEET TITLE

SECOND FLOOR STRUCTURED CABLING PLAN - UNIT 2400F

SHEET NO.

TC220.m

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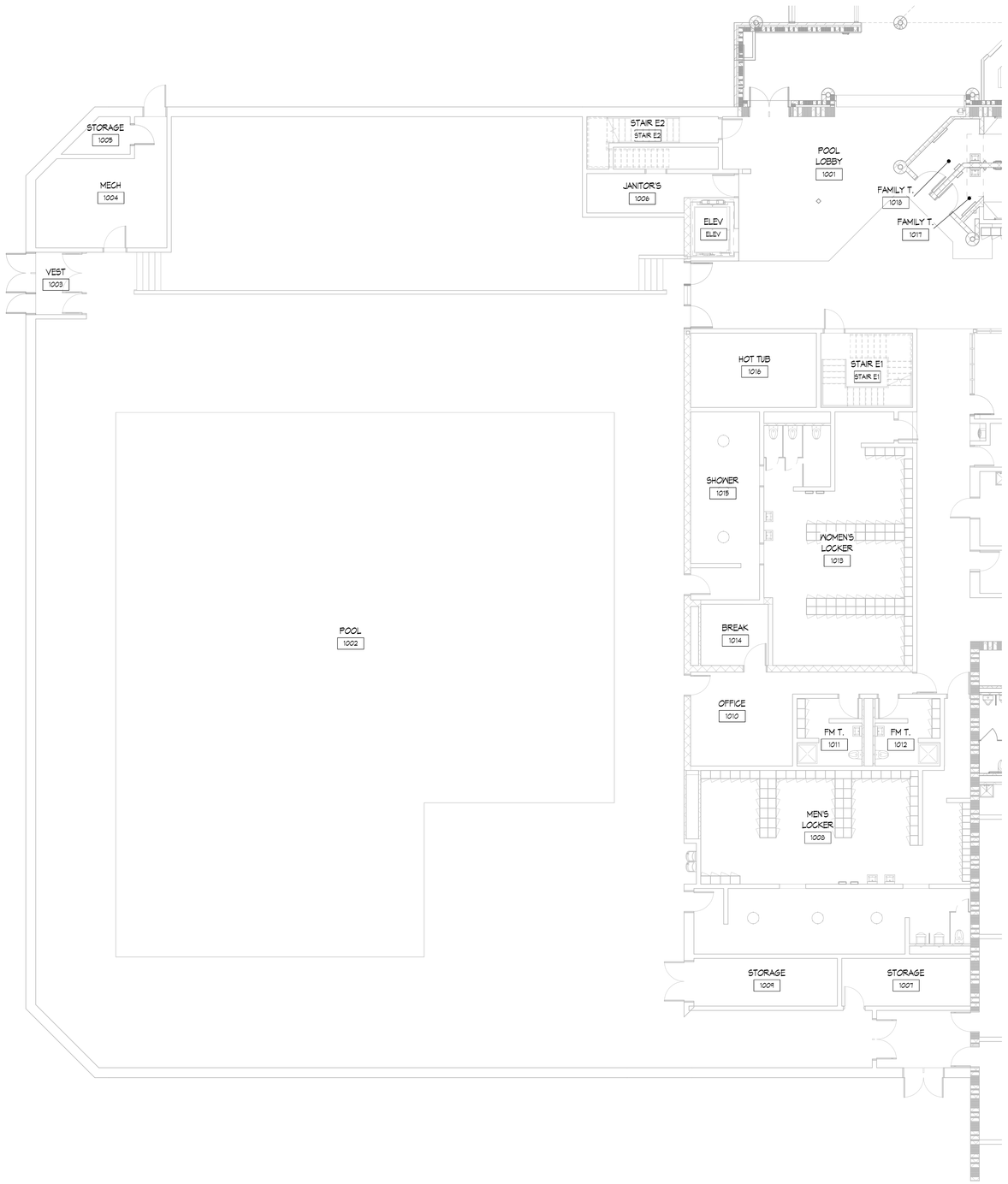
PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1000
1/8" = 1'-0"

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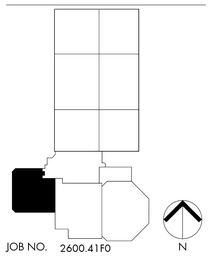

JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1000

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TP210.a

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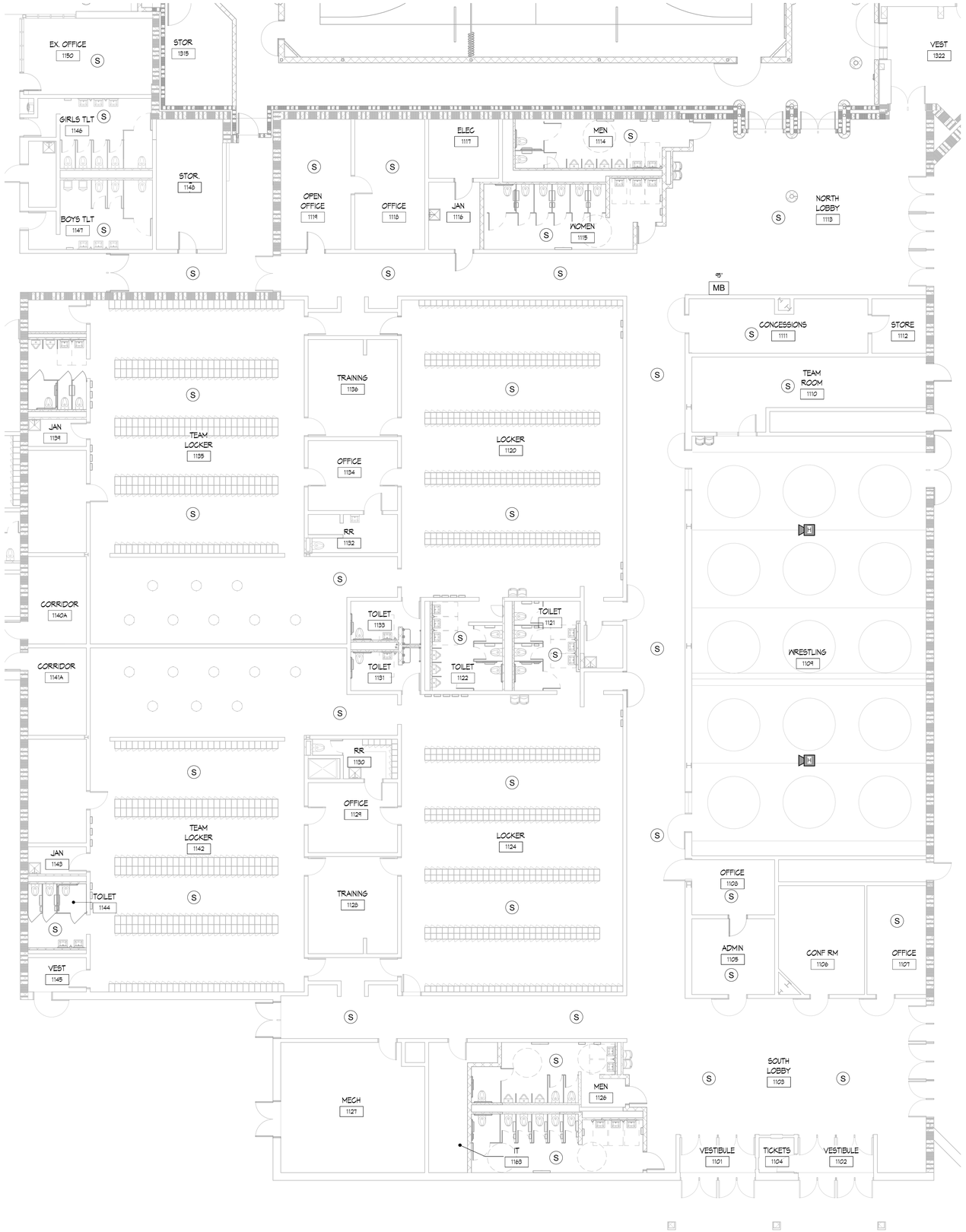

1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1100

1/8" = 1'-0"

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER

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SHEET TITLE
FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1100

SHEET NO.
TP210.b

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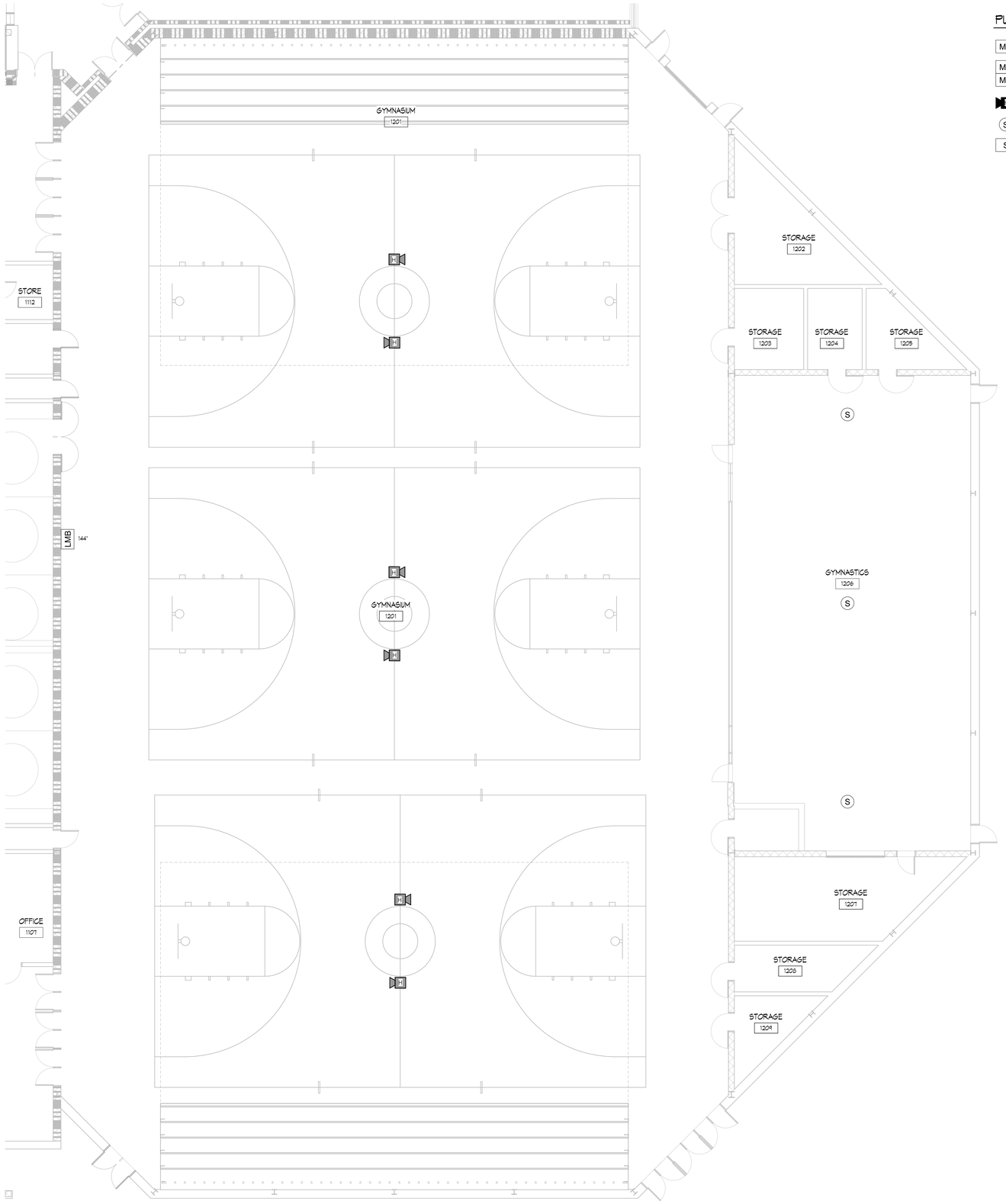


1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1200
1/8" = 1'-0"

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

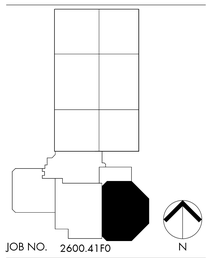
WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1200

SHEET NO.
TP210.c

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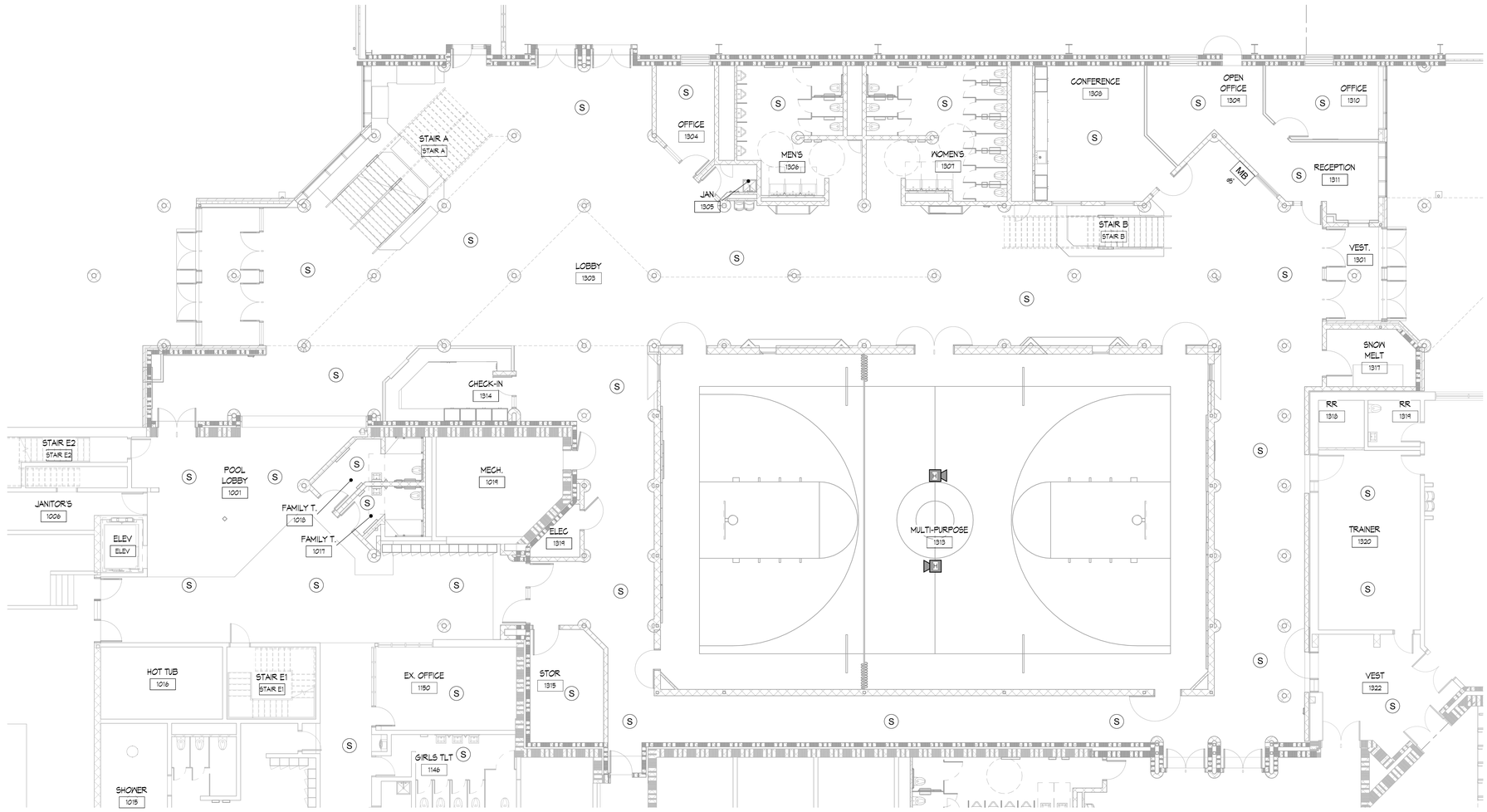
PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

- MB — SMALL SINGLE CLOCK / MESSAGE BOARD
- MB / MB — DUAL SIDED CLOCK / MESSAGE BOARD
- PUBLIC ADDRESS HORN
- (S) — CEILING MOUNTED PUBLIC ADDRESS SPEAKER
- S — WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1300A
1/8" = 1'-0"

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WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F0

N

SHEET TITLE
FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1300A

SHEET NO.
TP210.d

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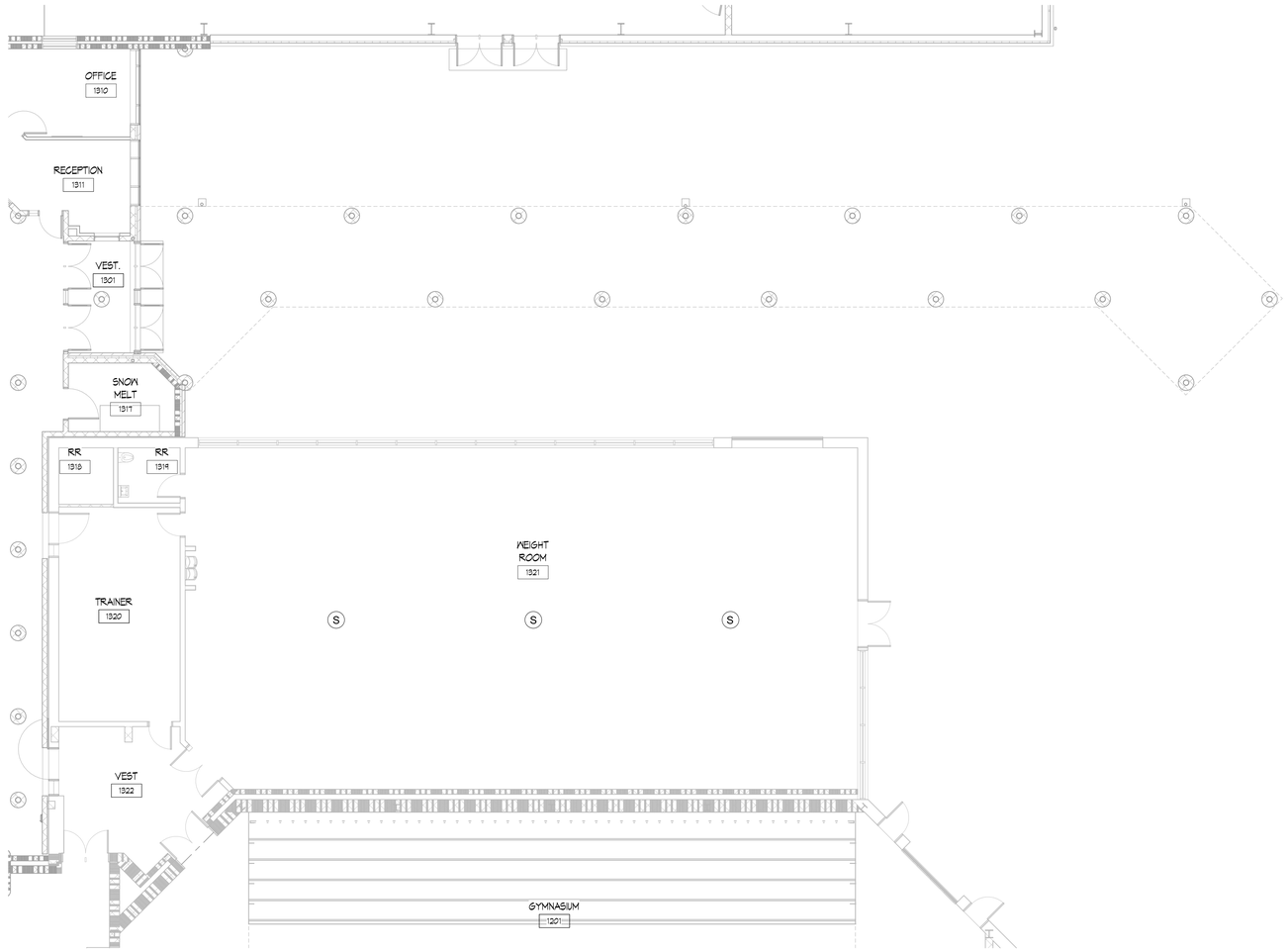
PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1300B
1/8" = 1'-0"

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PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

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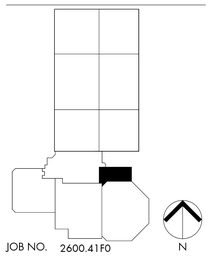
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1300B

SHEET NO.
TP210.e

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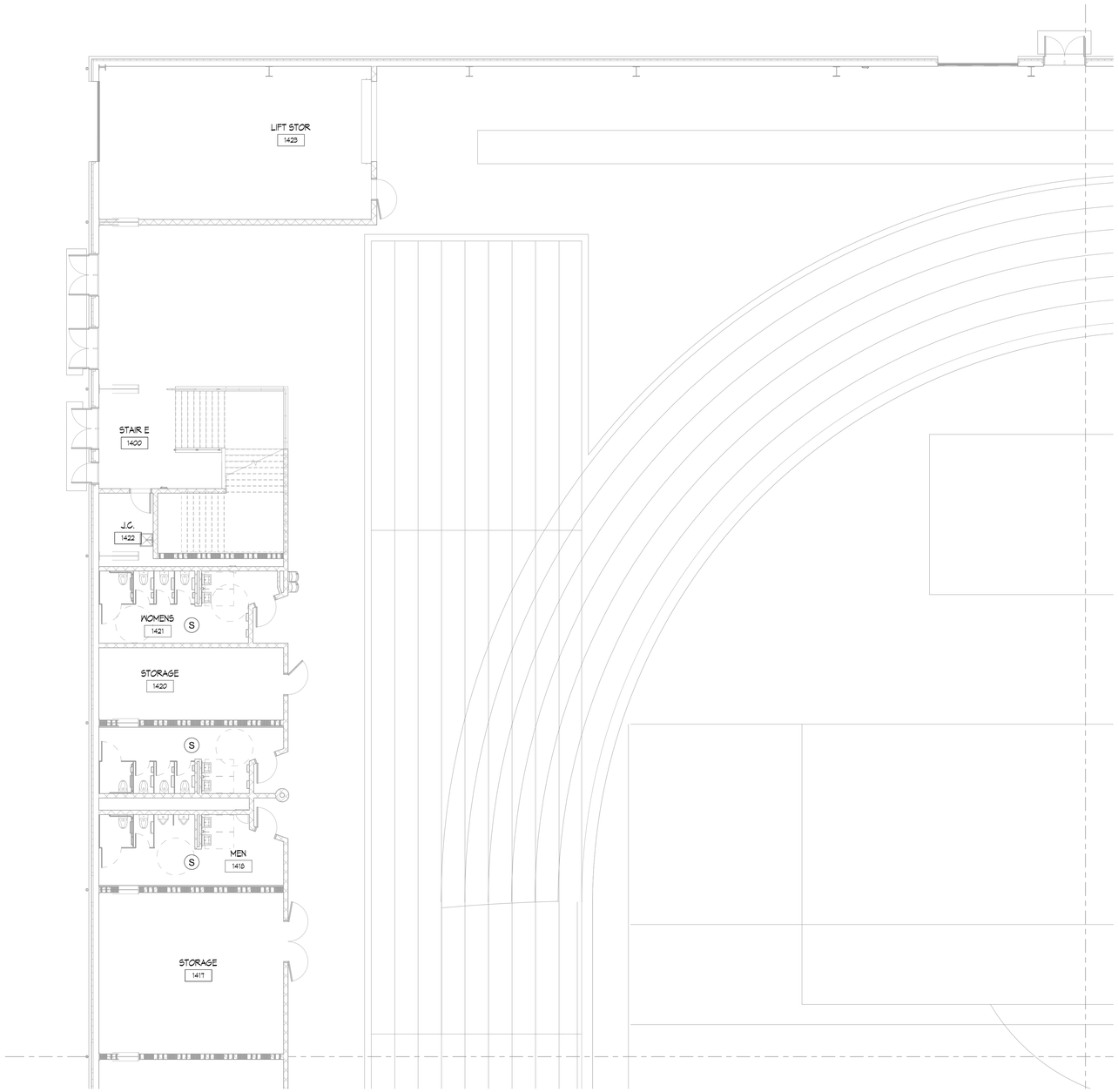
PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400A
1/8" = 1'-0"

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HOWELL COMMUNITY CENTER

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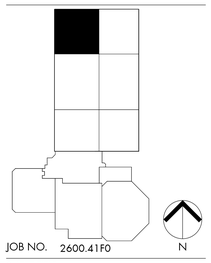
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

N

SHEET TITLE
FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400A

SHEET NO.
TP210.f

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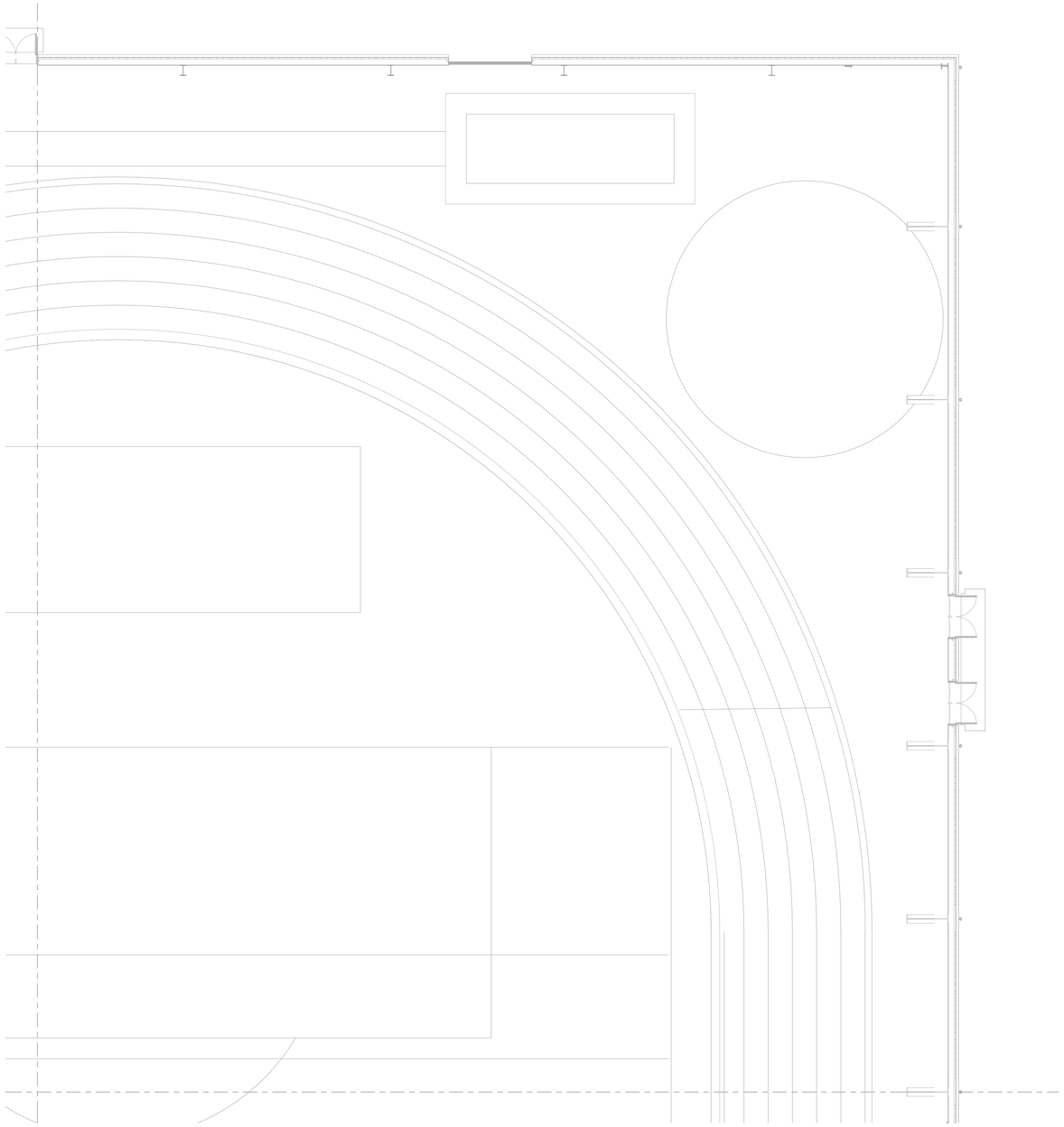
NO SCOPE OF WORK IN THIS AREA



1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400B
1/8" = 1'-0"

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER

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WRIGHT & HUNTER

HOWELL COMMUNITY CENTER
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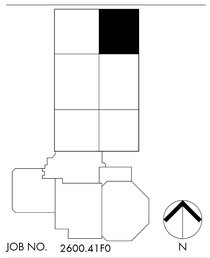
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

N

SHEET TITLE
FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400B

SHEET NO.
TP210.g

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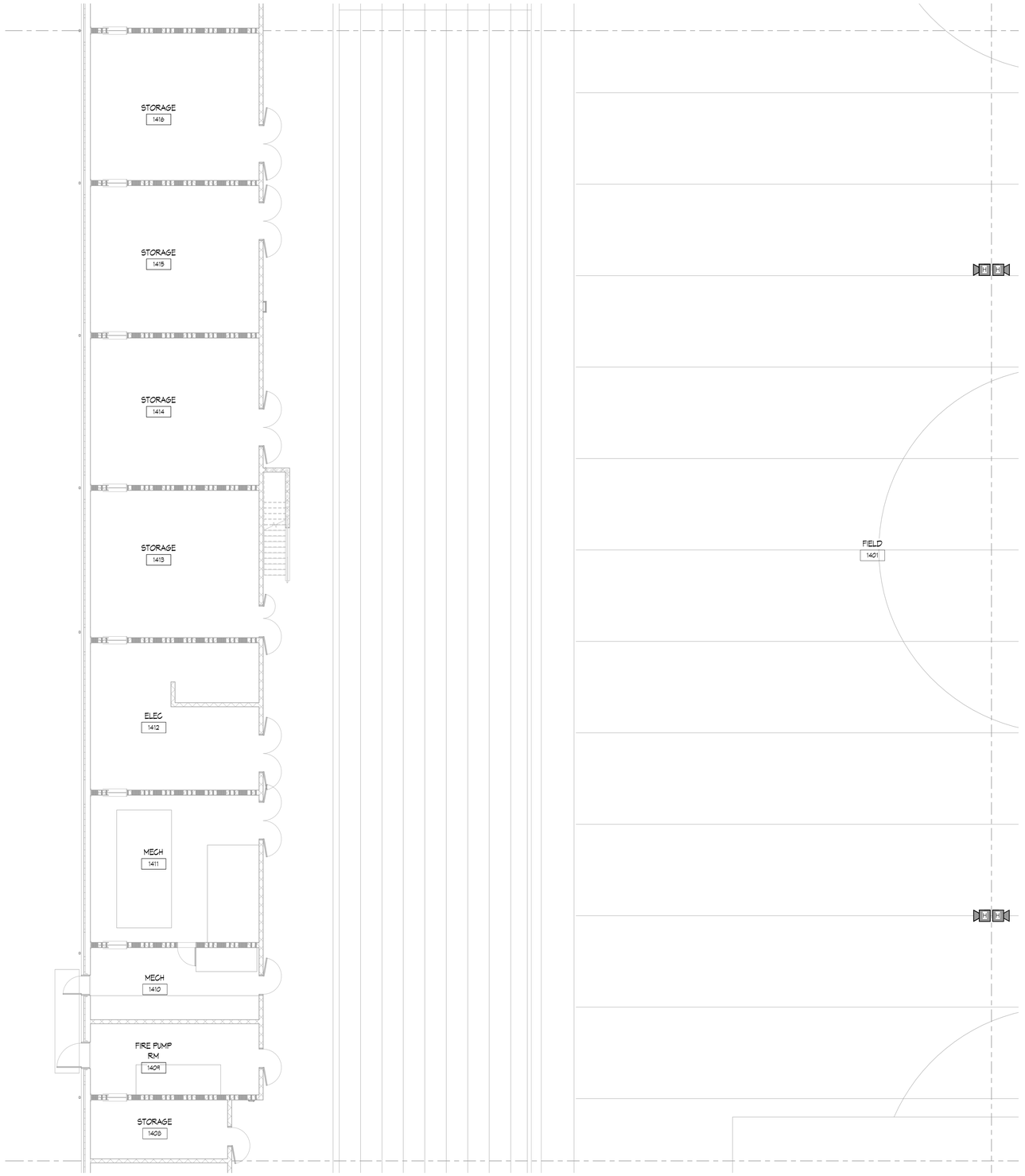

1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400C
1/8" = 1'-0"

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER

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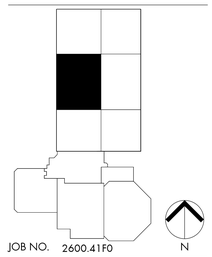
HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400C

SHEET NO.
TP210.h

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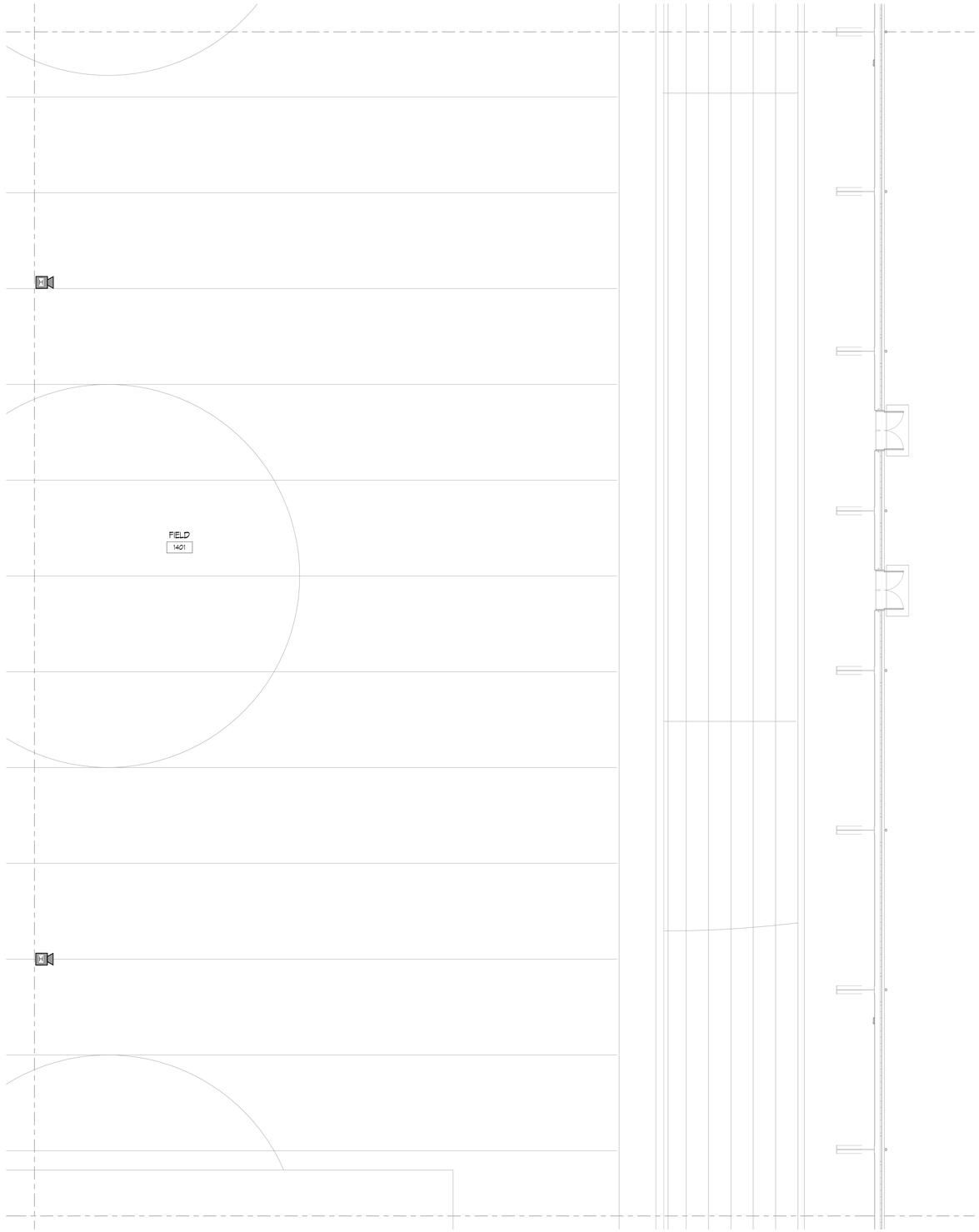
PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400D
1/8" = 1'-0"

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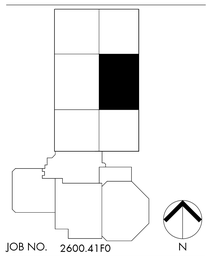
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400D

SHEET NO.
TP210.i

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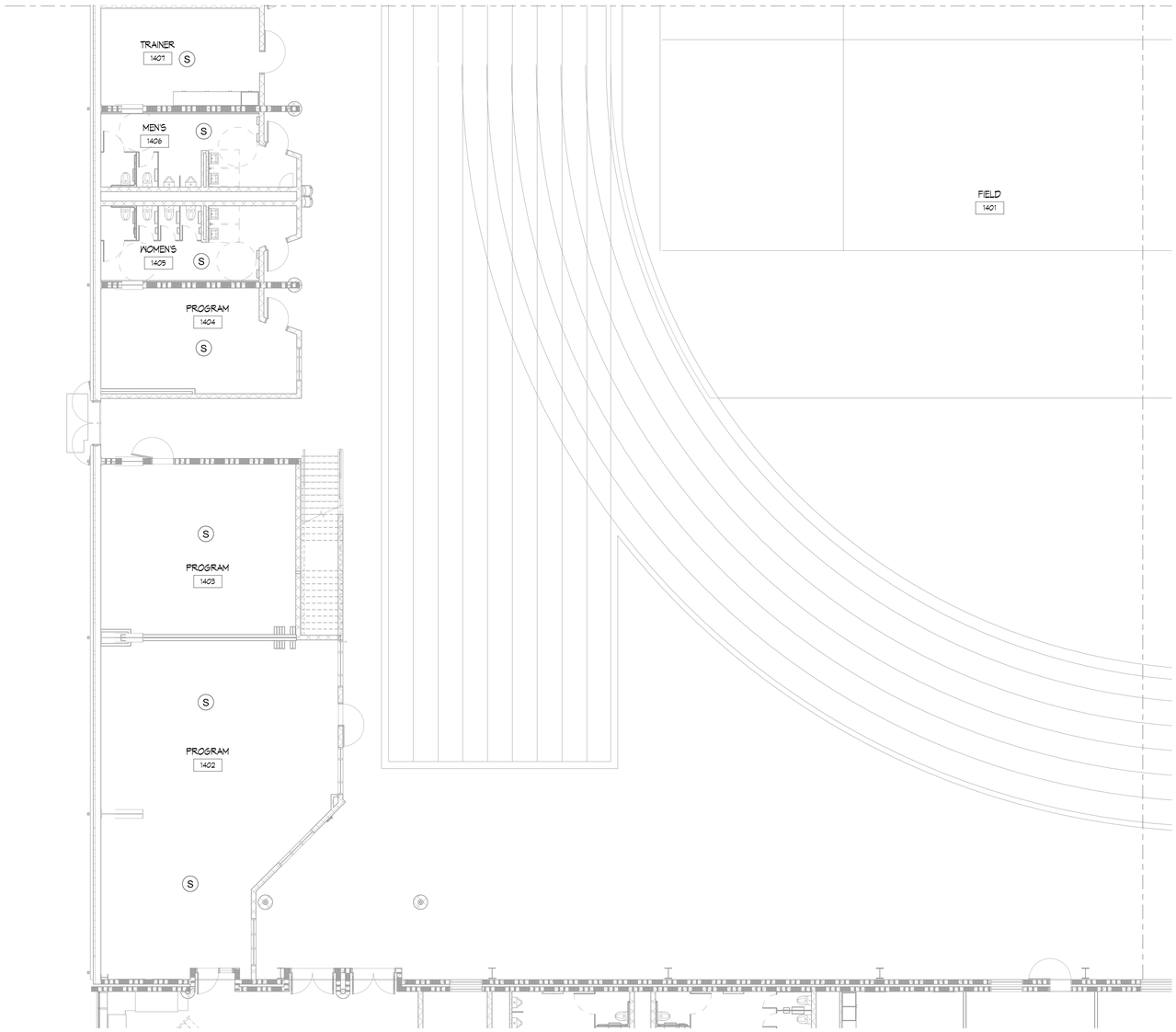
PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400E
1/8" = 1'-0"

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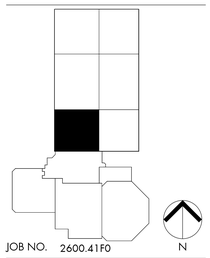
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400E

SHEET NO.
TP210.k

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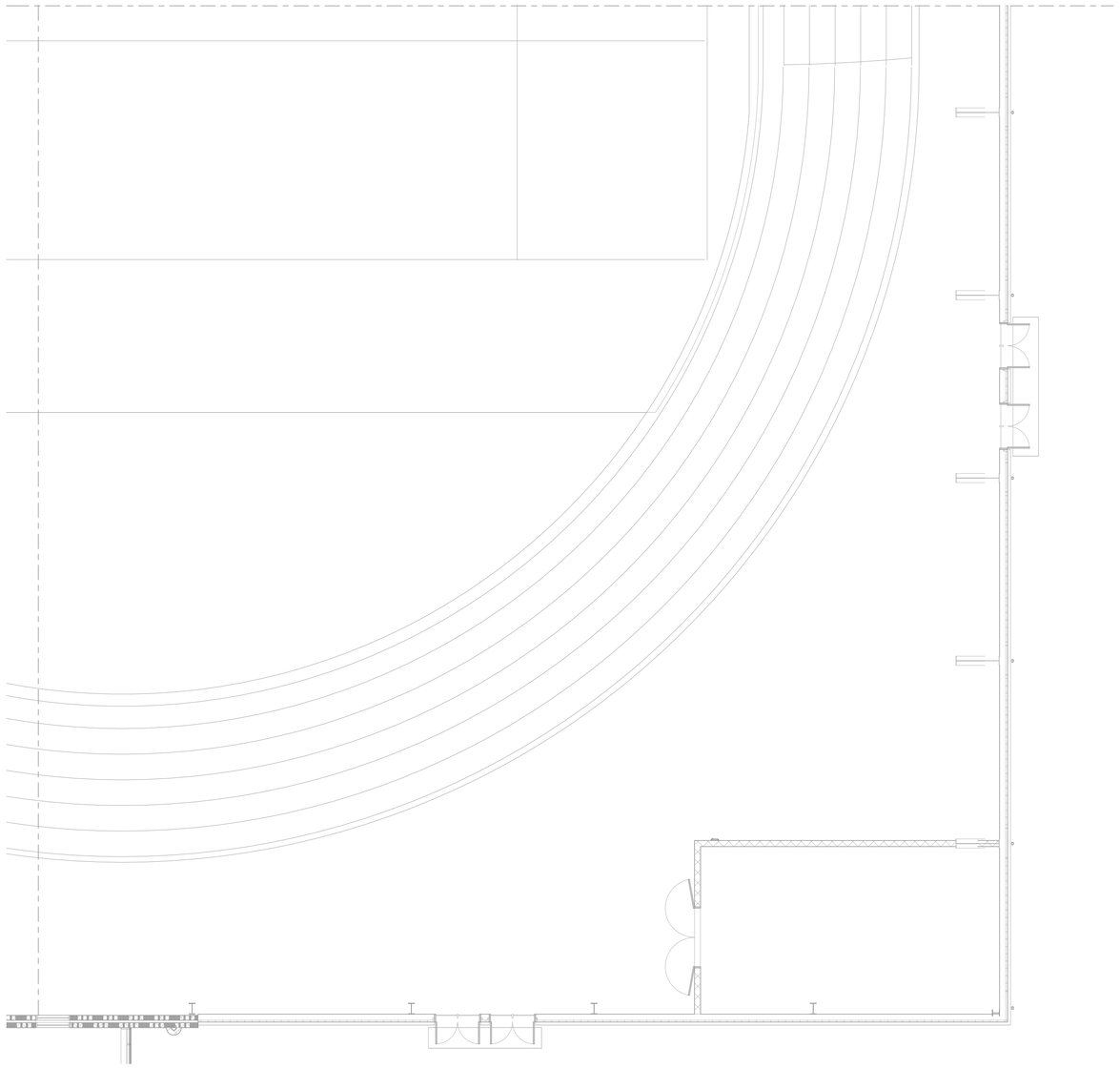
NO SCOPE OF WORK IN THIS AREA

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

- MB — SMALL SINGLE CLOCK / MESSAGE BOARD
- MB / MB — DUAL SIDED CLOCK / MESSAGE BOARD
- PUBLIC ADDRESS HORN
- (S) — CEILING MOUNTED PUBLIC ADDRESS SPEAKER
- S — WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400F
1/8" = 1'-0"

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WRIGHT & HUNTER

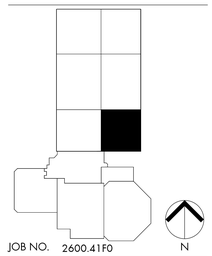
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

N

SHEET TITLE

FIRST FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 1400F

SHEET NO.

TP210.m

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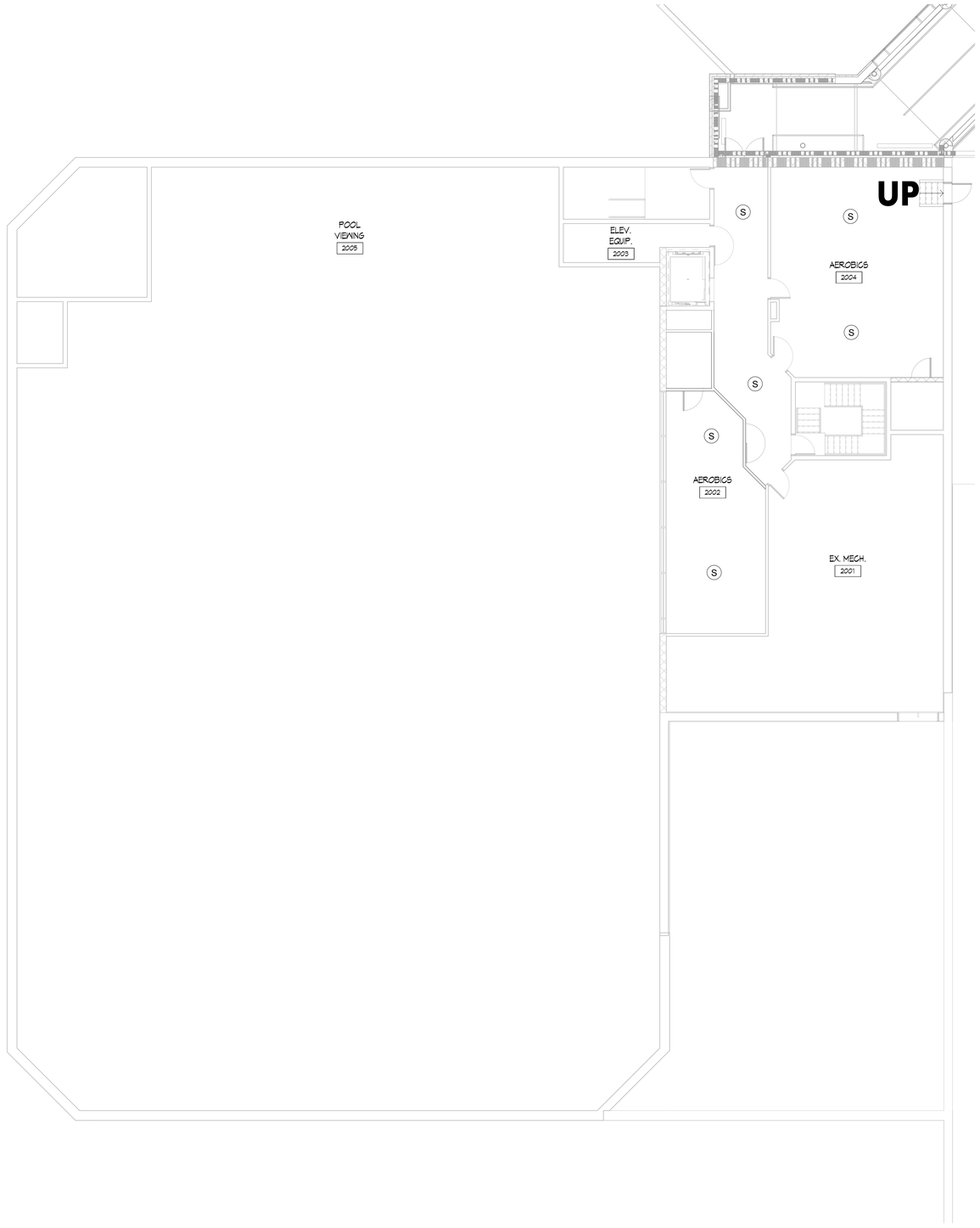
PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

- MB — SMALL SINGLE CLOCK / MESSAGE BOARD
- MB / MB — DUAL SIDED CLOCK / MESSAGE BOARD
- PUBLIC ADDRESS HORN
- (S) — CEILING MOUNTED PUBLIC ADDRESS SPEAKER
- S — WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 SECOND FLOOR PUBLIC ADDRESS SYSTEM - UNIT 2000
1/8" = 1'-0"

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F0

N

SHEET TITLE
SECOND FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 2000

SHEET NO.
TP220.a

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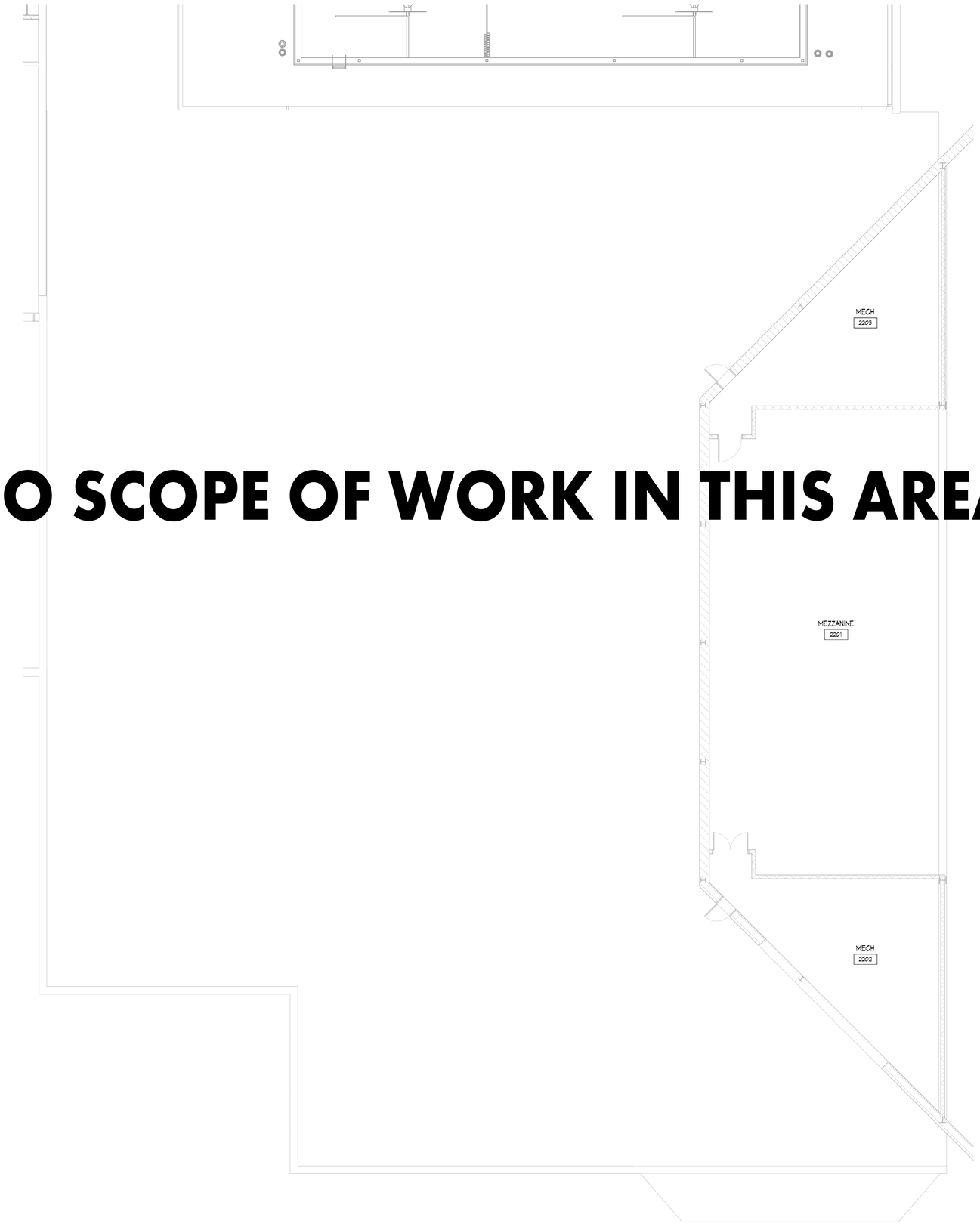

NO SCOPE OF WORK IN THIS AREA

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

- MB — SMALL SINGLE CLOCK / MESSAGE BOARD
- MB / MB — DUAL SIDED CLOCK / MESSAGE BOARD
- PUBLIC ADDRESS HORN
- (S) — CEILING MOUNTED PUBLIC ADDRESS SPEAKER
- S — WALL MOUNTED PUBLIC ADDRESS SPEAKER

1 SECOND FLOOR PUBLIC ADDRESS SYSTEM - UNIT 2100
1/8" = 1'-0"

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F0

N

SHEET TITLE
SECOND FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 2100

SHEET NO.
TP220.b

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NO SCOPE OF WORK IN THIS AREA

1 SECOND FLOOR PUBLIC ADDRESS SYSTEM - UNIT 2200
1/8" = 1'-0"

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER

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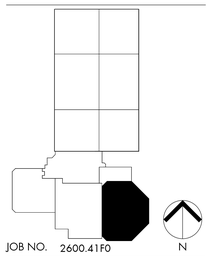
WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 2200

SHEET NO.
TP220.c

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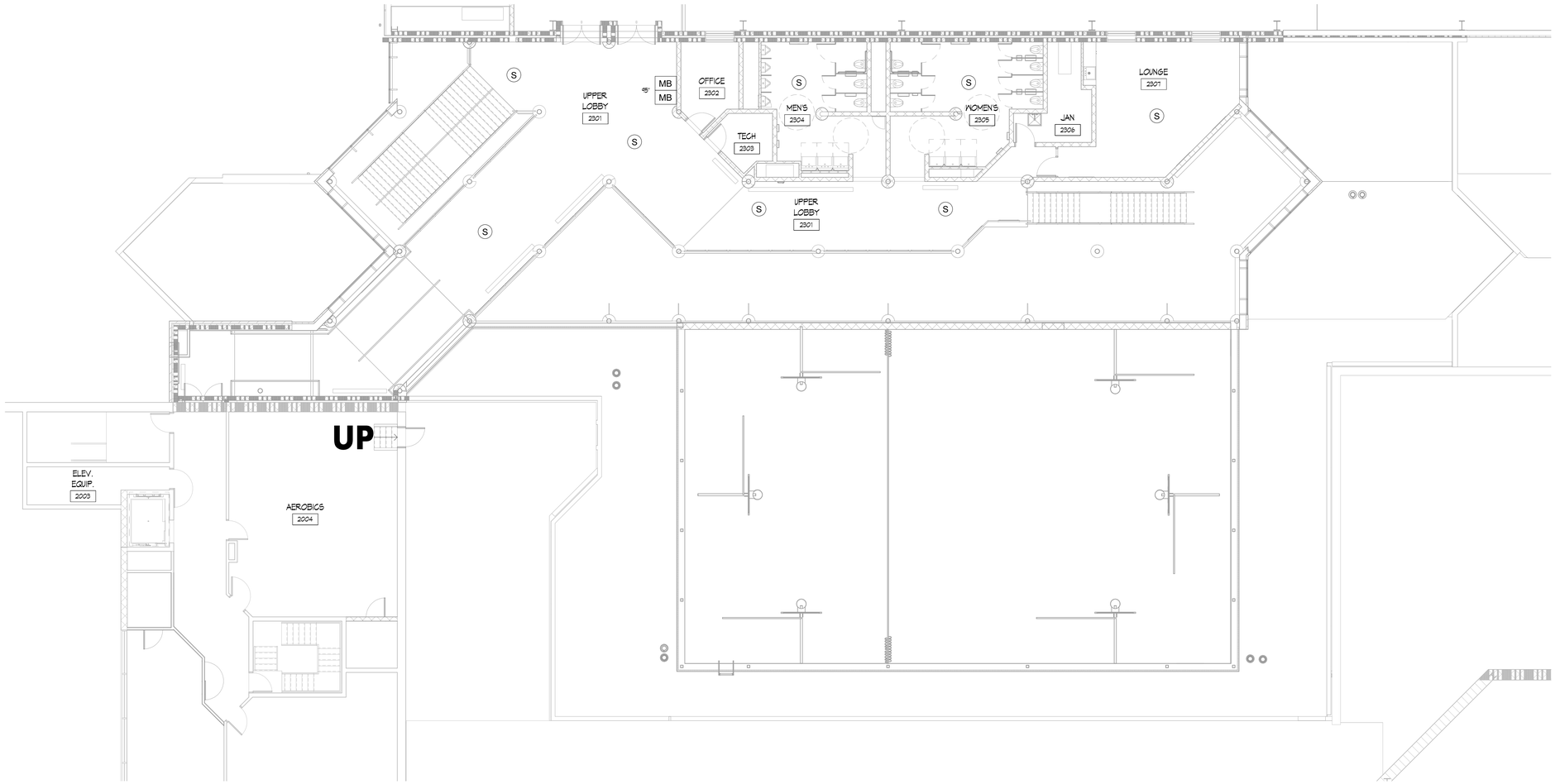
PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 SECOND FLOOR PUBLIC ADDRESS SYSTEM - UNIT 2300A
1/8" = 1'-0"

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

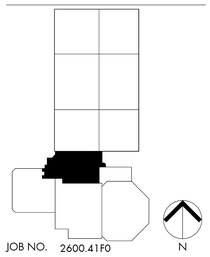
WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 2300A

SHEET NO.
TP220.d

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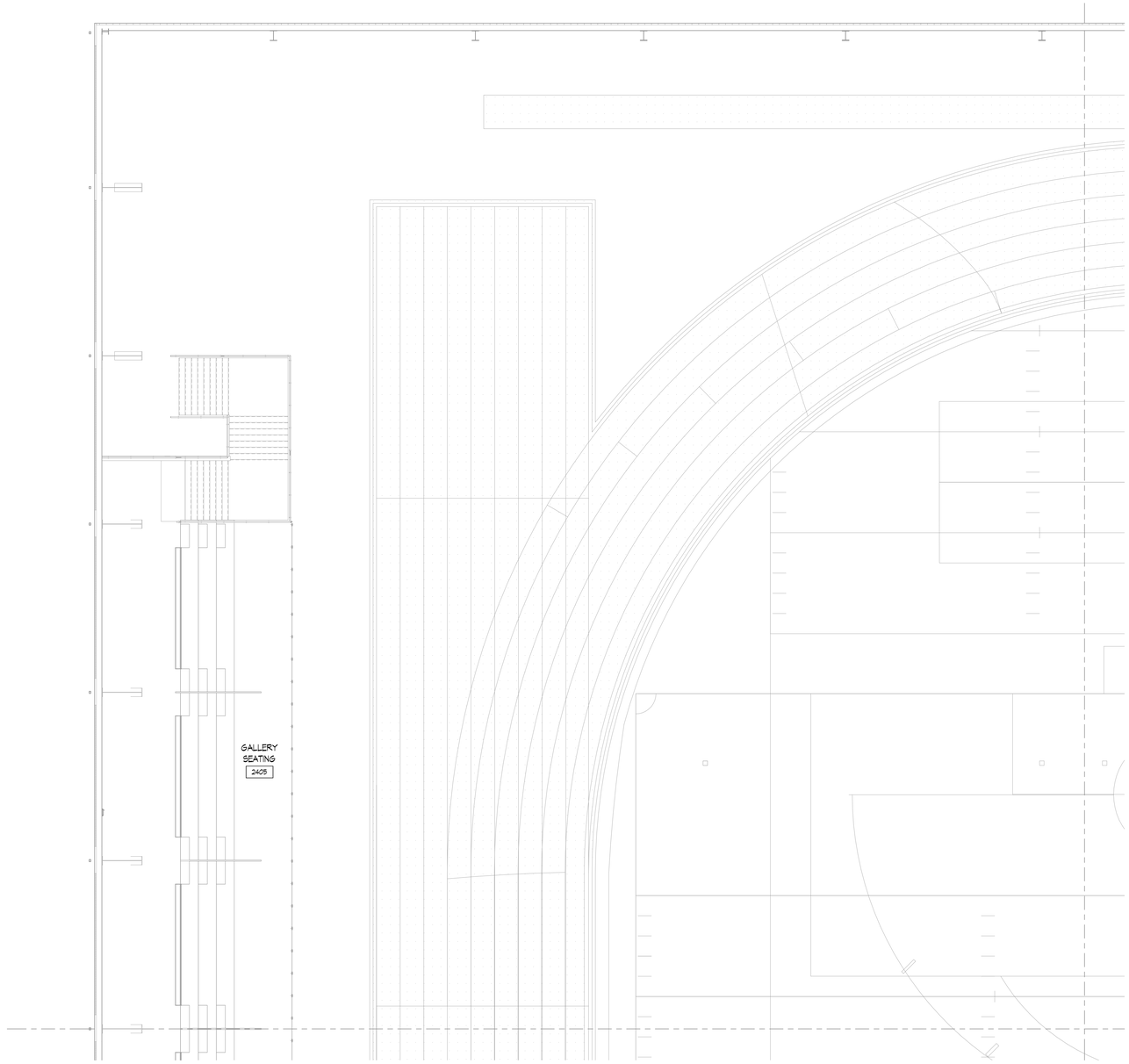
NO SCOPE OF WORK IN THIS AREA



1 SECOND FLOOR PUBLIC ADDRESS SYSTEM - UNIT 2400A
1/8" = 1'-0"

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER

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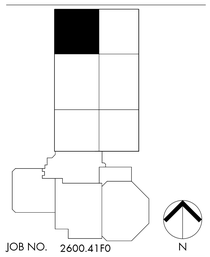
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 2400A

SHEET NO.
TP220.f

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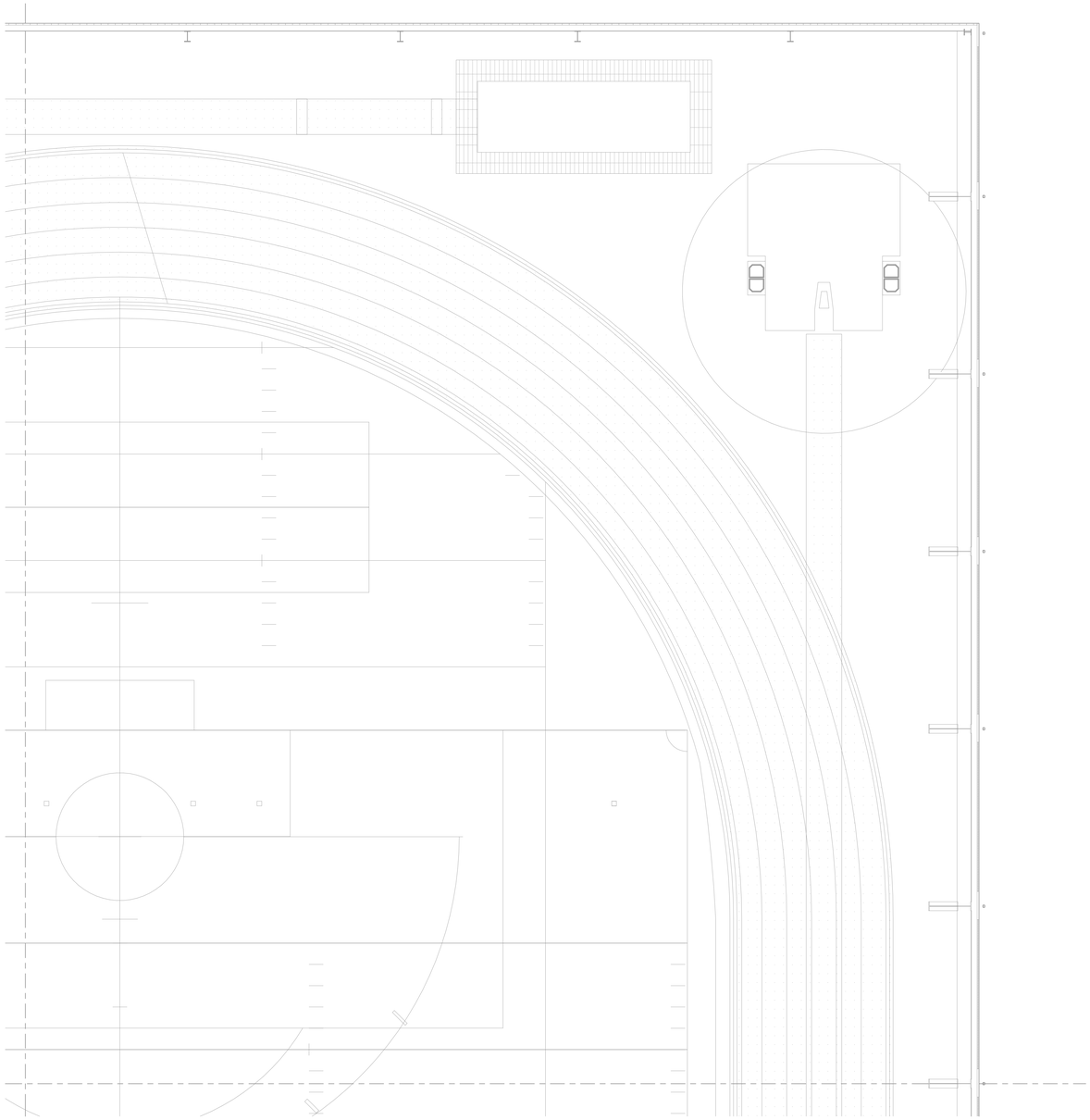

1 SECOND FLOOR PUBLIC ADDRESS SYSTEM - UNIT 2400B
1/8" = 1'-0"

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER

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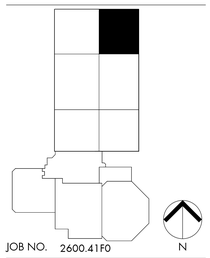
CONSTRUCTION DOCUMENTS	07.30.2026



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SHEET TITLE
SECOND FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 2400B

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1 SECOND FLOOR PUBLIC ADDRESS SYSTEM - UNIT 2400C
1/8" = 1'-0"

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER

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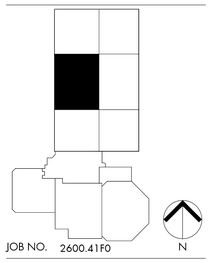
CONSTRUCTION DOCUMENTS	07.30.2026



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SHEET TITLE
SECOND FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 2400C

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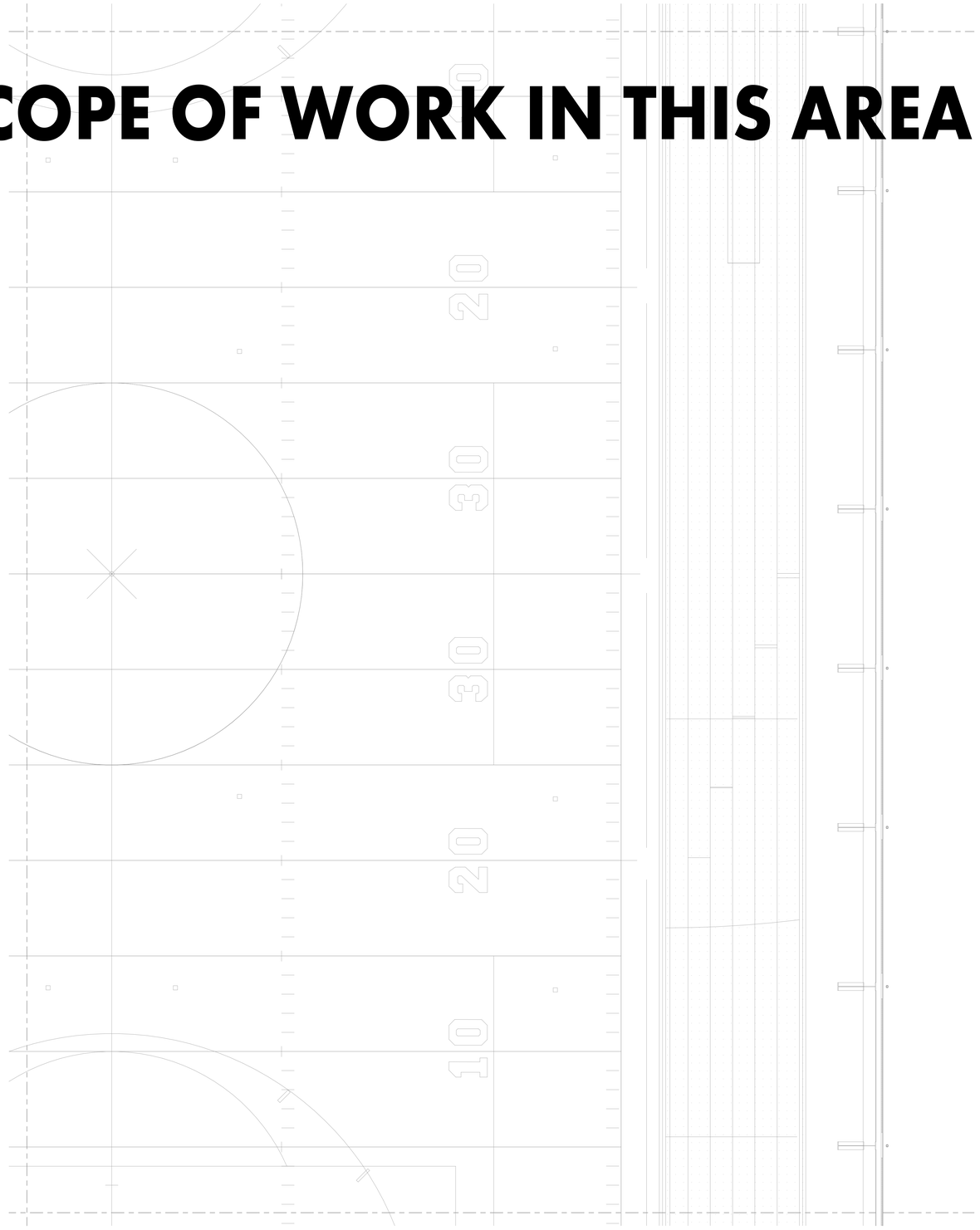

1 SECOND FLOOR PUBLIC ADDRESS SYSTEM - UNIT 2400D
1/8" = 1'-0"

PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER

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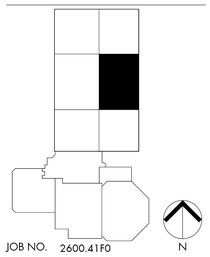
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 2400D

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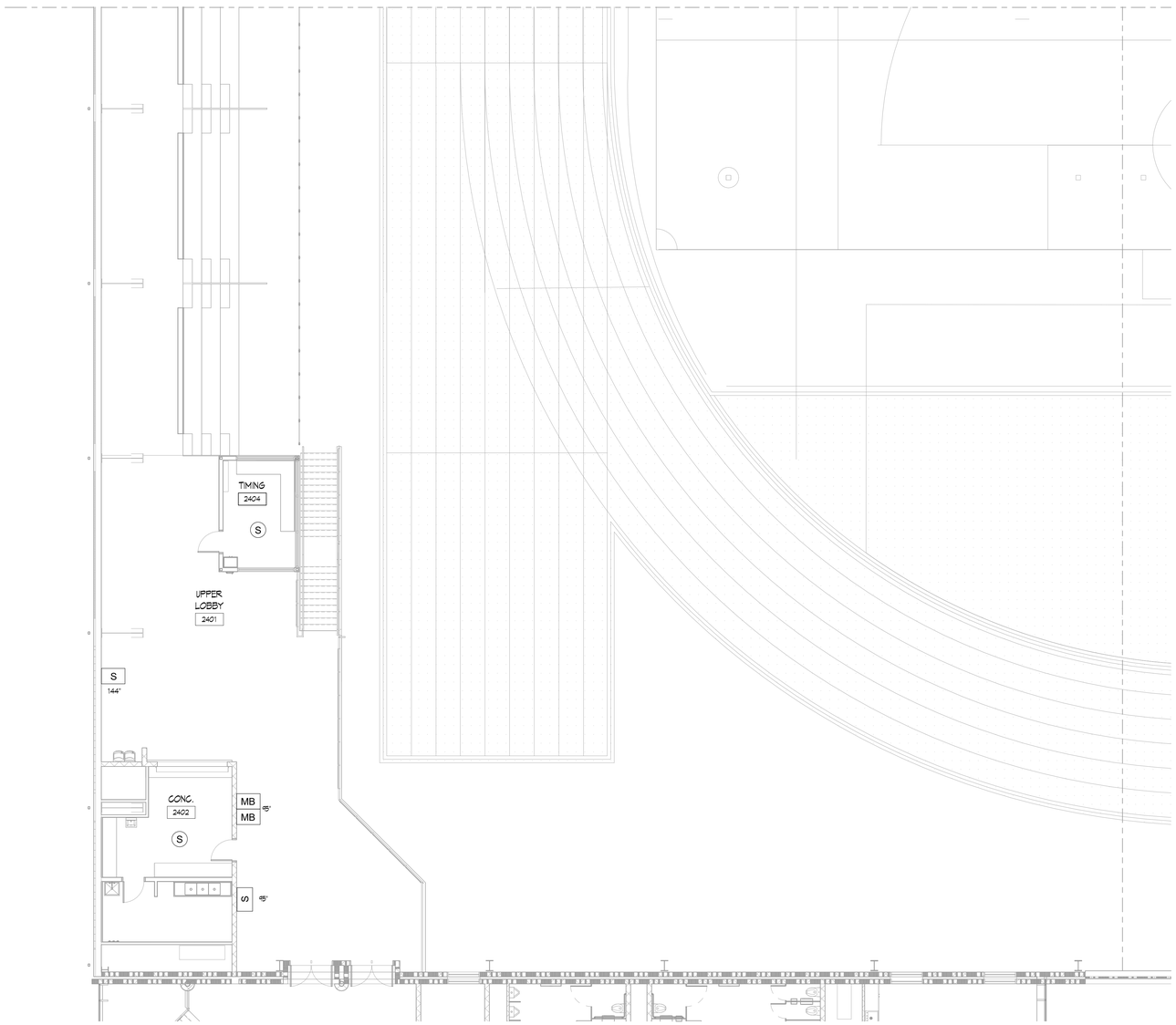
PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 SECOND FLOOR PUBLIC ADDRESS SYSTEM - UNIT 2400E
1/8" = 1'-0"

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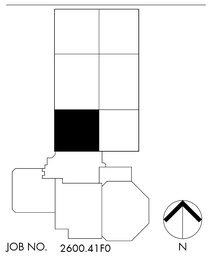
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



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SHEET TITLE
SECOND FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 2400E

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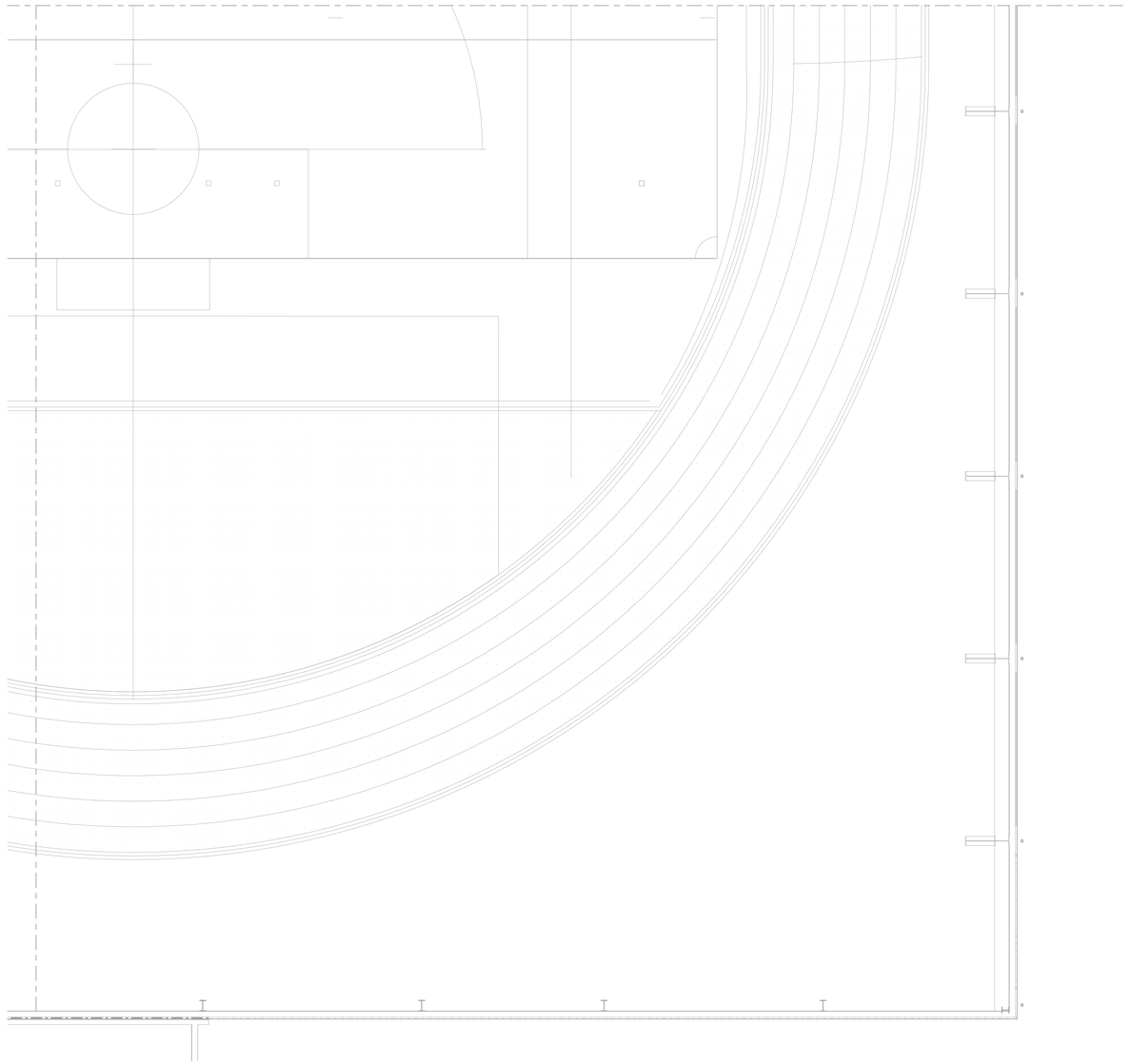
PUBLIC ADDRESS SYSTEM SYMBOL LEGEND

MB	SMALL SINGLE CLOCK / MESSAGE BOARD
MB / MB	DUAL SIDED CLOCK / MESSAGE BOARD
	PUBLIC ADDRESS HORN
S	CEILING MOUNTED PUBLIC ADDRESS SPEAKER
S	WALL MOUNTED PUBLIC ADDRESS SPEAKER



1 SECOND FLOOR PUBLIC ADDRESS SYSTEM - UNIT 2400F
1/8" = 1'-0"

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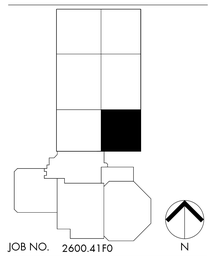

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SHEET TITLE
SECOND FLOOR PUBLIC ADDRESS SYSTEM PLAN - UNIT 2400F

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TP220.m

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ACCESS CONTROL SCHEDULE

DOOR NUMBER	SALTO DOOR HARDWARE	CONNECTIVITY	ONLINE OR OFFLINE	LOCK TYPE	KEY OVERRIDE	NOTES
1001C	GN	WIRELESS	OFFLINE	MORTISE	-	
1002B	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	
1004A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1008A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1008	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1010A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1011	XS4 ORIGINAL + AVPRIVACY	WIRELESS	OFFLINE	MORTISE	-	
1012	XS4 ORIGINAL + AVPRIVACY	WIRELESS	OFFLINE	MORTISE	-	
1013	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1017	XS4 ORIGINAL + AVPRIVACY	WIRELESS	OFFLINE	MORTISE	-	
1018	XS4 ORIGINAL + AVPRIVACY	WIRELESS	OFFLINE	MORTISE	-	
1019	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1022	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1101	ADD ELECTRIC STRIKE	WIRED	ONLINE	-	YES	
1101J	ADD ELECTRIC STRIKE	WIRED	ONLINE	-	YES	RELEASE FROM READER AT 1102L
1101K	ADD ELECTRIC STRIKE	WIRED	ONLINE	-	YES	RELEASE FROM READER AT 1102L
1101L	ADD ELECTRIC STRIKE	WIRED	ONLINE	-	YES	RELEASE FROM READER AT 1102L
1102J	ADD ELECTRIC STRIKE	WIRED	ONLINE	-	YES	RELEASE FROM READER AT 1102L
1102J	ADD ELECTRIC STRIKE	WIRED	ONLINE	-	YES	RELEASE FROM READER AT 1102L
1102K	ADD ELECTRIC STRIKE	WIRED	ONLINE	-	YES	RELEASE FROM READER AT 1102L
1102L	EXISTING DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	WIRE TO RELEASE ALL EXTERIOR DOORS
1103M	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	LATCH RETRACTION
1104	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1105	REINSTALL EXISTING XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1106	REINSTALL EXISTING XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1107	REINSTALL EXISTING XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1108A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1108C	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1109A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1109B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1109C	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1110A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1110B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1111	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1116	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1118	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1120A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1120B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1124	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	LATCH RETRACTION
1124A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1127A	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	DOOR STRIKE
1128A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1128B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1129A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1129B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1130	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1131	XS4 ORIGINAL + AVPRIVACY	WIRELESS	OFFLINE	MORTISE	-	
1133	XS4 ORIGINAL + AVPRIVACY	WIRELESS	OFFLINE	MORTISE	-	
1137	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1139	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1140	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1140B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1141B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1144A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1144B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1145A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1146A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1146B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1149	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1150	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1160B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	WALL MAG H/O
1201A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1201W	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	

ACCESS CONTROL SCHEDULE

DOOR NUMBER	SALTO DOOR HARDWARE	CONNECTIVITY	ONLINE OR OFFLINE	LOCK TYPE	KEY OVERRIDE	NOTES
1202	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1204	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1210	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1301A	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	LATCH RETRACTION
1301C	WIRE DOOR RELEASE WITH 1301A	WIRED	ONLINE	-	YES	LATCH RETRACTION
1302B	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	LATCH RETRACTION
1302D	SEE NOTE	WIRED	ONLINE	-	YES	LATCH RETRACTION/ACTIVATES WITH 1302B
1304	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1305	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1308	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1310	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1311	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1312B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1313B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1314	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1315	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1317	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1318	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1320	EXISTING SEE NOTE	WIRED	ONLINE	-	YES	SALVAGE AND REINSTALL READER AND STRIKE
1402A	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	LATCH RETRACTION
1402E	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	LATCH RETRACTION
1402F	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	LATCH RETRACTION
1402N	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	LATCH RETRACTION
1402A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1402B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1403	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1404	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1407	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE		
1408	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE		
1409A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE		
1409B	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	LATCH RETRACTION
1410A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE		
1410B	DESIGN XS MULLION READER	WIRED	ONLINE	-	YES	LATCH RETRACTION
1411	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1412	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1413	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1414	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1415	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1416	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1417	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1420	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1422	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1423A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1424	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
1437	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2001B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2002	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2004	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2005	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2006	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2102	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2103	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2202	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2204	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2205	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2306	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2307	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2401A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2401B	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2402A	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2403	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	
2404	XS4 ORIGINAL +	WIRELESS	OFFLINE	MORTISE	-	

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F0

SHEET TITLE
ACCESS CONTROL SCHEDULE

SHEET NO.
TS6.1

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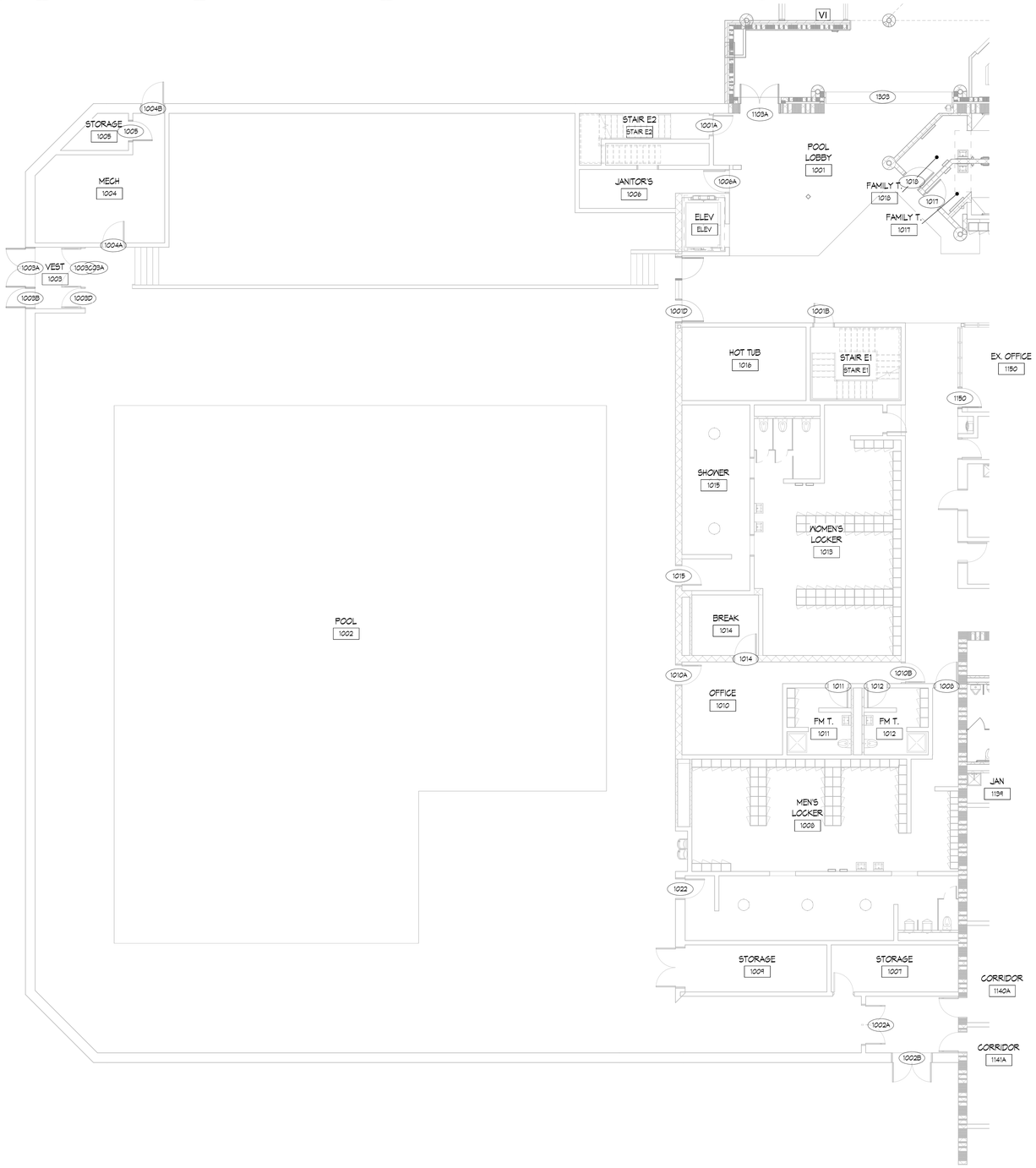

1 FIRST FLOOR SECURITY PLAN - UNIT 1000
1/8" = 1'-0"

SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM

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ISSUANCES	DATE
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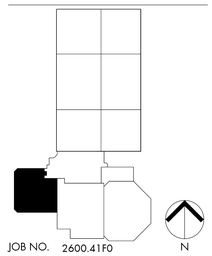

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SHEET TITLE

FIRST FLOOR SECURITY PLAN - UNIT 1000

SHEET NO.

TS210.a

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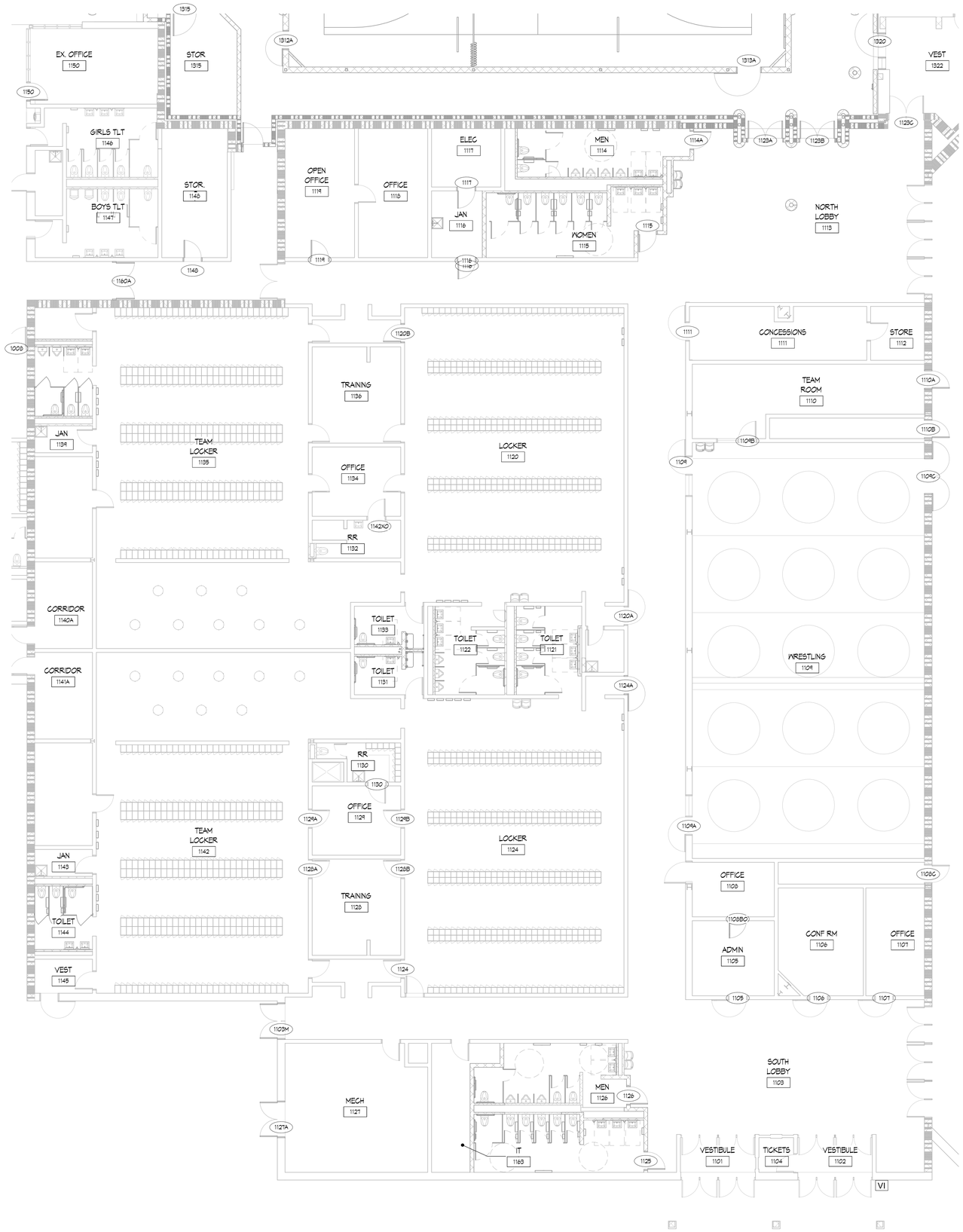

1 FIRST FLOOR SECURITY PLAN - UNIT 1100

1/8" = 1'-0"

SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F0

N

SHEET TITLE

FIRST FLOOR SECURITY PLAN - UNIT 1100

SHEET NO.

TS210.b

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NO SCOPE OF WORK IN THIS AREA

1 FIRST FLOOR SECURITY PLAN - UNIT 1200
1/8" = 1'-0"

SECURITY SYMBOL LEGEND

VI	VIDEO INTERCOM

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

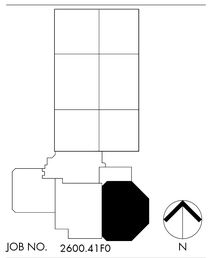
WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR SECURITY PLAN - UNIT 1200

SHEET NO.
TS210.c

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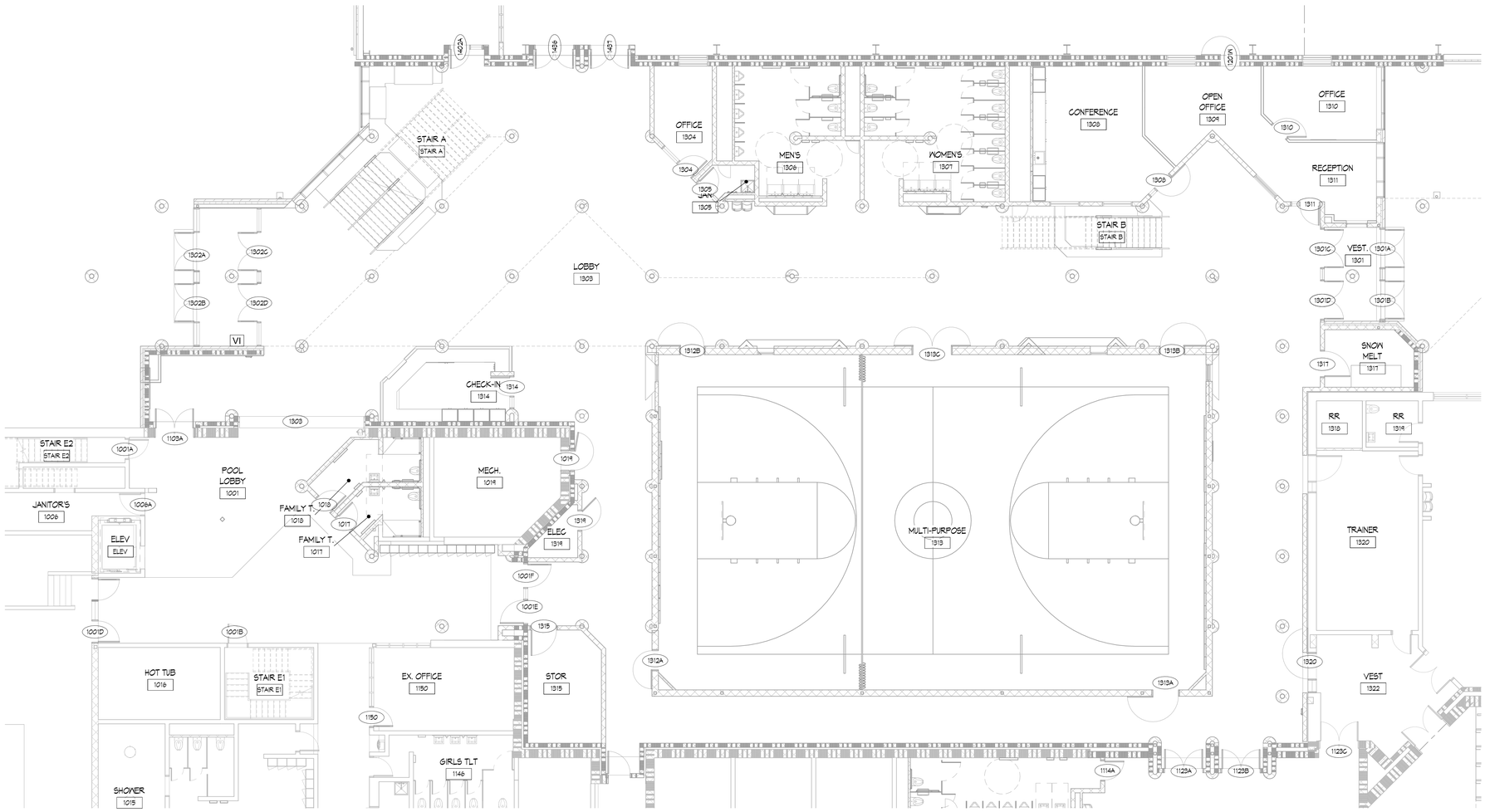
SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM



1 FIRST FLOOR SECURITY PLAN - UNIT 1300A

1/8" = 1'-0"

KINGSCOTT

PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

WRIGHT & HUNTER

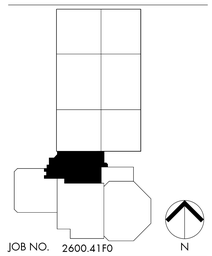
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE

FIRST FLOOR SECURITY PLAN - UNIT 1300A

SHEET NO.

TS210.d

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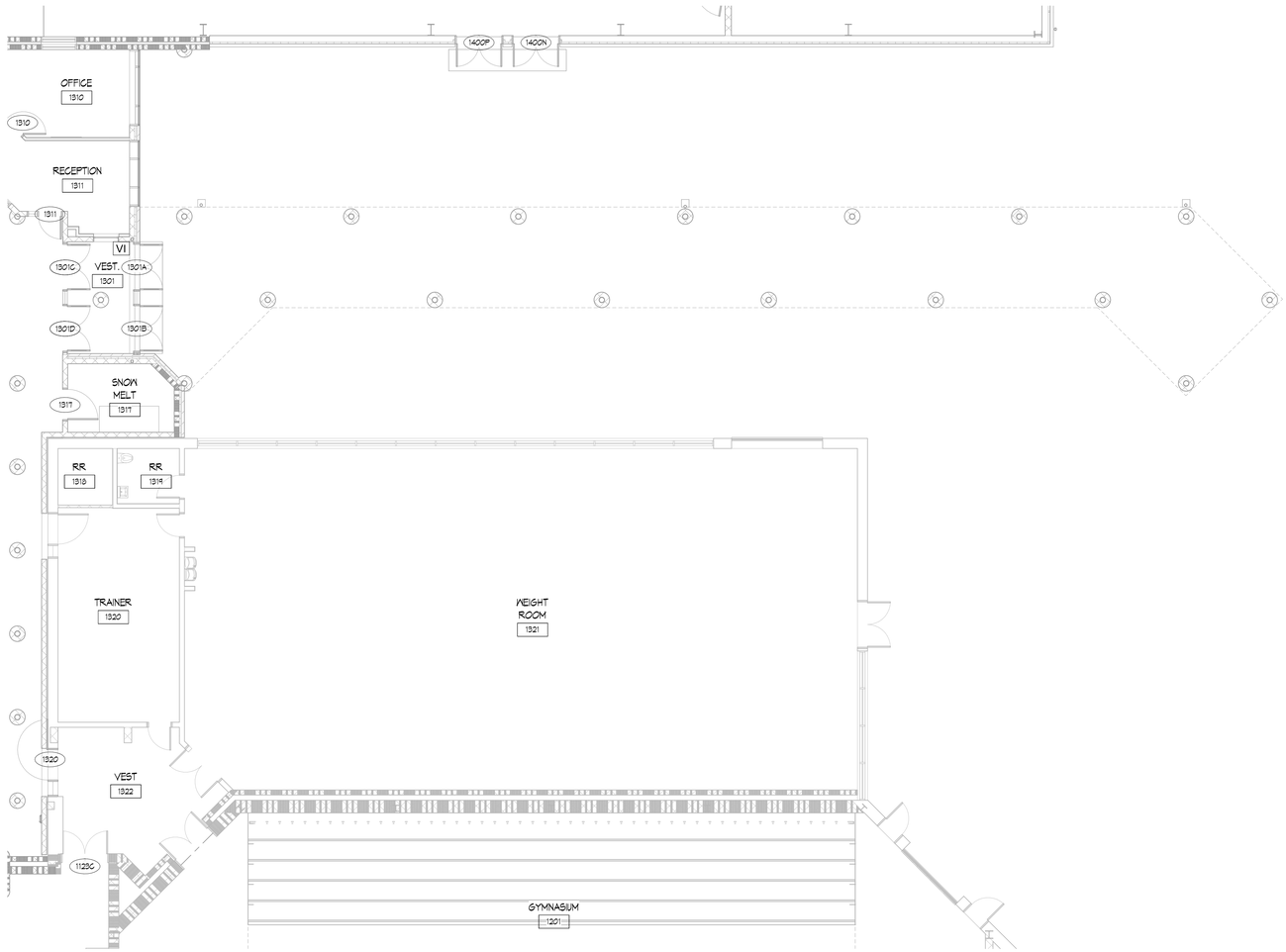
NO SCOPE OF WORK IN THIS AREA

SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM



1 FIRST FLOOR SECURITY PLAN - UNIT 1300B

1/8" = 1'-0"

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F0

N

SHEET TITLE

FIRST FLOOR SECURITY PLAN - UNIT 1300B

SHEET NO.

TS210.e

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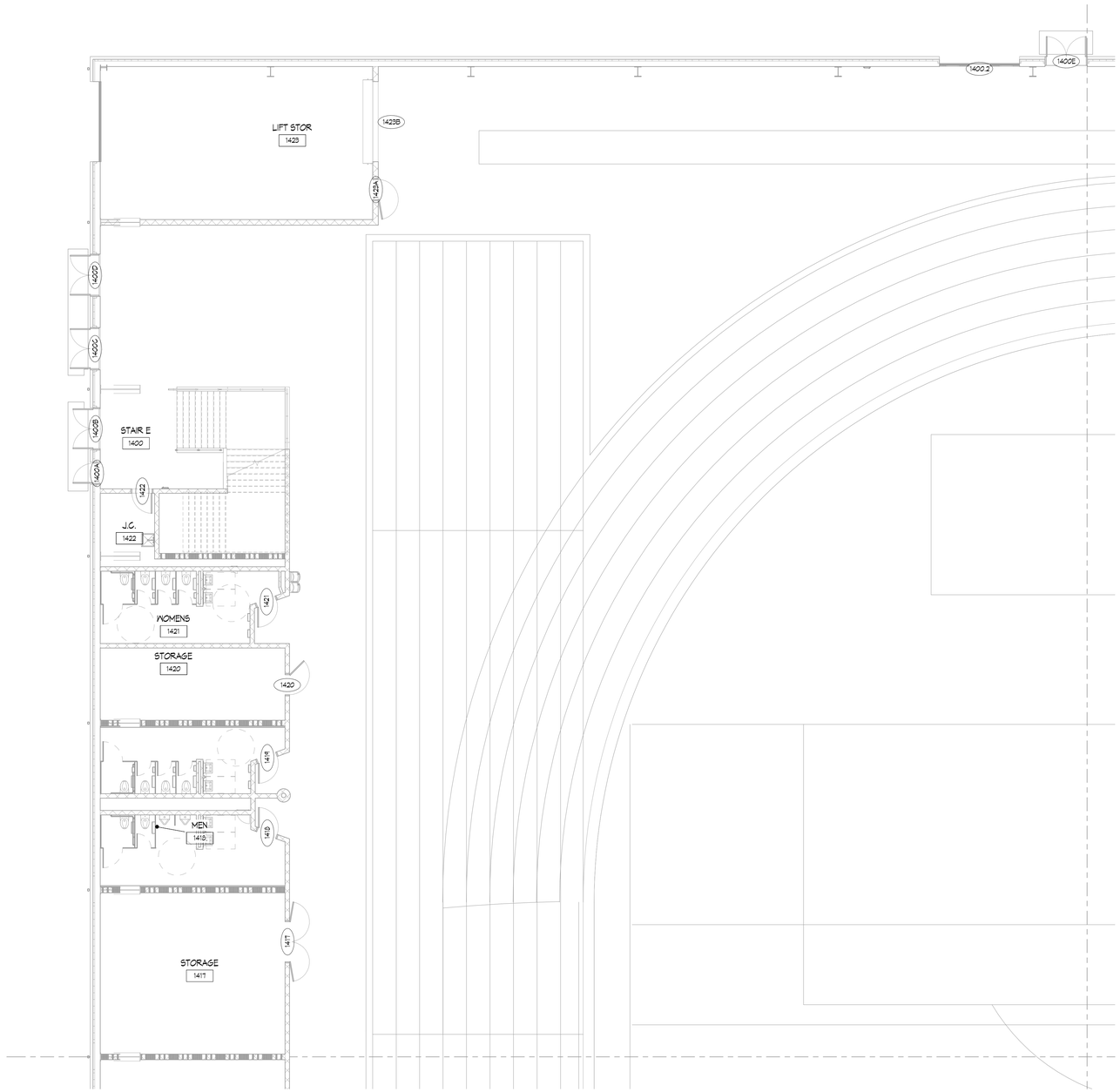
NO SCOPE OF WORK IN THIS AREA

SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM



1 FIRST FLOOR SECURITY PLAN - UNIT 1400A

1/8" = 1'-0"

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F0

N

SHEET TITLE

FIRST FLOOR SECURITY PLAN - UNIT 1400A

SHEET NO.

TS210.f

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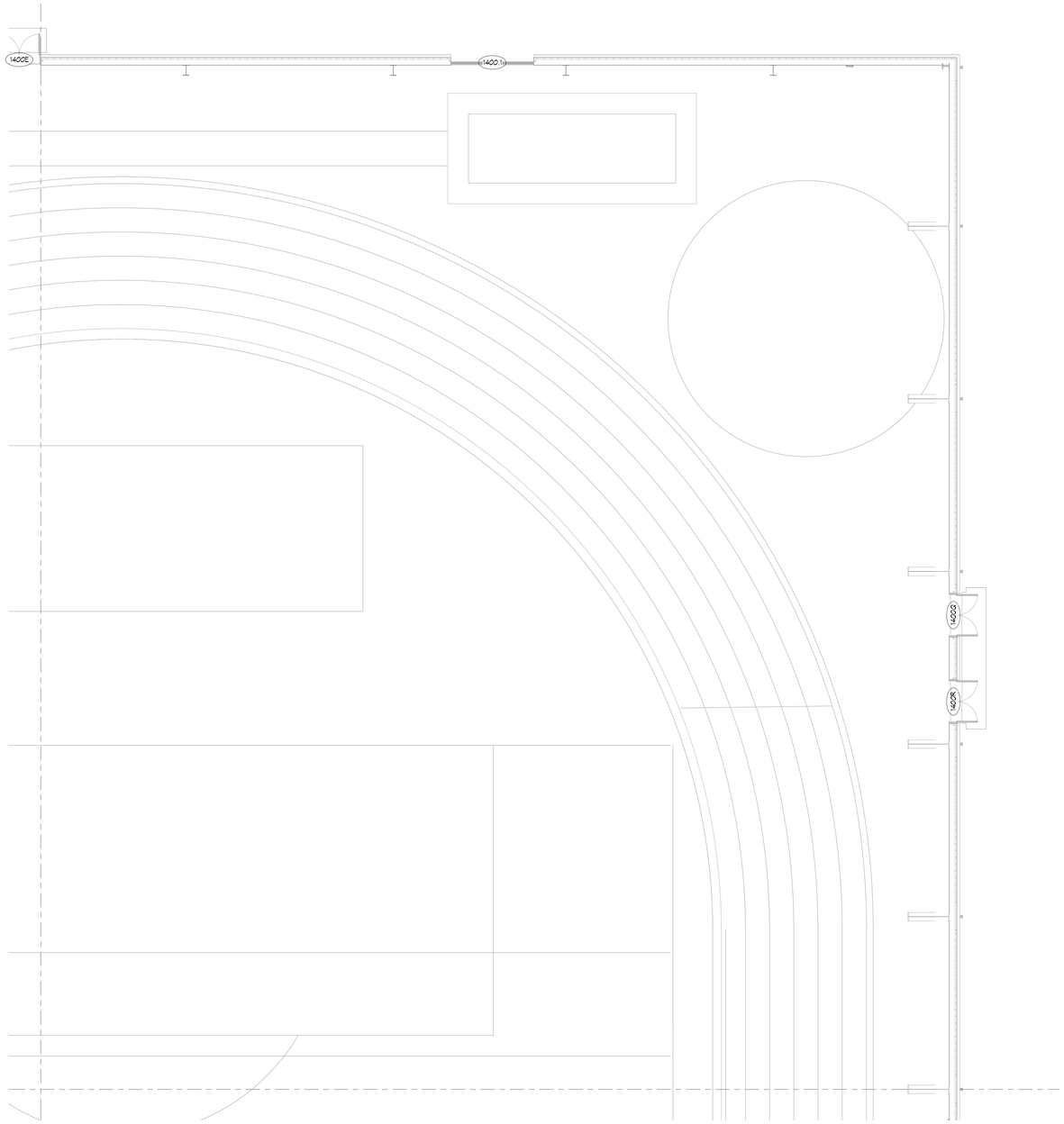
NO SCOPE OF WORK IN THIS AREA

SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM



1 FIRST FLOOR SECURITY PLAN - UNIT 1400B
1/8" = 1'-0"

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

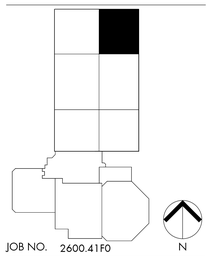
WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR SECURITY PLAN - UNIT 1400B

SHEET NO.
TS210.g

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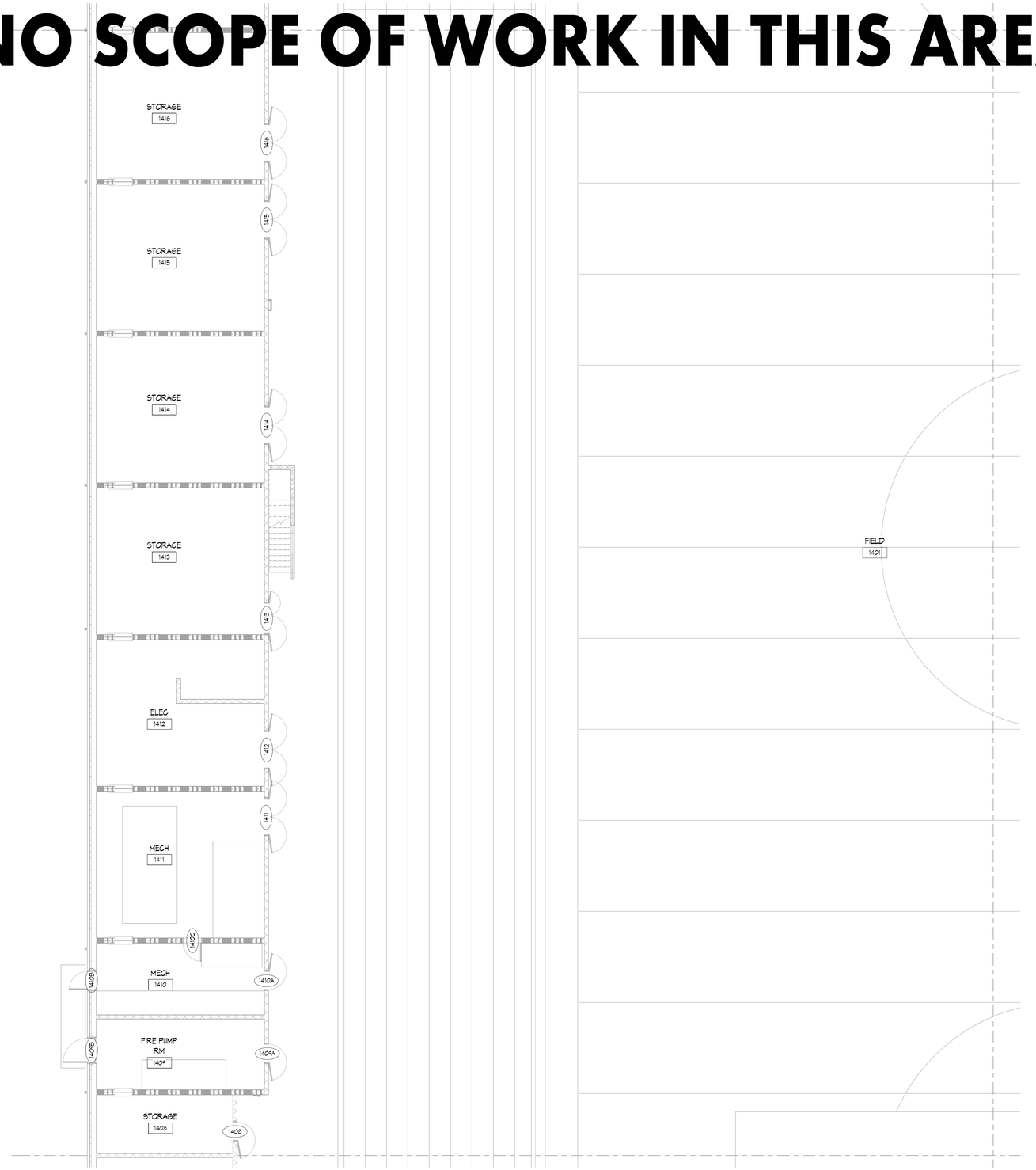
NO SCOPE OF WORK IN THIS AREA



SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM

1 FIRST FLOOR SECURITY PLAN - UNIT 1400C
1/8" = 1'-0"

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026

JOB NO. 2600.41F0

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SHEET TITLE

FIRST FLOOR SECURITY PLAN - UNIT 1400C

SHEET NO.

TS210.h

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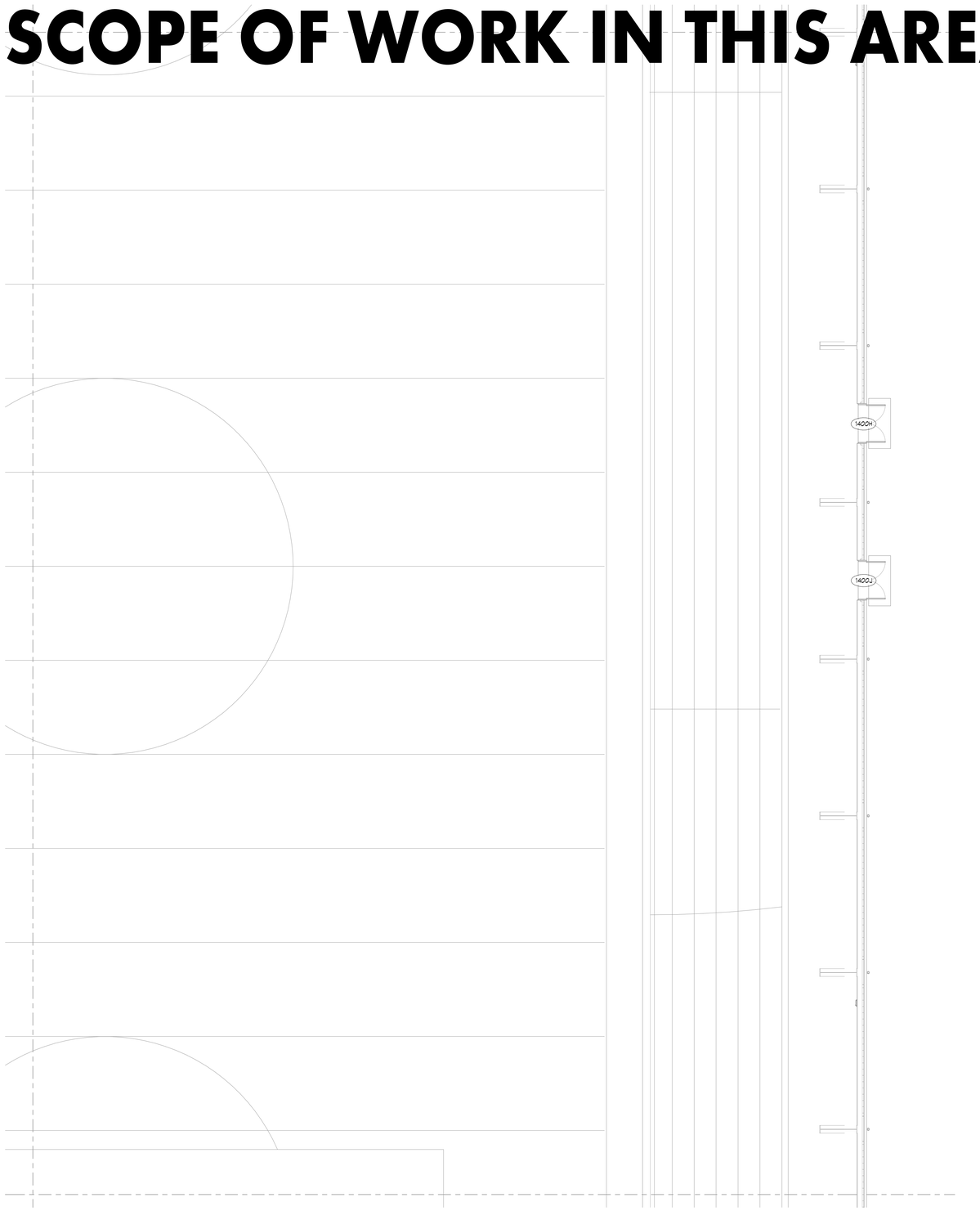
NO SCOPE OF WORK IN THIS AREA



1 FIRST FLOOR SECURITY PLAN - UNIT 1400D
1/8" = 1'-0"

SECURITY SYMBOL LEGEND

VI	VIDEO INTERCOM

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

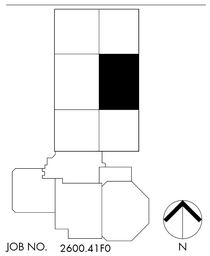
WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR SECURITY PLAN - UNIT 1400D

SHEET NO.
TS210.i

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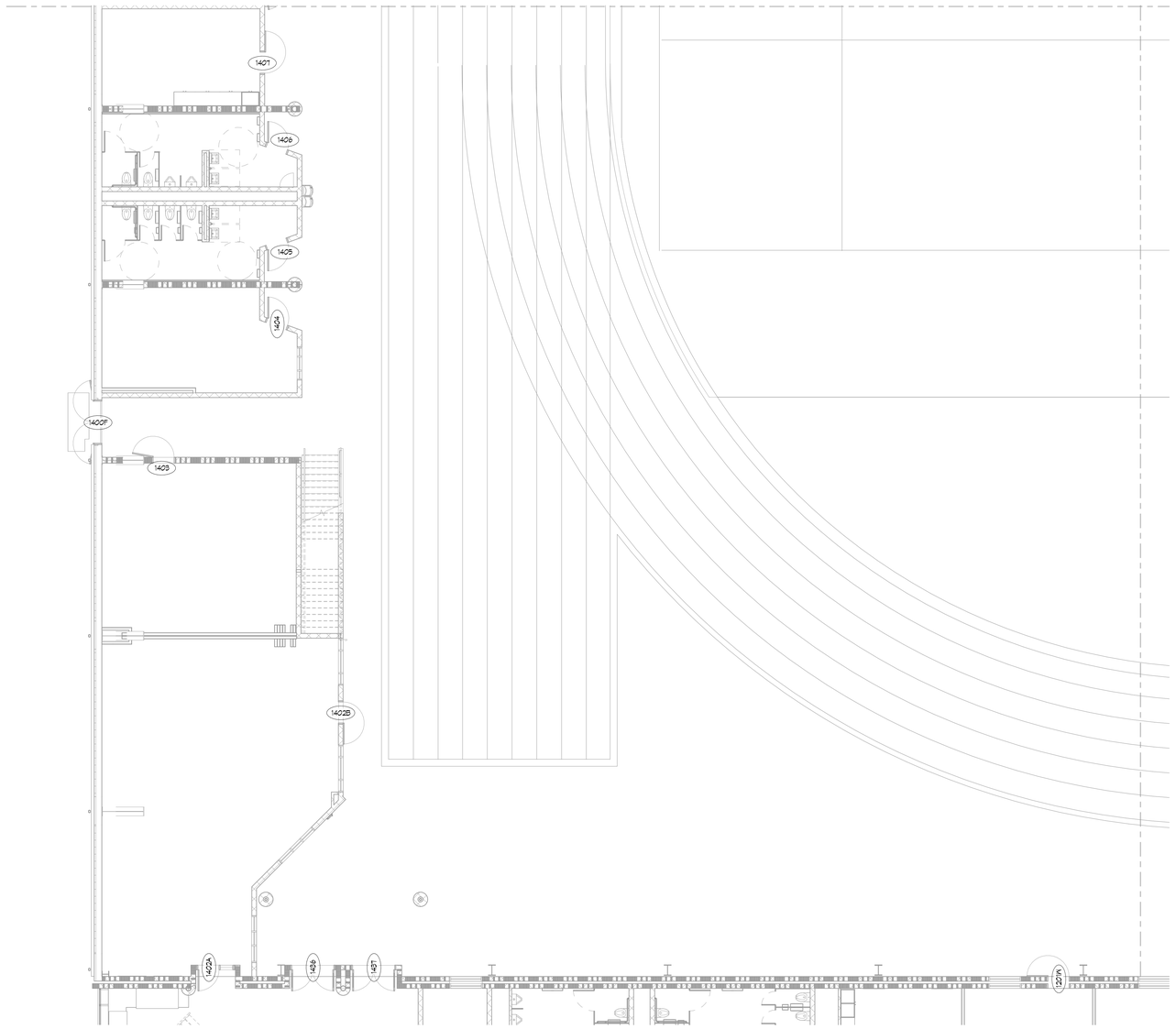
SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM

NO SCOPE OF WORK IN THIS AREA



1 FIRST FLOOR SECURITY PLAN - UNIT 1400E
1/8" = 1'-0"

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

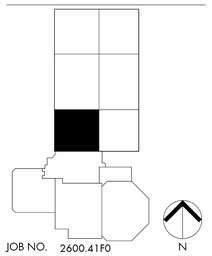
WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR SECURITY PLAN - UNIT 1400E

SHEET NO.
TS210.k

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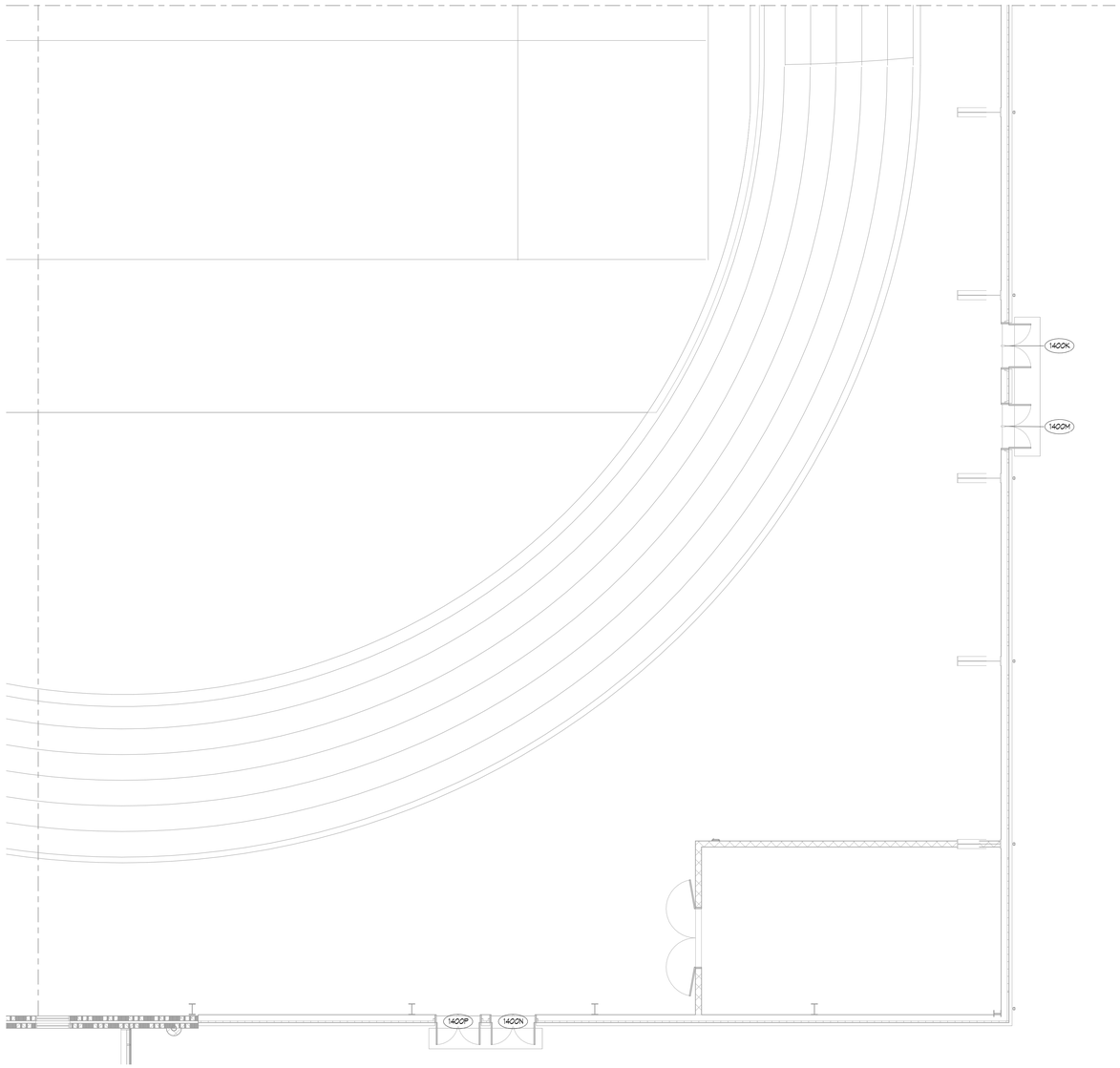
NO SCOPE OF WORK IN THIS AREA

SECURITY SYMBOL LEGEND

VI	VIDEO INTERCOM



1 FIRST FLOOR SECURITY PLAN - UNIT 1400F
1/8" = 1'-0"

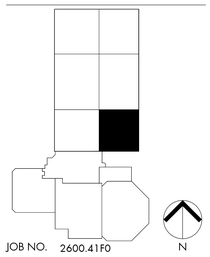
KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

WRIGHT & HUNTER

HOWELL COMMUNITY CENTER
HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
FIRST FLOOR SECURITY PLAN - UNIT 1400F

SHEET NO.
TS210.m

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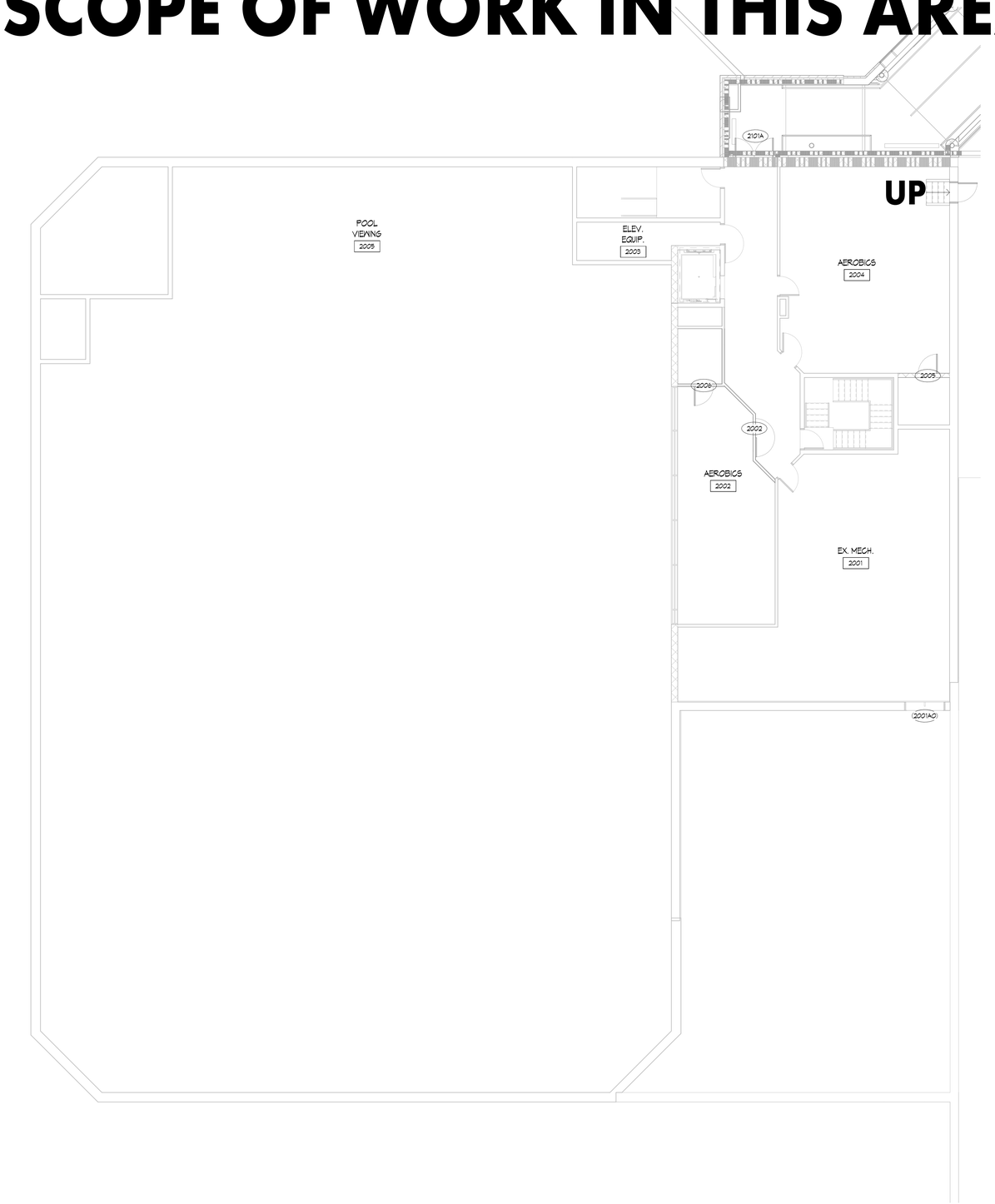
NO SCOPE OF WORK IN THIS AREA



1 SECOND FLOOR SECURITY PLAN - UNIT 2000
1/8" = 1'-0"

SECURITY SYMBOL LEGEND

VI	VIDEO INTERCOM

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

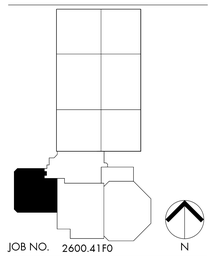
WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR SECURITY PLAN - UNIT 2000

SHEET NO.
TS220.a

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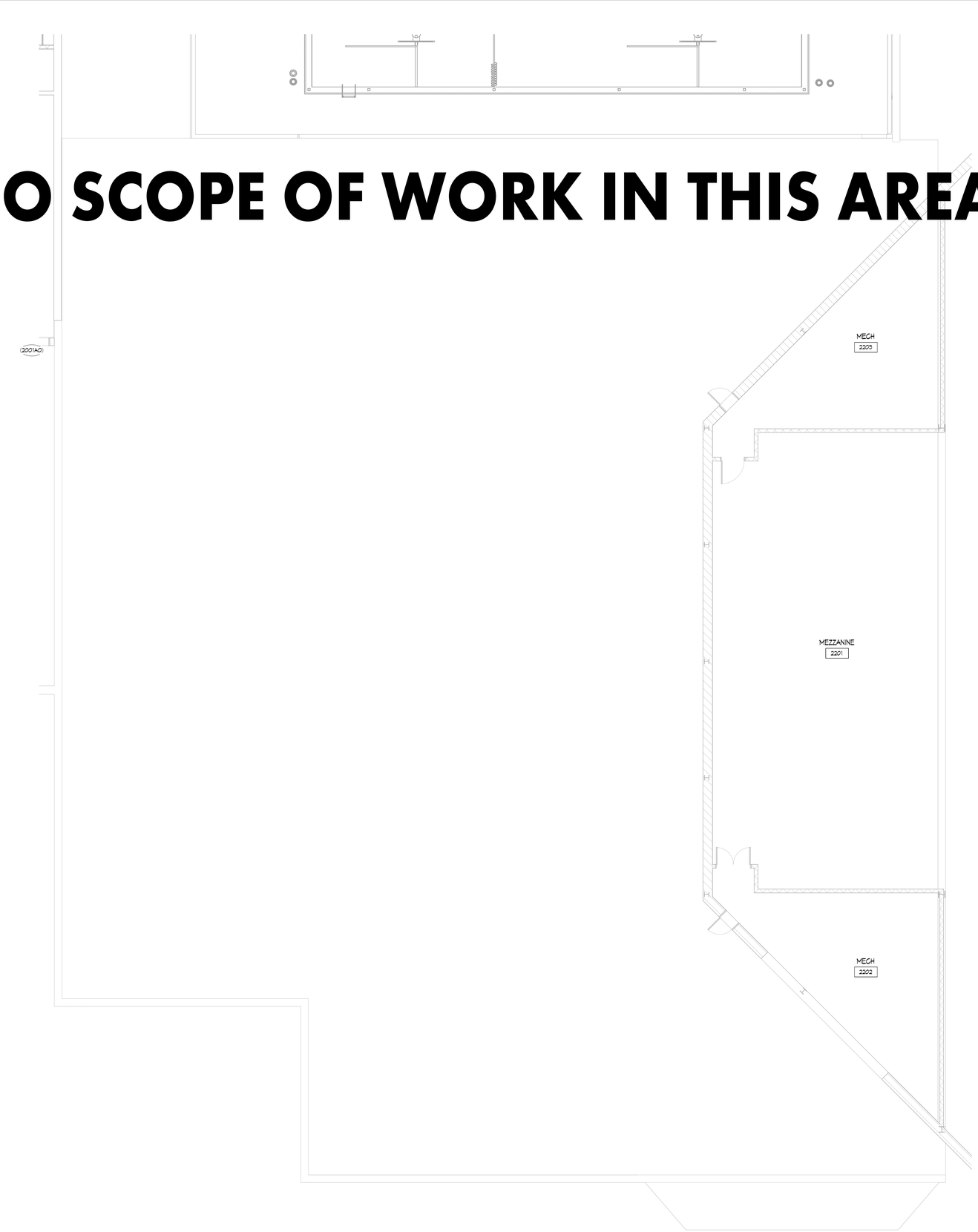
NO SCOPE OF WORK IN THIS AREA



1 SECOND FLOOR SECURITY PLAN - UNIT 2100
1/8" = 1'-0"

SECURITY SYMBOL LEGEND

VI	VIDEO INTERCOM

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

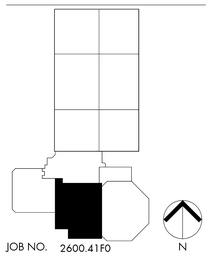
WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR SECURITY PLAN - UNIT 2100

SHEET NO.
TS220.b

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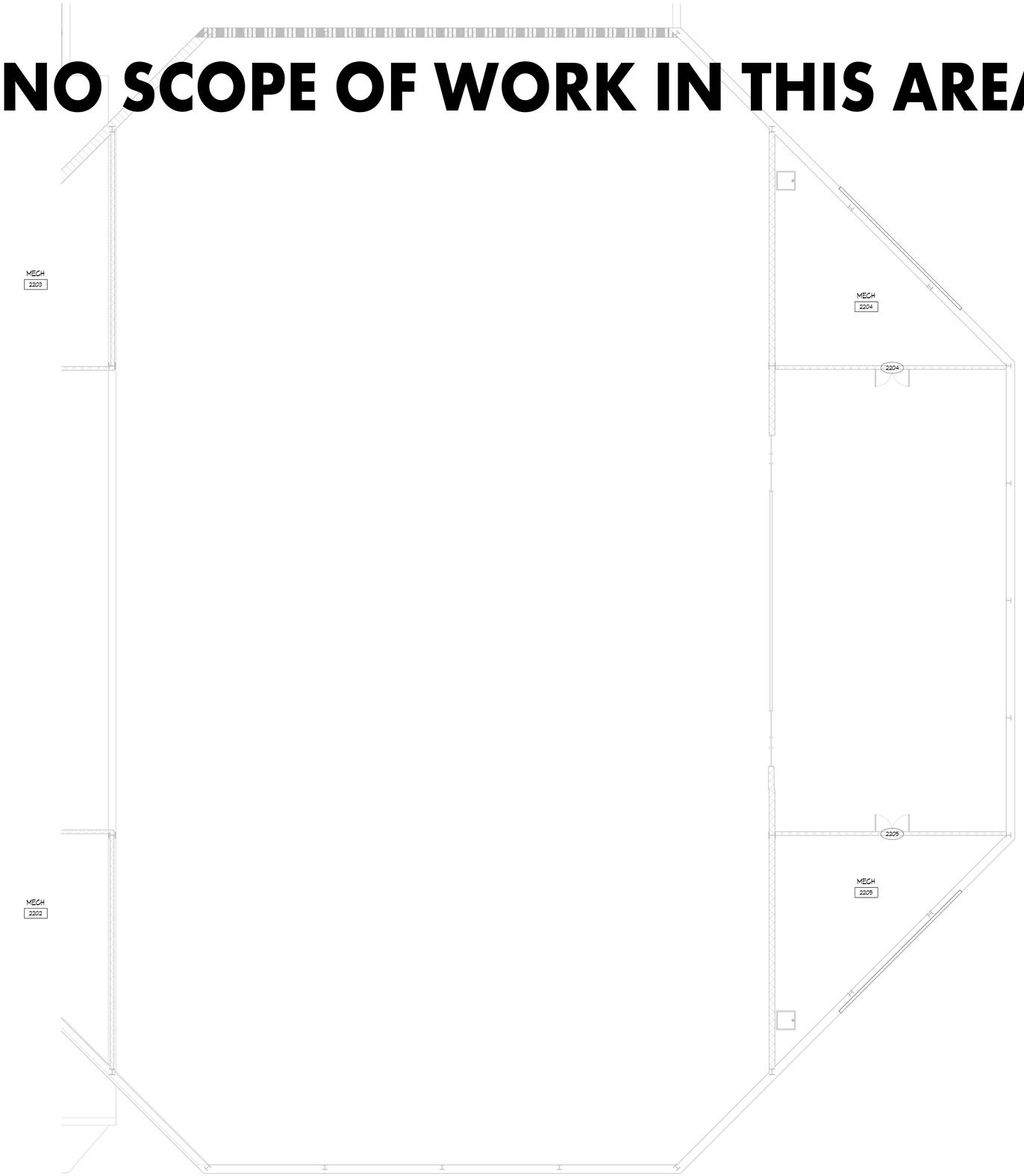
NO SCOPE OF WORK IN THIS AREA



1 SECOND FLOOR SECURITY PLAN - UNIT 2200
1/8" = 1'-0"

SECURITY SYMBOL LEGEND

VI	VIDEO INTERCOM

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

WRIGHT & HUNTER

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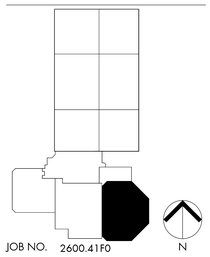
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR SECURITY PLAN - UNIT 2200

SHEET NO.
TS220.c

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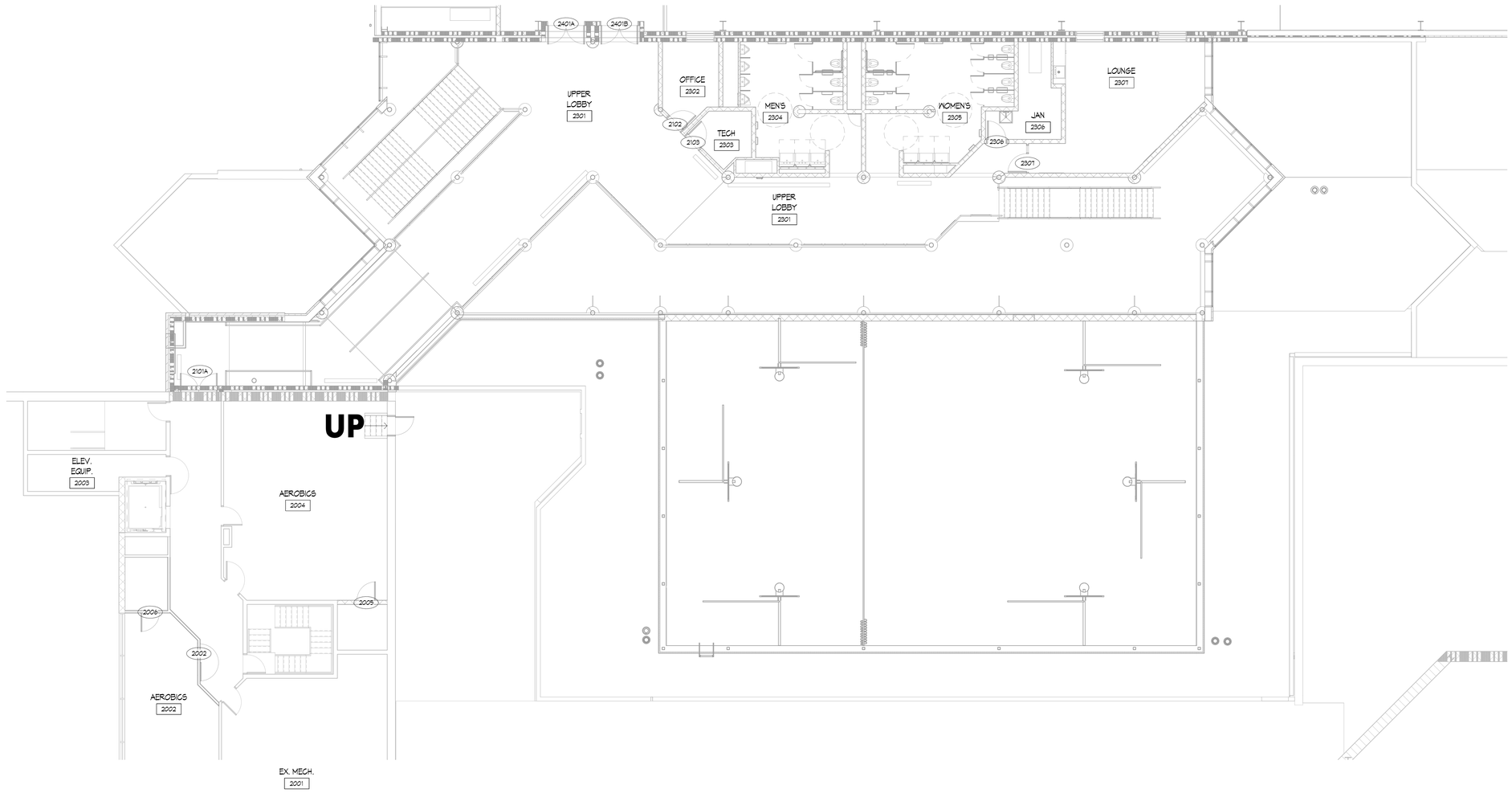
NO SCOPE OF WORK IN THIS AREA

SECURITY SYMBOL LEGEND

VI	VIDEO INTERCOM



1 SECOND FLOOR SECURITY PLAN - UNIT 2300A
1/8" = 1'-0"

KINGSCOTT
PORTAGE | CHELSEA | GRAND RAPIDS | DETROIT

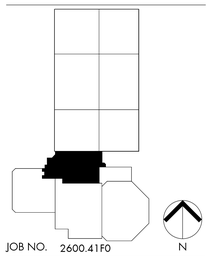
WRIGHT & HUNTER

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR SECURITY PLAN - UNIT 2300A

SHEET NO.
TS220.d

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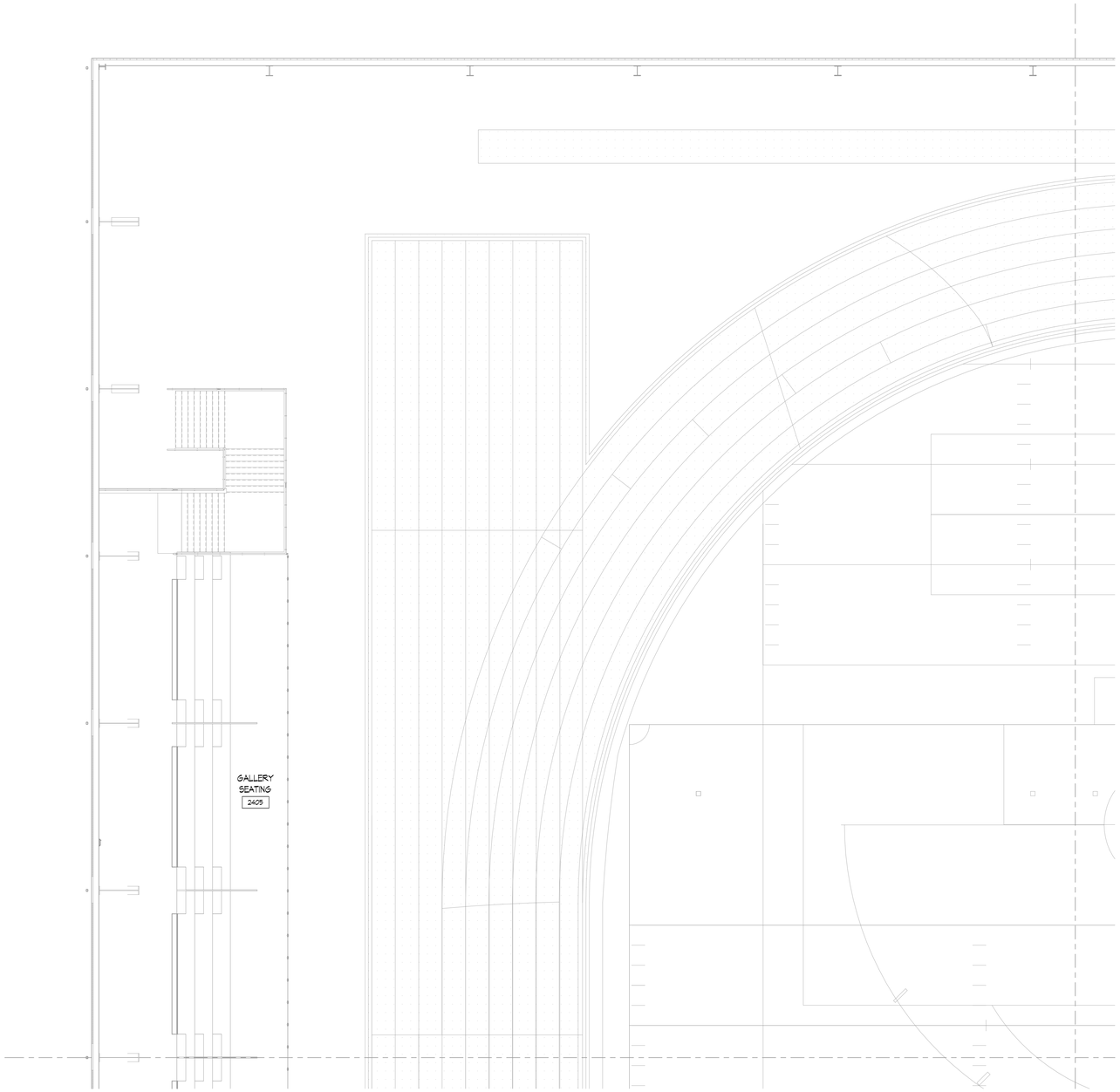
NO SCOPE OF WORK IN THIS AREA

SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM



1 SECOND FLOOR SECURITY PLAN - UNIT 2400A
1/8" = 1'-0"

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HOWELL COMMUNITY CENTER

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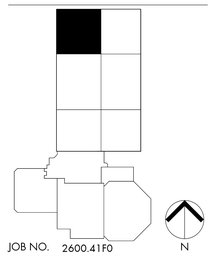
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE

SECOND FLOOR SECURITY PLAN - UNIT 2400A

SHEET NO.

TS220.f

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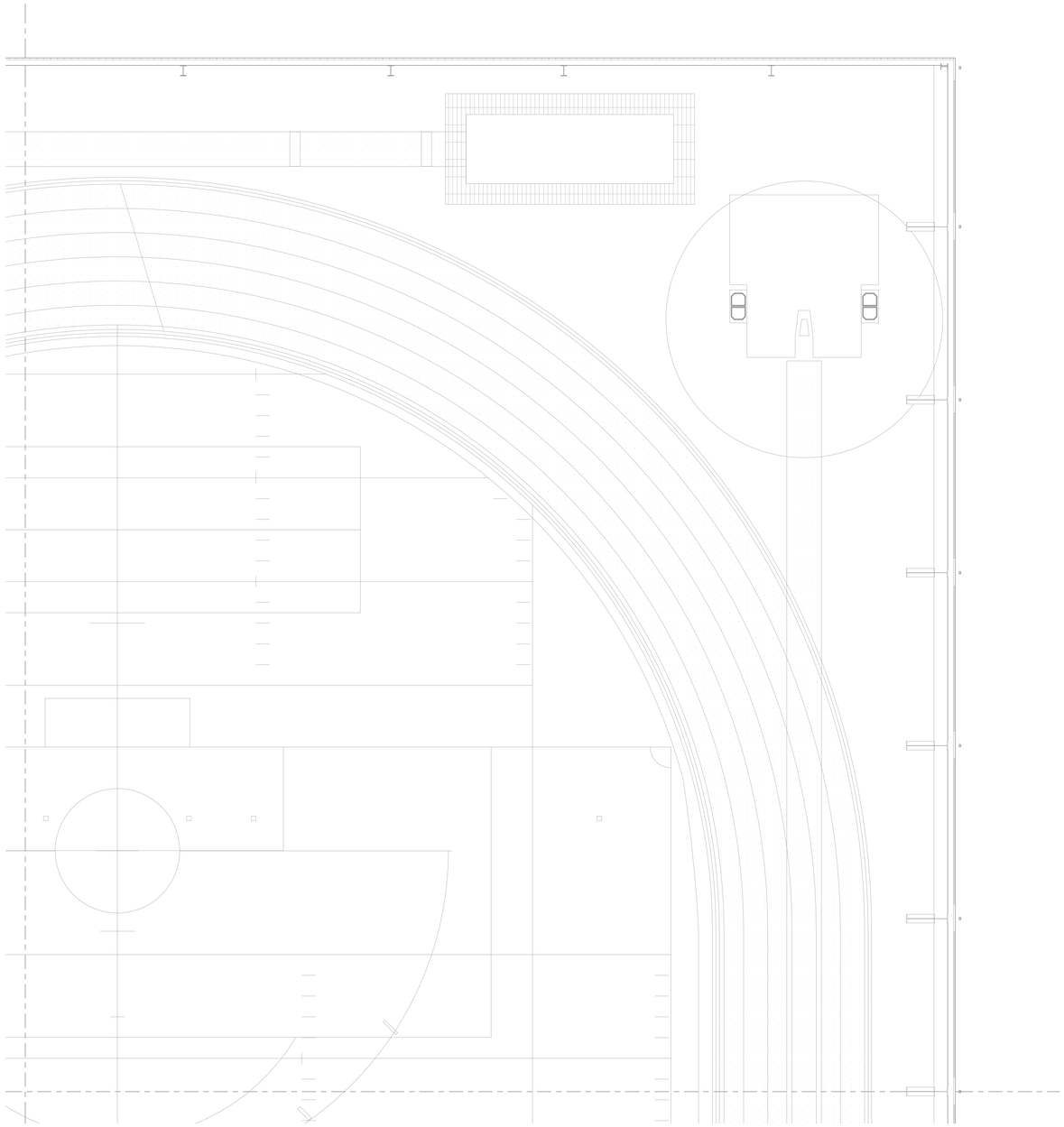
SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM



1 SECOND FLOOR SECURITY PLAN - UNIT 2400B
1/8" = 1'-0"

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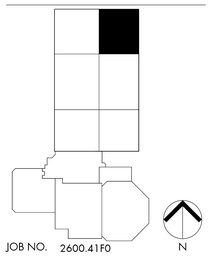
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE

SECOND FLOOR SECURITY PLAN - UNIT 2400B

SHEET NO.

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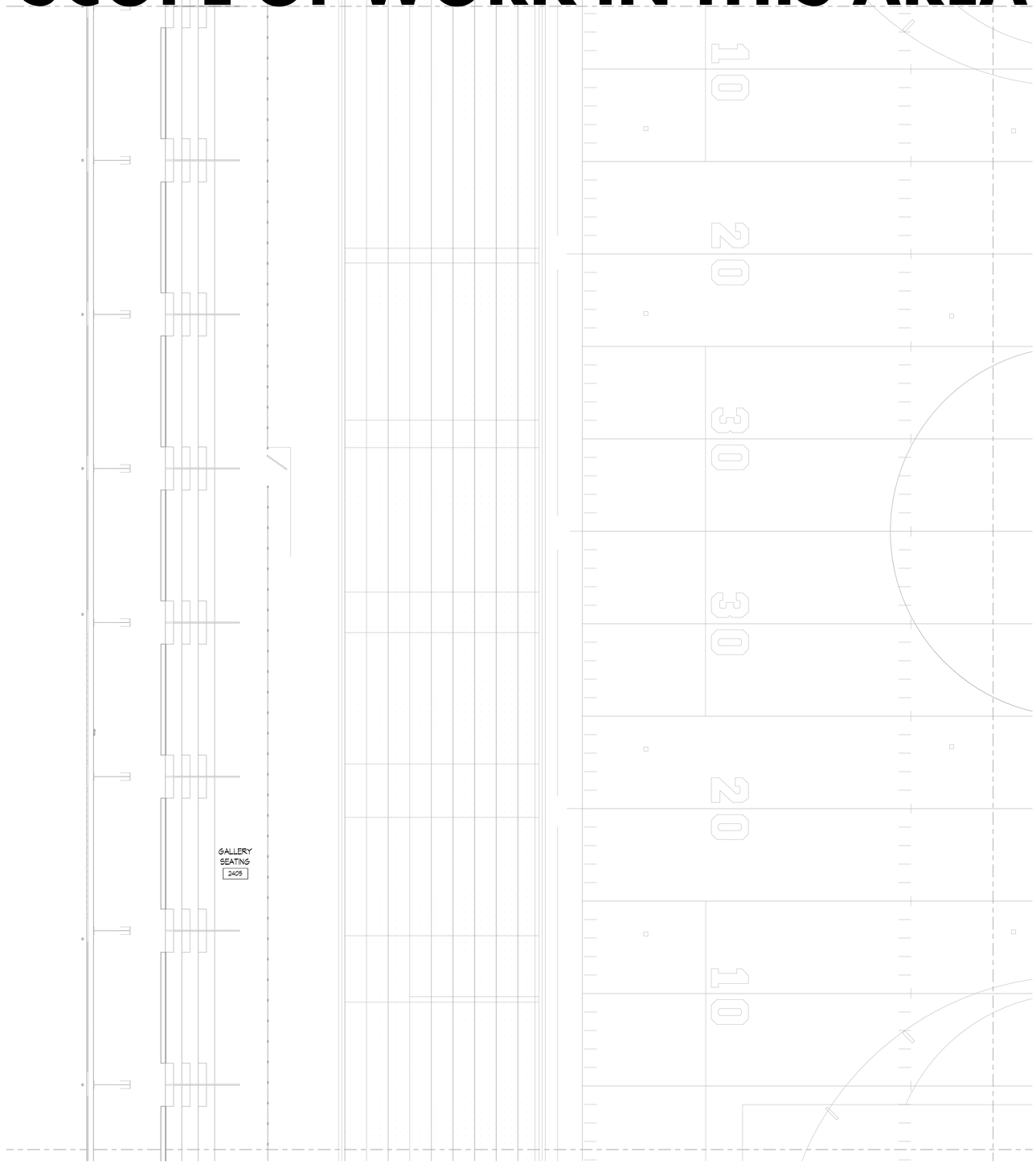

1 SECOND FLOOR SECURITY PLAN - UNIT 2400C
1/8" = 1'-0"

SECURITY SYMBOL LEGEND

VI	VIDEO INTERCOM

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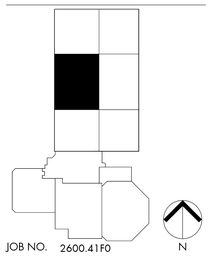

JOB NO. 2600.41F0

SHEET TITLE
SECOND FLOOR SECURITY PLAN - UNIT 2400C

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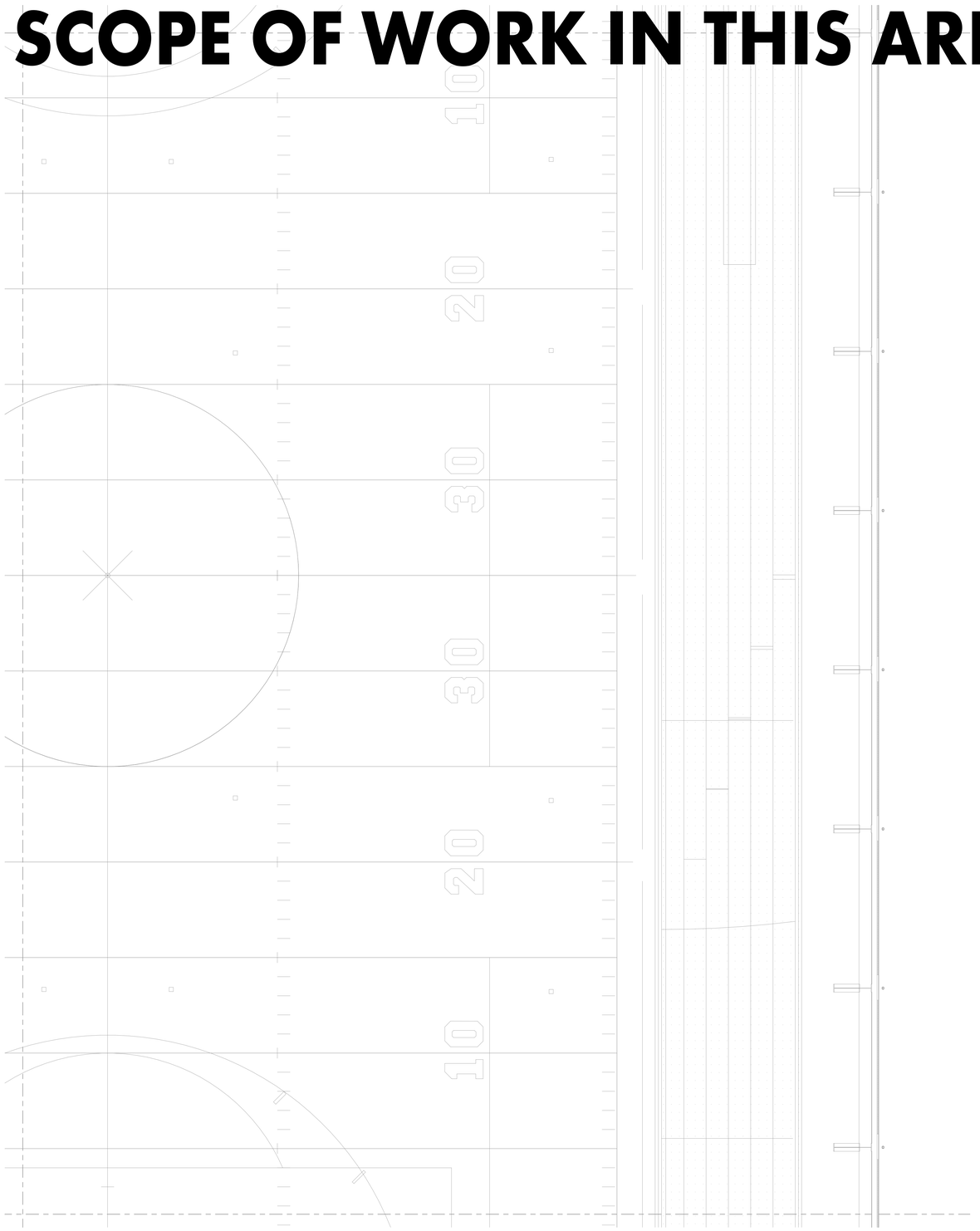

1 SECOND FLOOR SECURITY PLAN - UNIT 2400D
1/8" = 1'-0"

SECURITY SYMBOL LEGEND

VI	VIDEO INTERCOM

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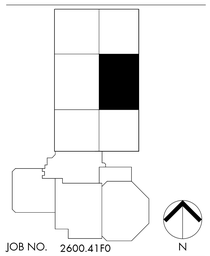

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SHEET TITLE
SECOND FLOOR SECURITY PLAN - UNIT 2400D

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SECURITY SYMBOL LEGEND

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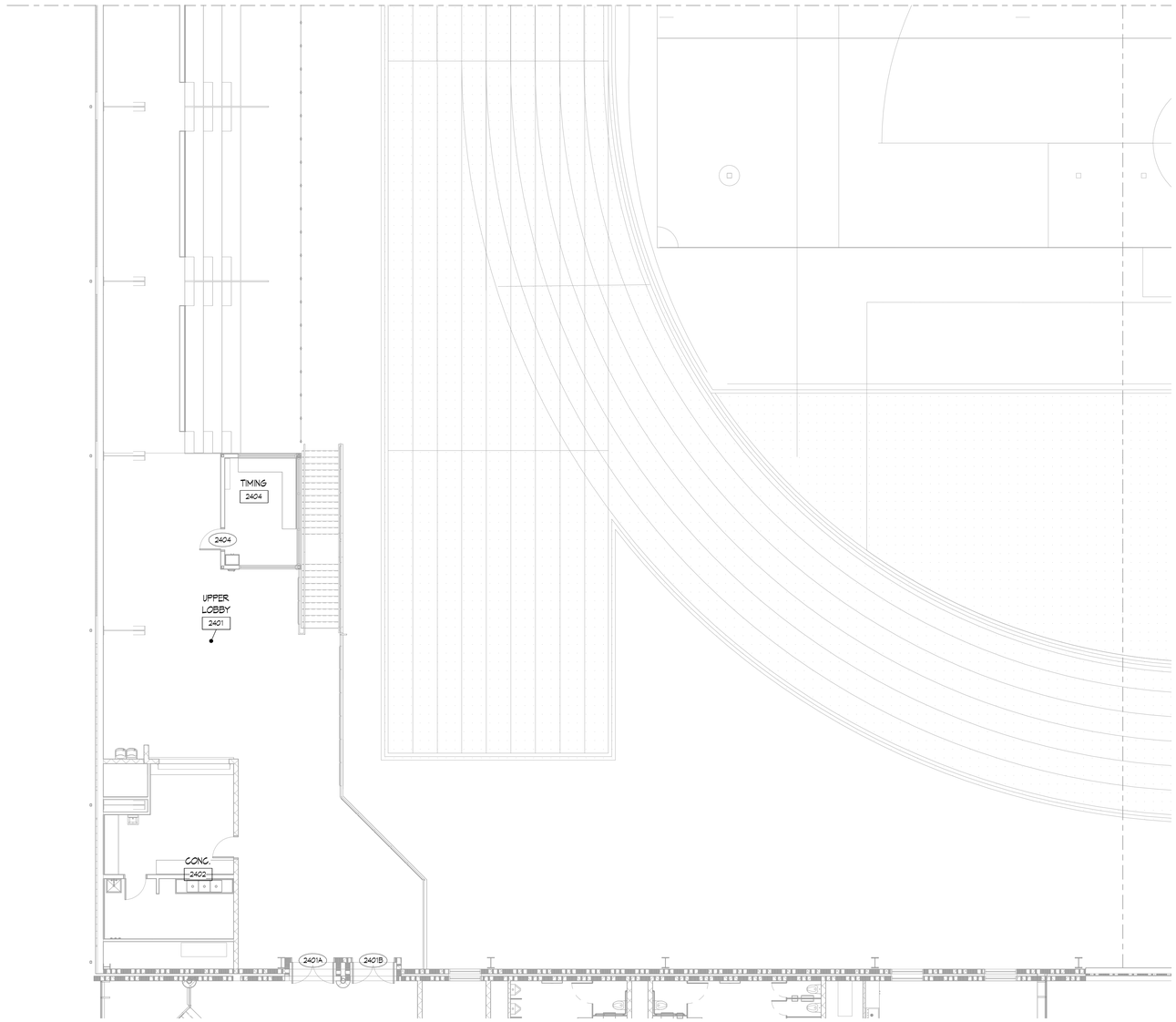

1 SECOND FLOOR SECURITY PLAN - UNIT 2400E

1/8" = 1'-0"

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SHEET TITLE

SECOND FLOOR SECURITY PLAN - UNIT 2400E

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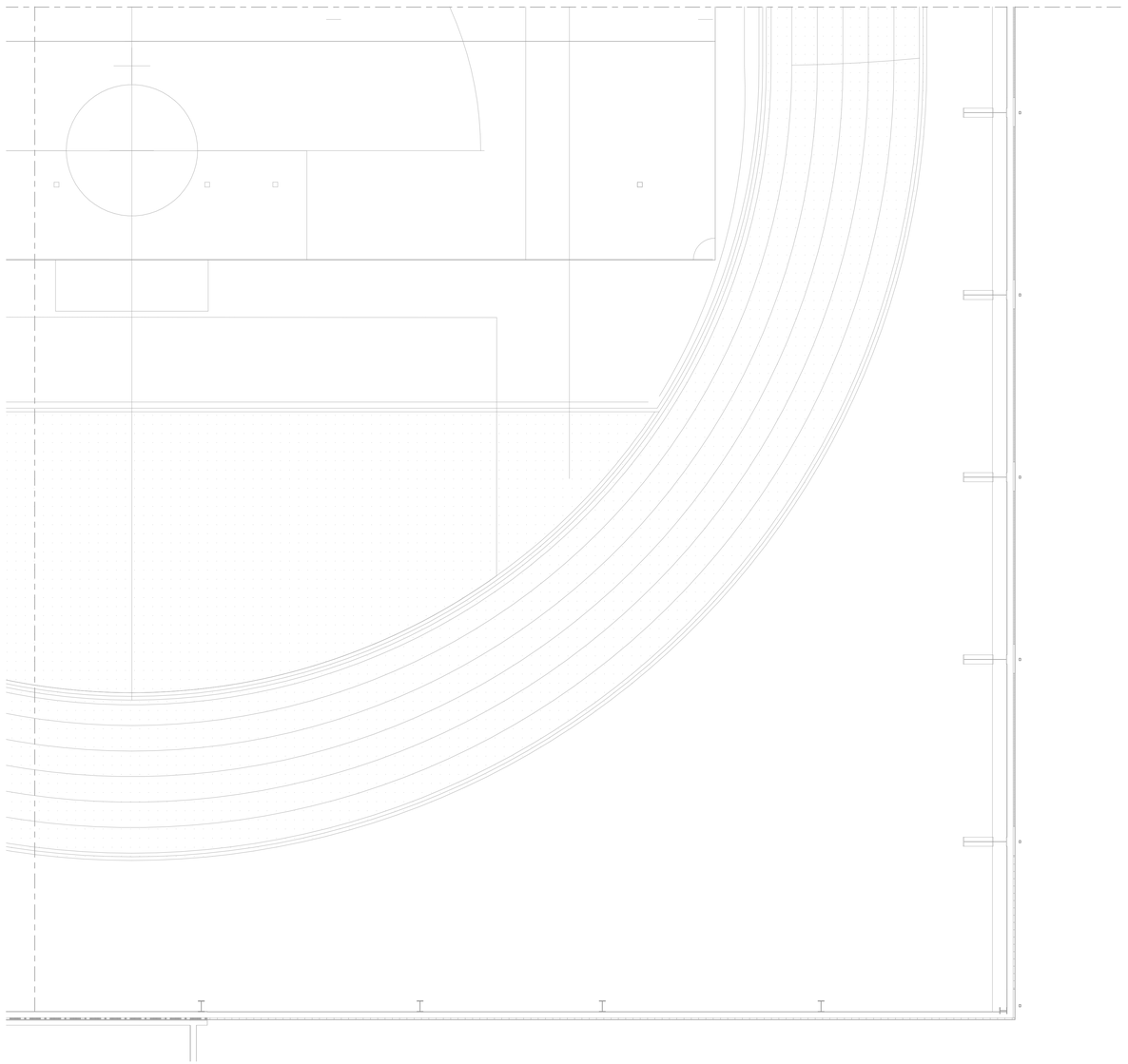
SECURITY SYMBOL LEGEND

VI VIDEO INTERCOM



1 SECOND FLOOR SECURITY PLAN - UNIT 2400F
1/8" = 1'-0"

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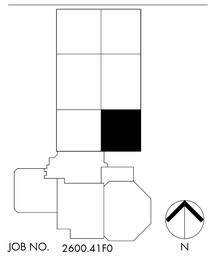
ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



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SHEET TITLE

SECOND FLOOR SECURITY PLAN - UNIT 2400F

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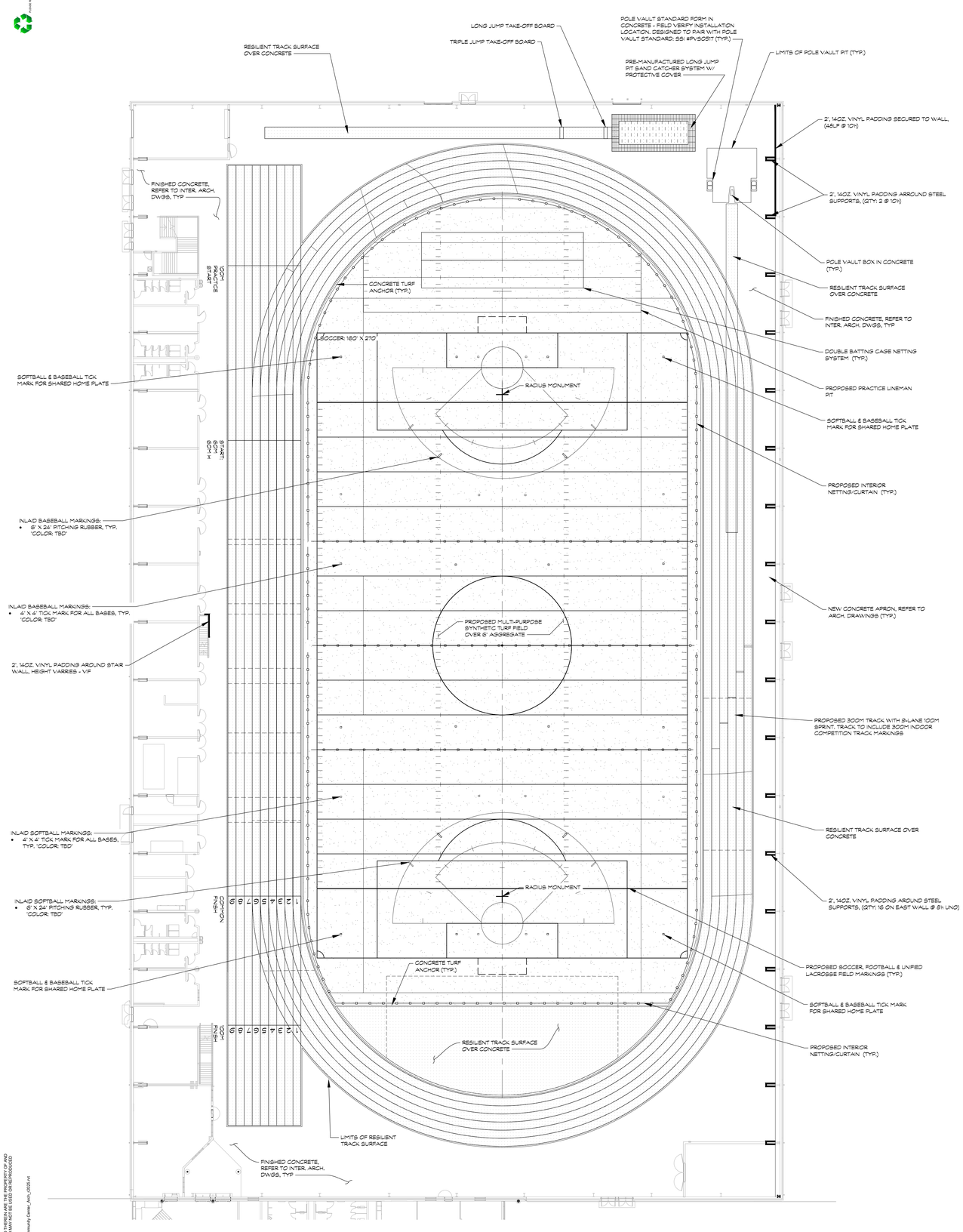

LEGEND

EXISTING

- SPOT ELEVATION
- AS-BUILT SPOT ELEVATION
- FENCE
- DRAINAGE STRUCTURE
- STORM DRAIN
- LIGHT POLE
- ELECTRICAL
- WATER
- TELEPHONE
- IRRIGATION
- PROPERTY
- SANITARY
- GAS

PROPOSED

- SPOT GRADE
- TOP OF WALL ELEVATION
- TOP OF CURB ELEVATION
- MATCH EXISTING ELEVATION
- TOP OF TRENCH ELEVATION
- DRAINAGE SWALE
- CHAINLINK FENCE - SEE PLANS FOR HT.
- ORNAMENTAL FENCE - SEE PLANS FOR HT.
- DRAINAGE STRUCTURE
- STORM DRAIN
- FLAT DRAIN
- 4" PERFORATED DRAINTILE
- 6" PERFORATED DRAINTILE
- 8" PERFORATED DRAINTILE
- LIGHT POLE
- ELECTRICAL
- WATER
- TELEPHONE
- IRRIGATION
- LIMITS OF CONSTRUCTION
- RESILIENT TRACK SURFACE OVER CONCRETE
- SYNTHETIC TURF
- MASON SAND

NORTH

0 10 20 40

SCALE: 1\20'

NOTES

1. NOTES AND LEGEND SHALL APPLY TO ALL SHEETS AND ALL SITES
2. THE TRACK SHALL BE STRIPPED FOR INDOOR AND OUTDOOR TRACK COMPETITION

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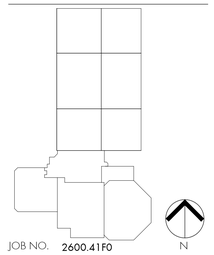

JOB NO. 2600.41F0

N

SHEET TITLE

ATHLETIC FLOOR PLAN

SHEET NO.

1101

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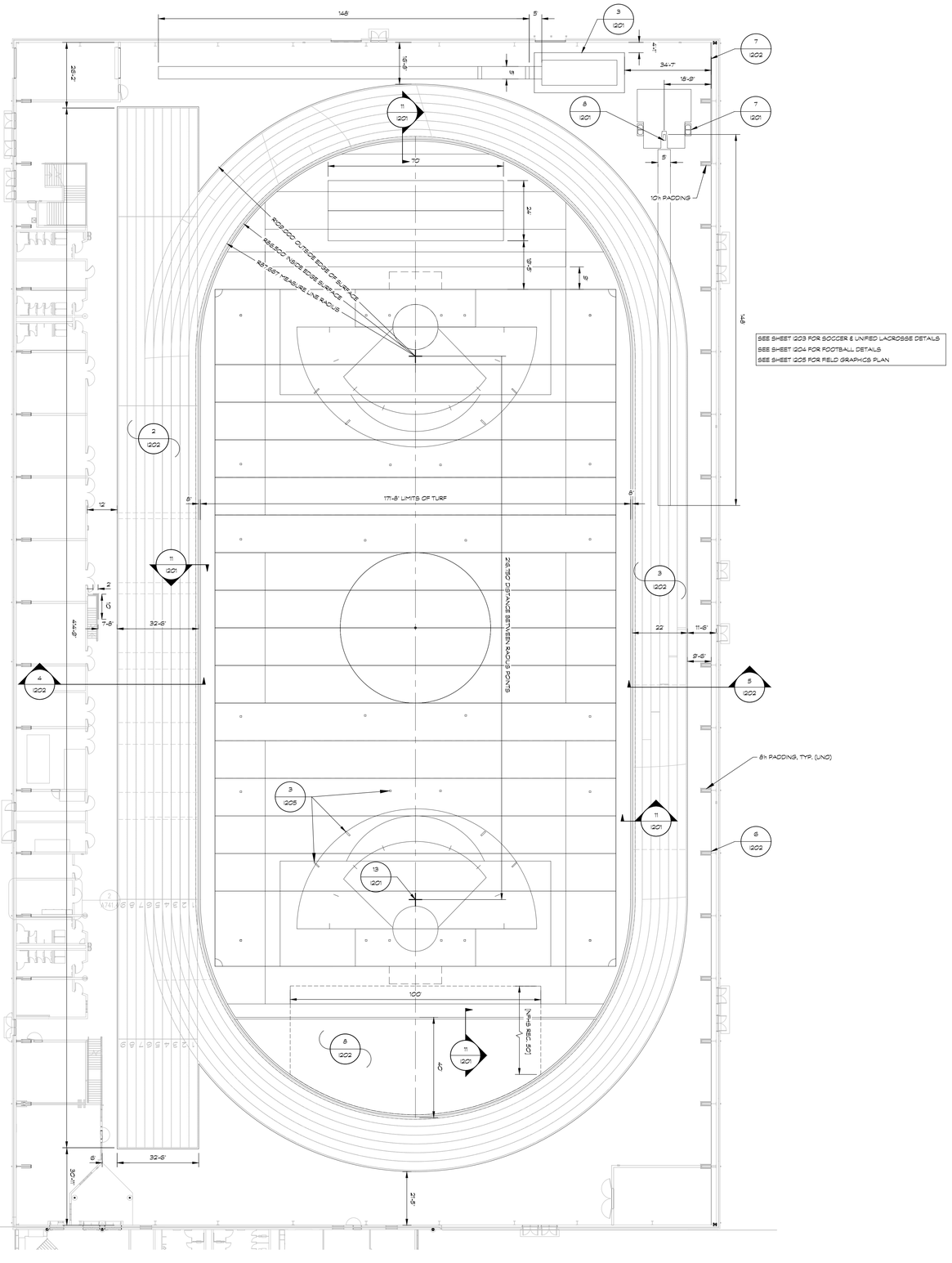
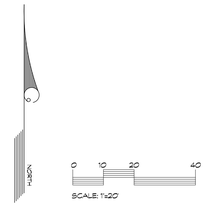


SEE SHEET 1203 FOR SOCCER & UNIFIED LACROSSE DETAILS
SEE SHEET 1204 FOR FOOTBALL DETAILS
SEE SHEET 1205 FOR FIELD GRAPHICS PLAN



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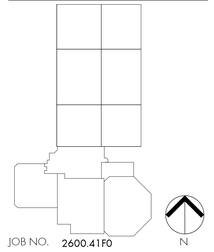

JOB NO. 2600.41F0

SHEET TITLE
ATHLETIC DIMENSION PLAN

SHEET NO.
I102

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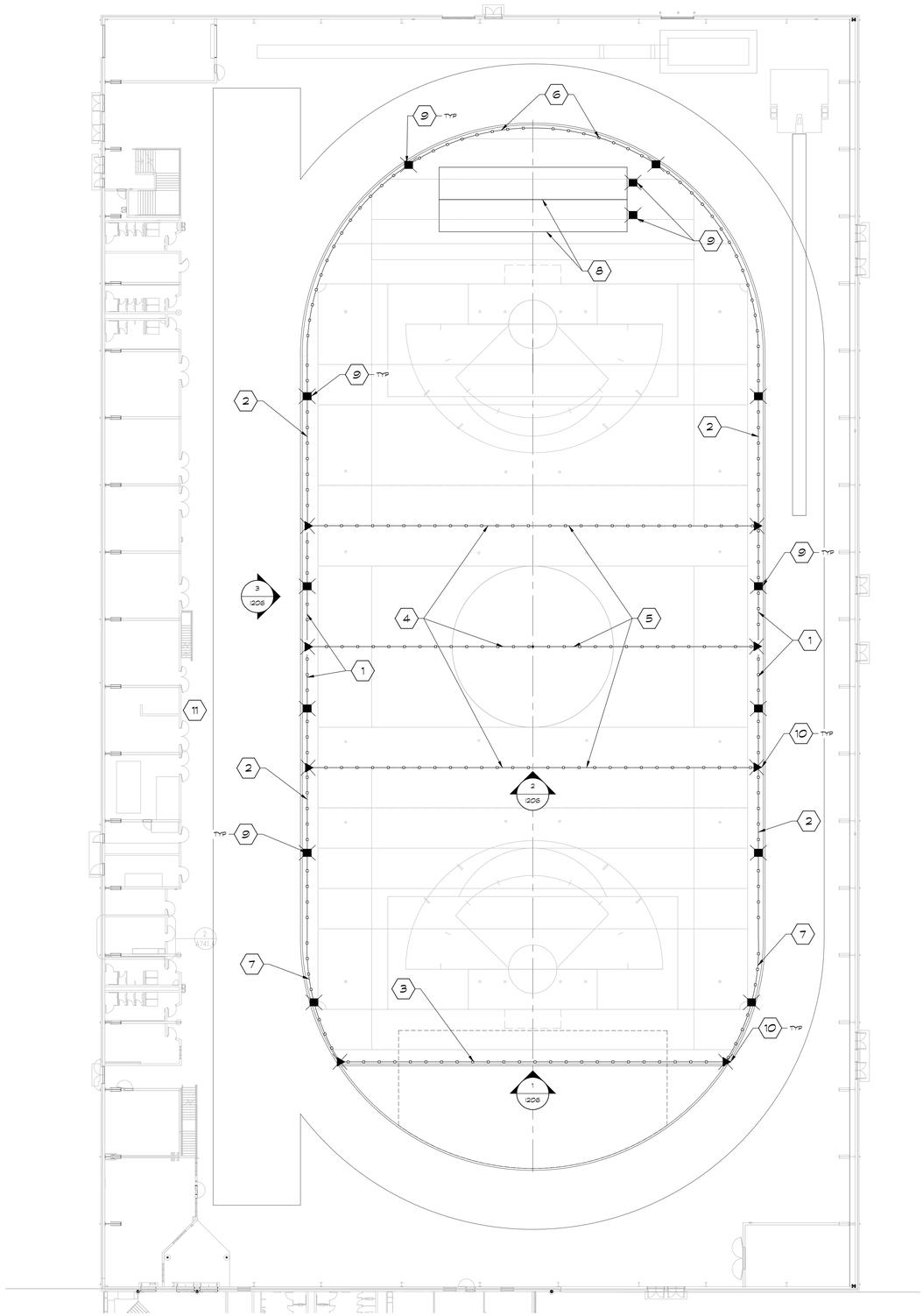
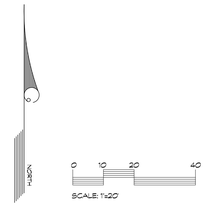


INDOOR PROTECTIVE NETTING
DELEGATED DESIGN NOTES:

1. DESIGN INTENT AND PROPOSED NETTING SYSTEM IS DIAGRAMMATIC ONLY. SYSTEM SHOWN IS INTENDED TO DEPICT GENERAL DESIGN LAYOUT, EXTENTS, AND HEIGHTS OF NEW PROTECTIVE NETTING SYSTEM REFLECTED ON THE DRAWINGS. FINAL DESIGN IS THE RESPONSIBILITY OF THE DELEGATED DESIGN ENGINEER. PROVIDE A COMPLETE DESIGN, ENGINEERING, AND FABRICATION OF THE PROTECTIVE NETTING SYSTEM, INCLUDING ALL STRUCTURAL COMPONENTS, CABLING, NETTING MATERIAL, MOTORS, AND CONTROLLERS.
2. THE PROTECTIVE NETTING SYSTEM AND FOUNDATIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER, LICENSED IN MICHIGAN, RETAINED BY THE CONTRACTOR/MANUFACTURER. ENGINEERED SYSTEM SHALL INCLUDE THE FOLLOWING:
   - NETTING MATERIAL AND MESH SIZING APPROPRIATE FOR INTENDED USE
   - SUPPORT SYSTEM: POSTS, POLES, AND CABLING AS NECESSARY
   - ANCHORAGE, EMBEDS, AND CONNECTION HARDWARE
   - TENSIONING SYSTEMS, CABLES, AND ATTACHMENT METHODS
   - INTERFACE WITH ADJACENT STRUCTURES (BUILDINGS, SUPPORT BEAMS, ETC.)
   - COMPLETE MOTOR OPERATED SYSTEM INCLUDING MOTORS, DRIVES, CONTROLLERS, LIMIT SWITCHES, SAFETY DEVICES, AND ALL ASSOCIATED ACCESSORIES. COORDINATE ELECTRICAL REQUIREMENTS INCLUDING POWER, CONTROLS, AND INTERFACES.
3. MANUFACTURER IS RESPONSIBLE TO PROVIDE SIGNED AND SEALED ENGINEERED DRAWINGS AND STRUCTURAL CALCULATIONS. SYSTEM SHALL BE DESIGNED FOR ANTICIPATED IMPACT LOADS ASSOCIATED WITH INTENDED USE, INCLUDING BUT NOT LIMITED TO BALL STRIKE LOADS AND REBOUND FORCES. DYNAMIC EFFECTS FROM MOTOR START/STOP AND NET DEPLOYMENT SHALL BE INCLUDED IN DESIGN.
4. ALL DIMENSIONS SHOWN OF PROPOSED ITEMS OR TO EXISTING FEATURES SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OR INSTALLATION.
5. CONTRACTOR SHALL COORDINATE WITH STRUCTURAL ENGINEER FOR ACCEPTABILITY OF LOADS AND REQUIRED REINFORCEMENTS.
6. COORDINATE WITH ALL CONSULTANT DRAWINGS.
7. SYSTEM SHALL COMPLY WITH ALL APPLICABLE CODES.
8. MANUFACTURER SHALL PROVIDE INSTALLATION REQUIREMENTS AND SUPERVISION OR CERTIFICATION OF INSTALLATION AS REQUIRED TO ENSURE SYSTEM PERFORMS AS DESIGNED.
9. SYSTEM SHALL BE DESIGNED AS A COMPLETE FUNCTIONAL SYSTEM CAPABLE OF SAFE, RELIABLE OPERATION UNDER ALL INTENDED USE CONDITIONS.



0 10 20 40
SCALE: 1:20

PROPOSED NET LEGEND:

1 CURTAIN : MODEL# 4020 FOLD-UP NETTING
- 45'-0" LENGTH (QTY: 4)
- 30' OVERALL HEIGHT
  - 27'-0" VINYL COATED POLYESTER MESH
  - 3'-0" SOLID 18 OZ. VINYL, COLOR: TBD

2 CURTAIN : MODEL# 4020 FOLD-UP NETTING
- 63'-6" LENGTH (QTY: 4)
- 30' OVERALL HEIGHT
  - 27'-0" VINYL COATED POLYESTER MESH, COLOR: TBD
  - 3'-0" SOLID 18 OZ. VINYL, COLOR: TBD

3 CURTAIN : MODEL# 4025 PEAK FOLD-UP NETTING
- 143'-8" LENGTH (QTY: 1)
- OVERALL HEIGHT VARIES: 45'-6" AT PEAK, 30' AT WALL
  - VINYL COATED POLYESTER MESH, COLOR: TBD
  - 3'-0" SOLID 18 OZ. VINYL, COLOR: TBD
- HIGH SCHOOL FOOTBALL GOALPOST SEWN INTO MESH

4 CURTAIN : MODEL# 4025 SLOPE FOLD-UP NETTING
- 84' LENGTH (QTY: 3)
- OVERALL HEIGHT VARIES: 45'-6" AT PEAK, 30' AT WALL
  - VINYL COATED POLYESTER MESH, COLOR: TBD
  - 3'-0" SOLID 18 OZ. VINYL, COLOR: TBD

5 CURTAIN : MODEL# 4025 SLOPE FOLD-UP NETTING
- 84' LENGTH (QTY: 3)
- OVERALL HEIGHT VARIES: 45'-6" AT PEAK, 30' AT WALL
  - VINYL COATED POLYESTER MESH, COLOR: TBD
  - 3'-0" SOLID 18 OZ. VINYL, COLOR: TBD

6 CURTAIN : MODEL# 4020R FOLD-UP RADIUS NETTING
- 132'-8" LENGTH (QTY: 2)
- 30' OVERALL HEIGHT
  - 27'-0" VINYL COATED POLYESTER MESH, COLOR: TBD
  - 3'-0" SOLID 18 OZ. VINYL, COLOR: TBD

7 CURTAIN : MODEL# 4020R FOLD-UP RADIUS NETTING
- 48'-6" LENGTH (QTY: 2)
- 30' OVERALL HEIGHT
  - 24'-0" VINYL COATED POLYESTER MESH, COLOR: TBD
  - 3'-0" SOLID 18 OZ. VINYL, COLOR: TBD

8 MODEL# 4080BL-TG BOTTOM LIFT BATTING CAGE (QTY: 2)
- 12'h X 12'w X 70'l
- 1-3/4" MESH, COLOR: BLACK

9 CURTAIN HOIST MOTOR
- 3-HP
- MODEL# 4002-R000
- 115v, 1PH, 60HZ
- WEIGHT: 50 lbs

10 CURTAIN HOIST MOTOR
- 1HP
- MODEL# 4005SF
- 115v, 1PH, 60HZ
- WEIGHT: 50 lbs

11 TOUCHSCREEN SYSTEM CONTROL
- MODEL# TSC150GN_WIFI
- WALL MOUNTED WITH A LOCKABLE ENCLOSURE
- COORDINATE WITH ELECTRICAL DRAWINGS

NOTES:
1. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION AND DETAILS RELATED TO STRUCTURAL LOAD POINTS.
2. REFER TO ELECTRICAL DRAWINGS FOR CIRCUITING RELATED TO NETTING MOTORS.
3. FINAL INSTALLATION LOCATION TO BE COORDINATED WITH OWNER

CAUTION:

KEY SWITCH MUST BE LOCATED IN AN AREA THAT ALLOWS THE CURTAIN TO BE VISIBLE TO THE OPERATOR

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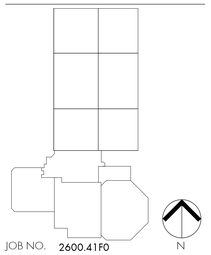

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SHEET TITLE

ATHLETIC NET LAYOUT

SHEET NO.

I103

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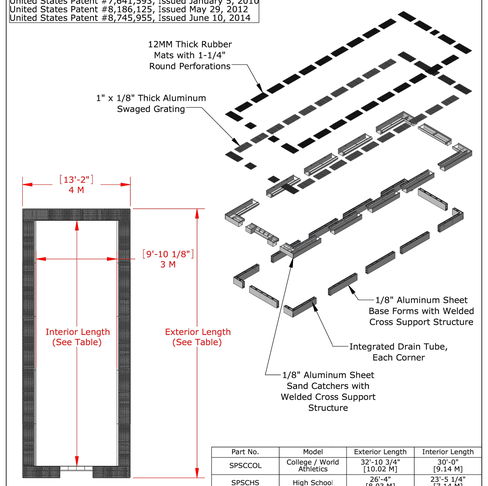
United States Patent #7,641,593, Issued January 5, 2010
United States Patent #8,186,125, Issued May 29, 2012
United States Patent #8,745,955, Issued June 10, 2014



Part No.	Model	Exterior Length	Interior Length
SPSCCOL	College / World Athletics	32'-10 3/4" [10.02 M]	30'-0" [9.14 M]
SPSCHS	High School	26'-4" [8.03 M]	23'-5 1/4" [7.14 M]

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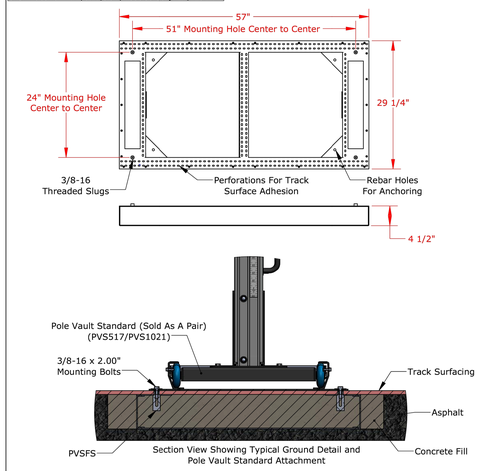
U.S. Patent # 10,604,952, Issued March 31, 2020
U.S. Patent # 11,072,902, Issued July 27, 2021



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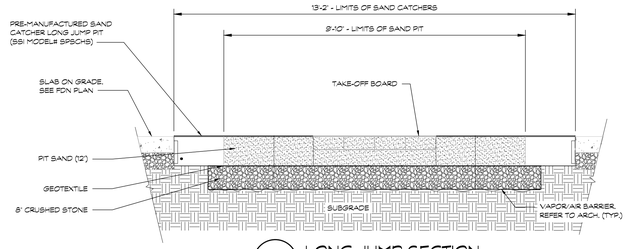
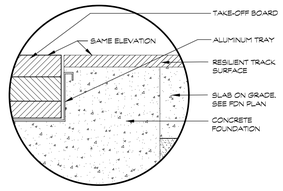
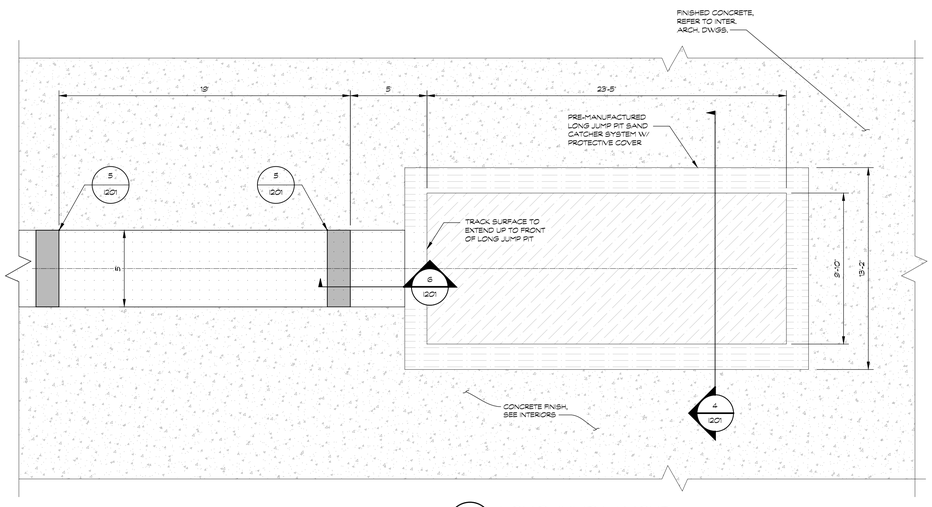


4 LONG JUMP SECTION
SCALE 1/2"=1'-0"

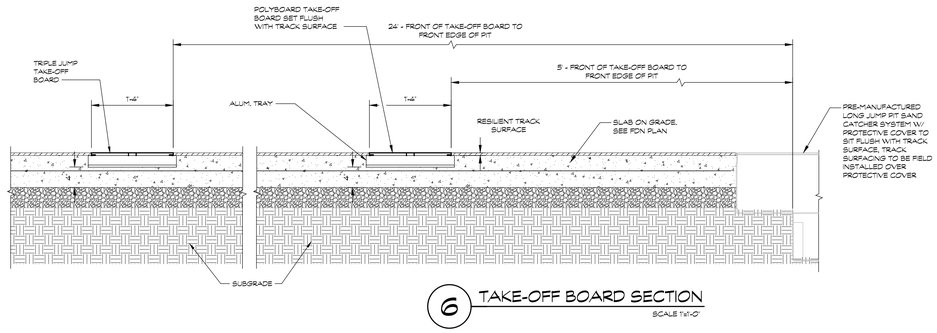


NOTE:
1. TAKE-OFF BOARD AND TRAY MUST BE INSTALLED PRIOR TO INSTALLATION OF THE ALL-WEATHER SURFACE. SEE MFR. CUT SHEET FOR TRAY INSTALLATION.
2. ARTIFICIAL RUNWAY SURFACE SHOULD BE TRIMMED EVEN WITH THE INSIDE EDGE OF THE TRAY.
3. THE TOP OF THE TAKE-OFF BOARD SHALL BE LEVEL WITH TOP OF ALL-WEATHER SURFACE. ADJUST AS REQUIRED FOR DIFFERENT SURFACE THICKNESS.

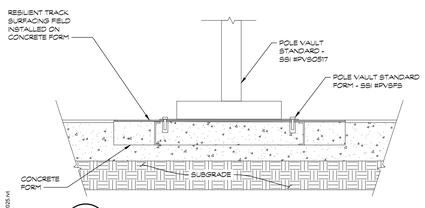
5 TAKE-OFF BOARD SECTION
NTS



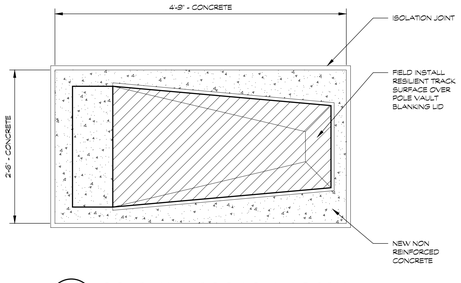
3 LONG JUMP LAYOUT
SCALE 1/4"x1'-0"



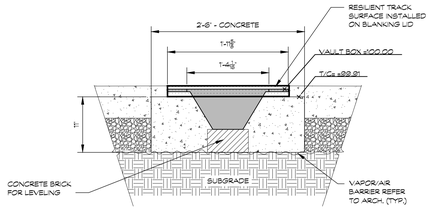
6 TAKE-OFF BOARD SECTION
SCALE 1"x1'-0"



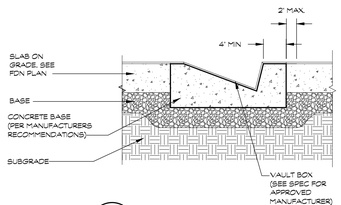
7 POLE VAULT STANDARD SECTION
SCALE 1"x1'-0"



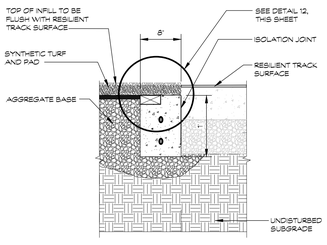
8 POLE VAULT BOX PLAN DETAIL
SCALE 1"x1'-0"



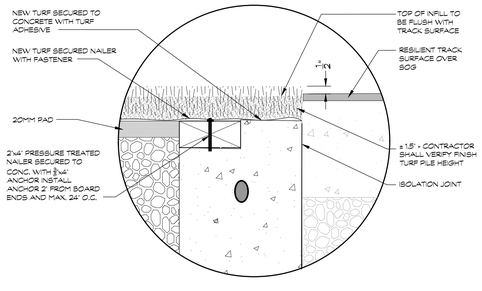
9 POLE VAULT BOX PLAN DETAIL
SCALE 1"x1'-0"



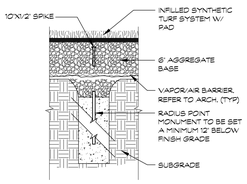
10 POLE VAULT BOX SECTION
SCALE 1"x1'-0"



11 CONCRETE TURF ANCHOR
SCALE 1"x1'-0"



12 CONCRETE TURF ANCHOR
SCALE 3"x1'-0"



13 RADIUS POINT MARKER
N.T.S.

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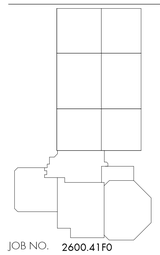
CONSTRUCTION DOCUMENTS	07.30.2026



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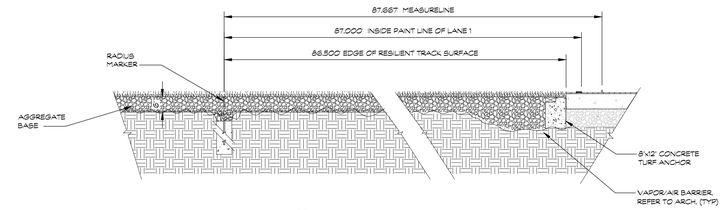
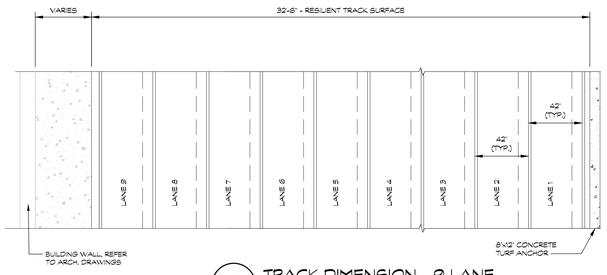
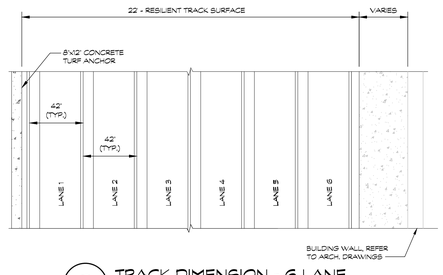
NOTE:
216.750 DISTANCE BETWEEN RADIUS POINTS



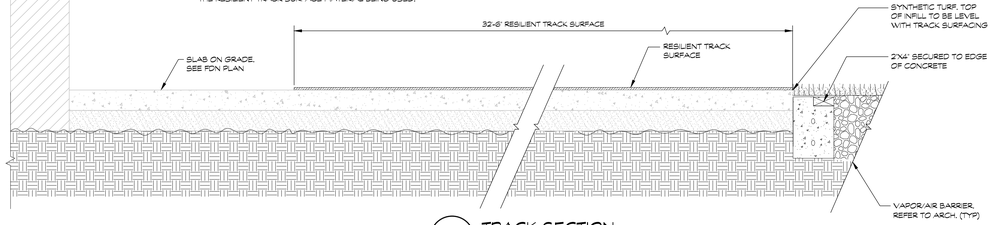
1 TRACK DIMENSION
SCALE 1/2"=1'-0"



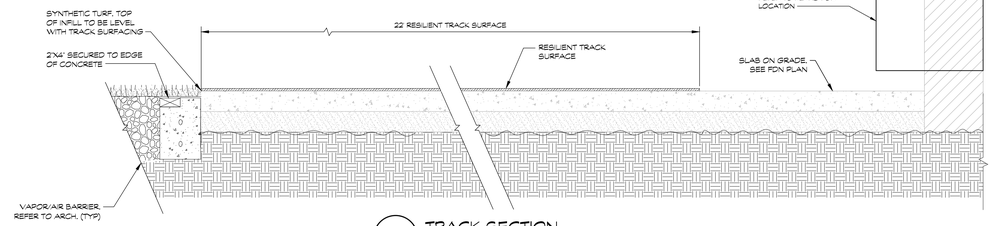
2 TRACK DIMENSION - 9 LANE
SCALE 1/4"=1'-0"



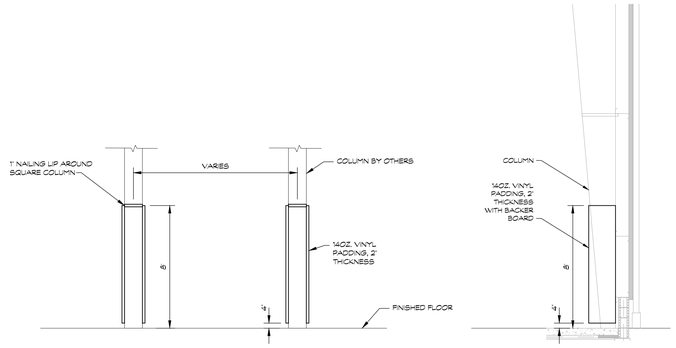
3 TRACK DIMENSION - 6 LANE
SCALE 1/4"=1'-0"



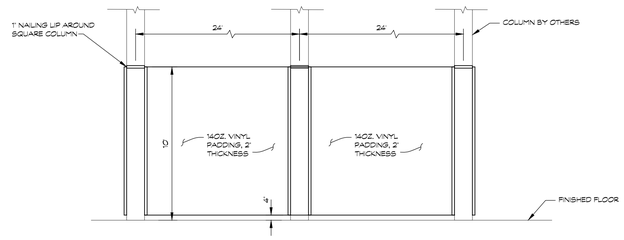
4 TRACK SECTION
SCALE 1"=1'-0"



5 TRACK SECTION
SCALE 1"=1'-0"

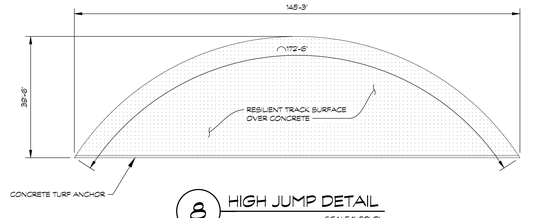


6 WALL PAD ELEVATION
COLUMNS SCALE 1/4"=1'-0"



7 WALL PAD ELEVATION
ADJACENT TO POLE VAULT SCALE 1/4"=1'-0"

NOTE:
COORDINATION IS REQUIRED BETWEEN THE CONCRETE INSTALLER AND SURFACE INSTALLER TO ENSURE THE PROPER CONCRETE FINISH REQUIRED FOR A MECHANICAL BOND WITH THE RESILIENT TRACK SURFACE MATERIAL BEING USED.



8 HIGH JUMP DETAIL
SCALE 1"=20'-0"

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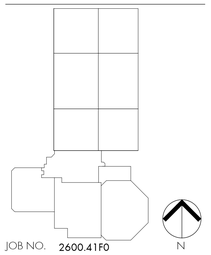

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SHEET NO.

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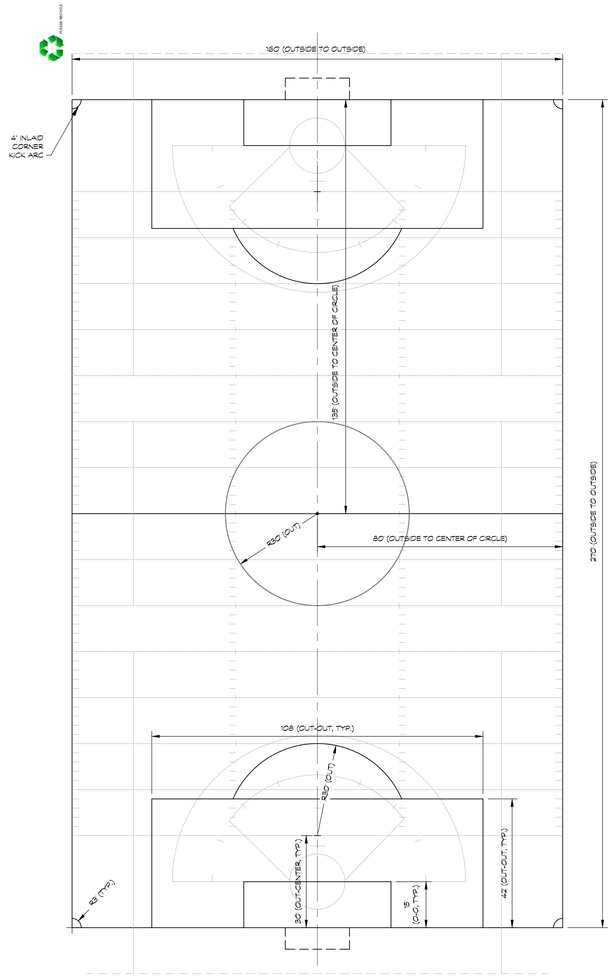
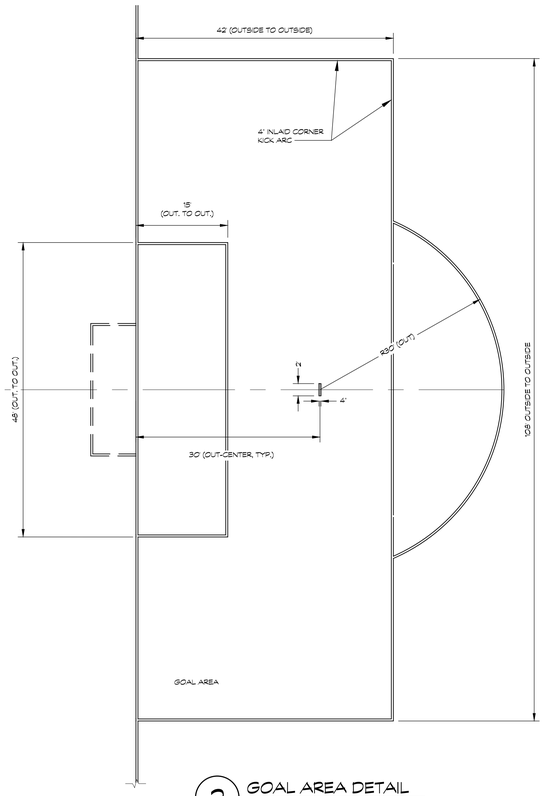


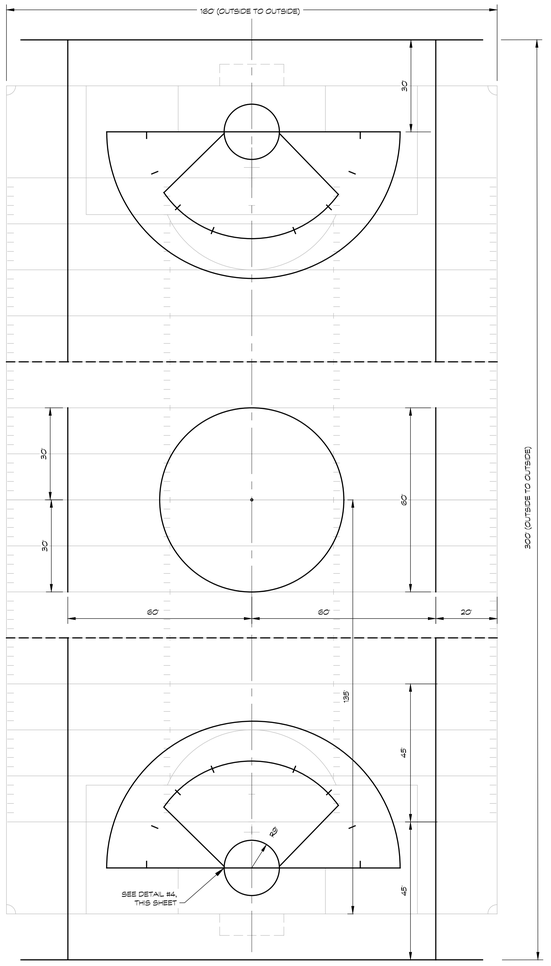
1 SOCCER FIELD LAYOUT DETAIL
SCALE 1"=20'-0"

SOCCER FIELD NOTES

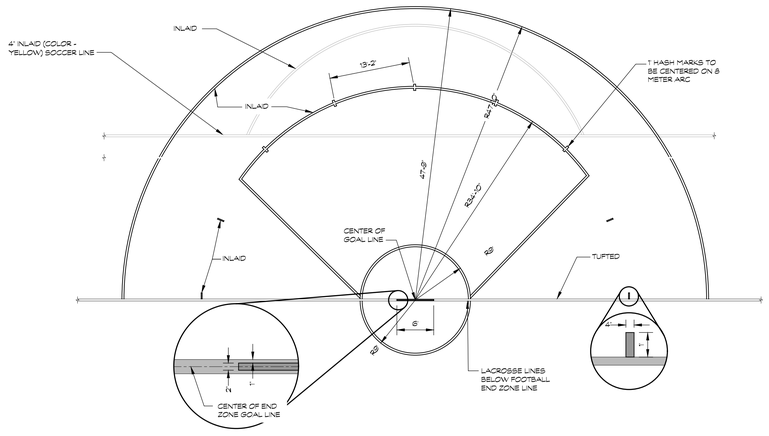
1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS. ALL LINE WORK SHALL BE LAID OUT WITH A TOLERANCE OF 1/4 INCH.
2. ALL SOCCER LINES ARE 4 INCH (COLOR - YELLOW) INLAID TURF AS DIMENSIONED ON THE SOCCER LAYOUT DETAIL PLAN.
3. THE SOCCER GOAL AREA IS 15' X 48', REFER TO PLAN FOR LOCATION. THE SOCCER PENALTY AREA IS 42' X 108', REFER TO PLAN FOR LOCATION.
4. THE PENALTY MARK IS AN INLAID LINE, 24' IN LENGTH, 4' WIDE, 30' FROM GOAL LINE AND CENTERED ON THE GOAL. THE RESTRAINING LINE FOR PENALTY KICKS IS AN ARC 30' FROM THIS MARK OUTSIDE OF THE PENALTY AREA. REFER TO THE PLAN FOR LOCATION.
5. THE HALFWAY LINE FOR THE SOCCER FIELD IS A 4' (COLOR - YELLOW) LINE WITH A CIRCLE 30' IN RADIUS IN THE CENTER OF THE FIELD, REFER TO THE PLAN FOR LOCATION.
6. THE CORNERS OF THE SOCCER FIELD SHALL HAVE A 3' ARC RADIUS IN YELLOW DESIGNATING THE CORNER KICK AREA.
7. THE CENTER KICK-OFF CIRCLE IS A 9' DIAMETER CIRCLE, INLAID (CORLOR - YELLOW).



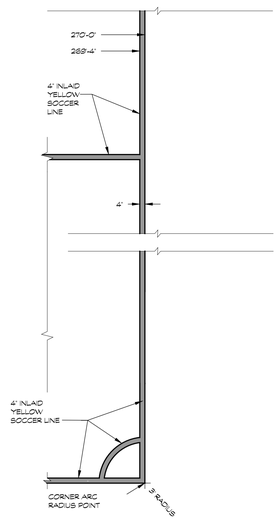
2 GOAL AREA DETAIL
SCALE 1"=10'-0"



3 UNIFIED LACROSSE FIELD LAYOUT DETAIL
SCALE 1"=20'-0"



4 UNIFIED LACROSSE GOAL AREA DETAIL
SCALE 1"=10'-0"



5 CORNER KICK DETAIL
SCALE 1/4"=1'-0"

LACROSSE LAYOUT NOTES:

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS.
2. ALL LINE WORK IS TO BE LAID OUT WITH A TOLERANCE OF 1/4 INCH.
3. ALL LACROSSE LINES ARE TO BE 4 INCHES WIDE EXCEPT FOR THE GOAL LINE WHICH SHALL BE 2". ALL LACROSSE LINES SHALL BE BLACK IN COLOR.
4. THE LACROSSE GOAL AREA IS A 9 FOOT RADIUS CIRCLE WITH A 6 FOOT GOAL LINE IN THE CENTER. REFER TO DETAIL 4.
5. THE 8 METER ARC HAS A RADIUS OF 34'-10" FROM THE CENTER OF THE GOAL LINE WITH 1 FOOT HASH MARKS 13'-2" APART AND EQUADISTANT FROM EACH OTHER. THE 12 METER FAN IS A 47'-9" RADIUS CIRCLE FROM THE CENTER OF THE GOAL LINE. REFER TO DETAIL #4, THIS SHEET.

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SOCCER & UNIFIED LACROSSE DETAILS

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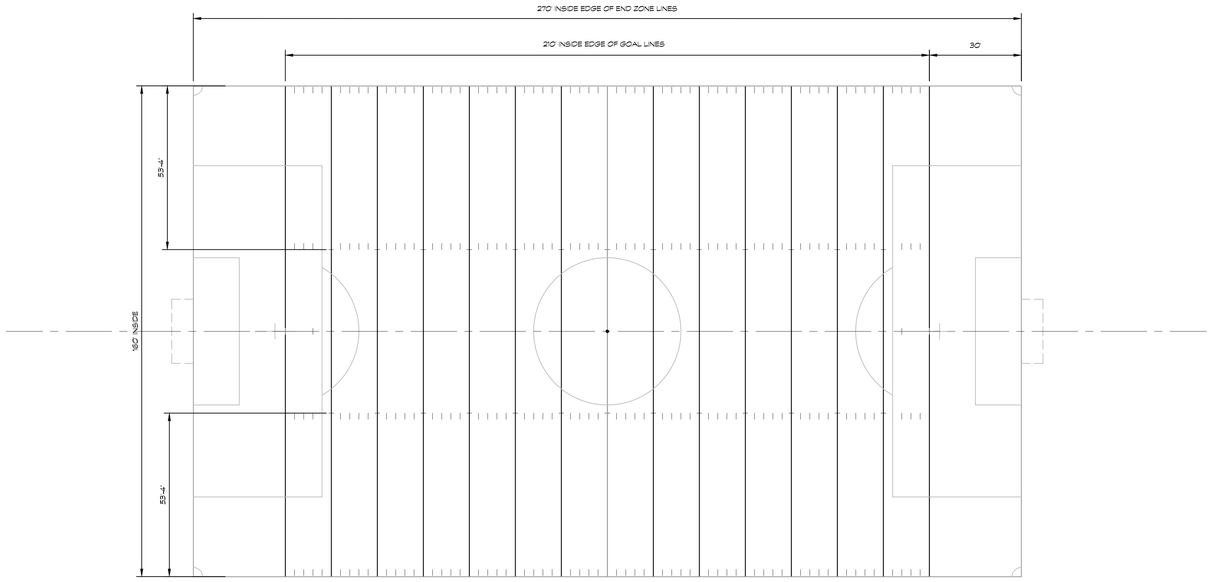
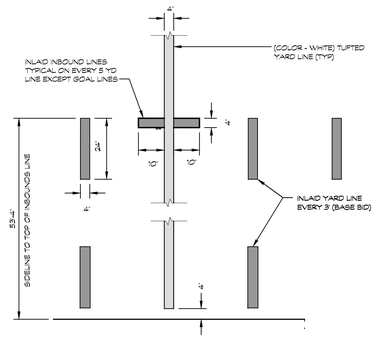


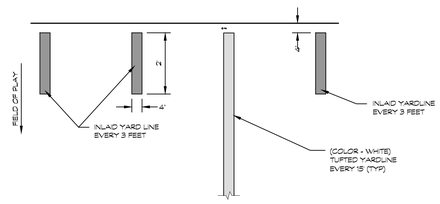
1 FOOTBALL LAYOUT PLAN
SCALE 1"=20'-0"

FIELD LAYOUT NOTES:

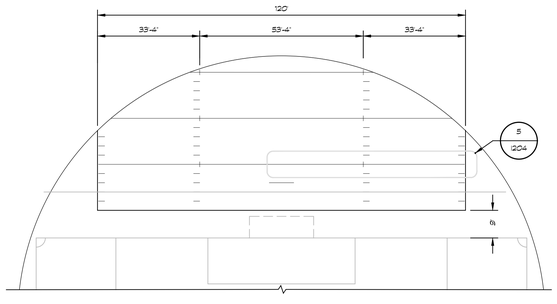
1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS. ALL LINE WORK IS TO BE LAID OUT WITH A TOLERANCE OF 1/4 INCH.
2. ALL YARDLINES SHALL BE 4 INCH, (COLOR - WHITE) TUFTED TURF, REFER TO DETAIL 3.
3. THE TWO INBOUNDS LINES ARE 53 FEET 4 INCHES FROM THE SIDELINES. INBOUNDS LINES AND SHORT YARDLINE EXTENSIONS SHALL BE 24 INCHES LONG AND 4 INCHES WIDE, INLAID - INBOUND ONLY. REFER TO DETAIL 3.
4. THE EXTRA POINT LINES ARE 6 FEET LONG, 4 INCHES WIDE, (COLOR - TBD) TUFTED LINES AT THE CENTERLINE OF THE FIELD AND THE 3 YARDLINE ON EACH END OF THE FIELD. REFER TO PLAN FOR LOCATION.



2 INBOUND LINE DETAIL
SCALE 1/2"=1'-0"



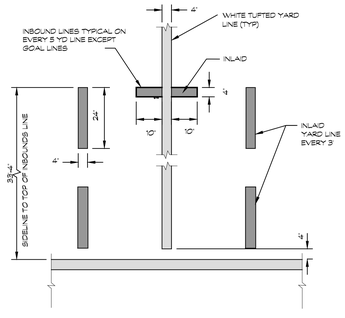
3 SIDELINE DETAIL
SCALE 1/2"=1'-0"



4 D-ZONE MARKING DETAIL
SCALE 1"=20'-0"

FIELD LAYOUT NOTES:

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS.
2. ALL LINE WORK IS TO BE LAID OUT WITH A TOLERANCE OF 1/4 INCH.
3. ALL YARDLINES SHALL BE 4 INCH, WHITE .
4. 24 INCH SHORT YARDLINE EXTENSIONS, 4 INCHES FROM THE SIDELINES SHALL BE 4 INCHES WIDE, WHITE, INLAID LINES.
5. TWO SETS OF INBOUNDS LINES ARE 33'-4" FEET 0 INCHES FROM THE SIDELINES. INBOUNDS LINES AND SHORT YARDLINE EXTENSIONS SHALL BE 24 INCHES LONG AND 4 INCHES WIDE, INLAID - INBOUND ONLY.
6. THE EXTRA POINT LINES ARE 6 FEET LONG, 4 INCHES WIDE, WHITE TUFTED LINES AT THE CENTERLINE OF THE FIELD AND THE 3 YARDLINE ON EACH END OF THE FIELD. REFER TO PLAN FOR LOCATION.



5 INBOUND LINE DETAIL
SCALE 1/2"=1'-0"

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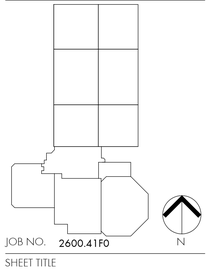

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SHEET TITLE
FOOTBALL DETAILS

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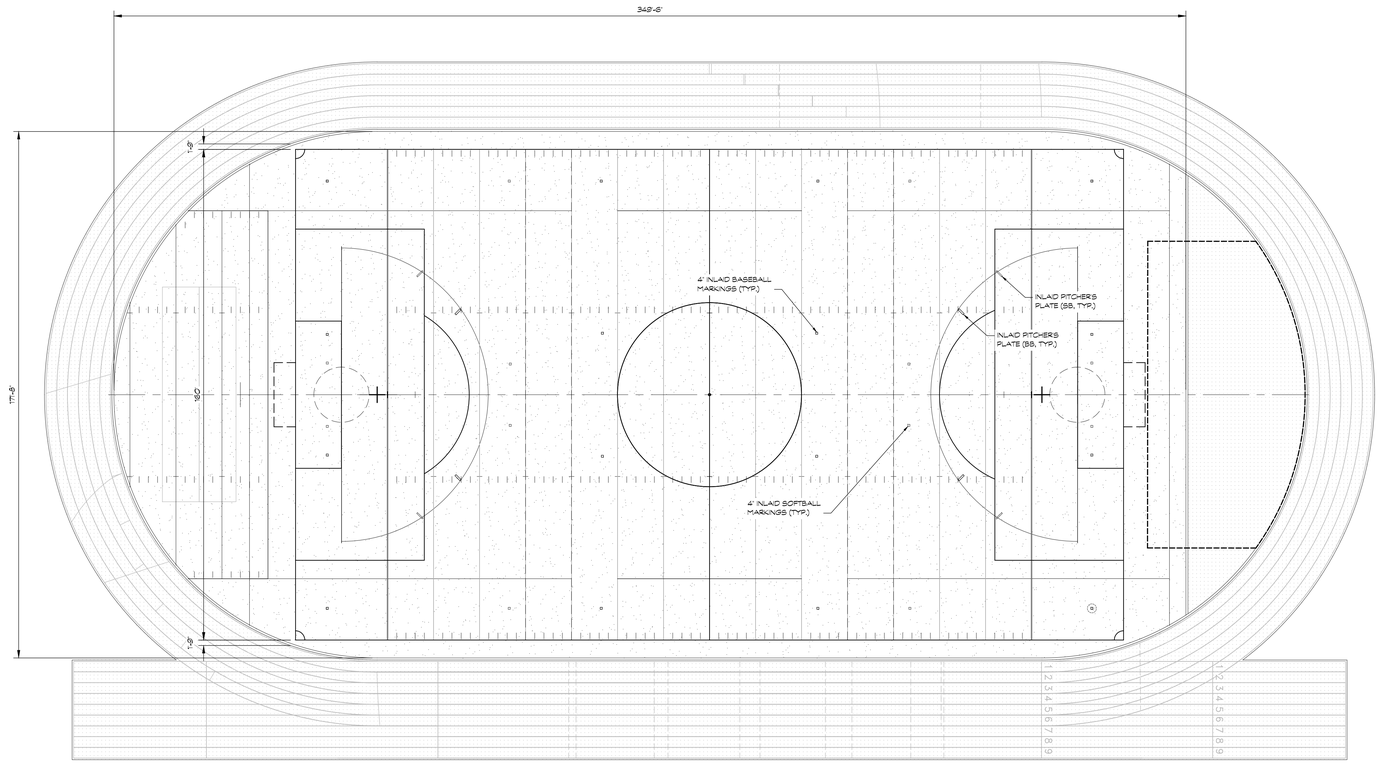
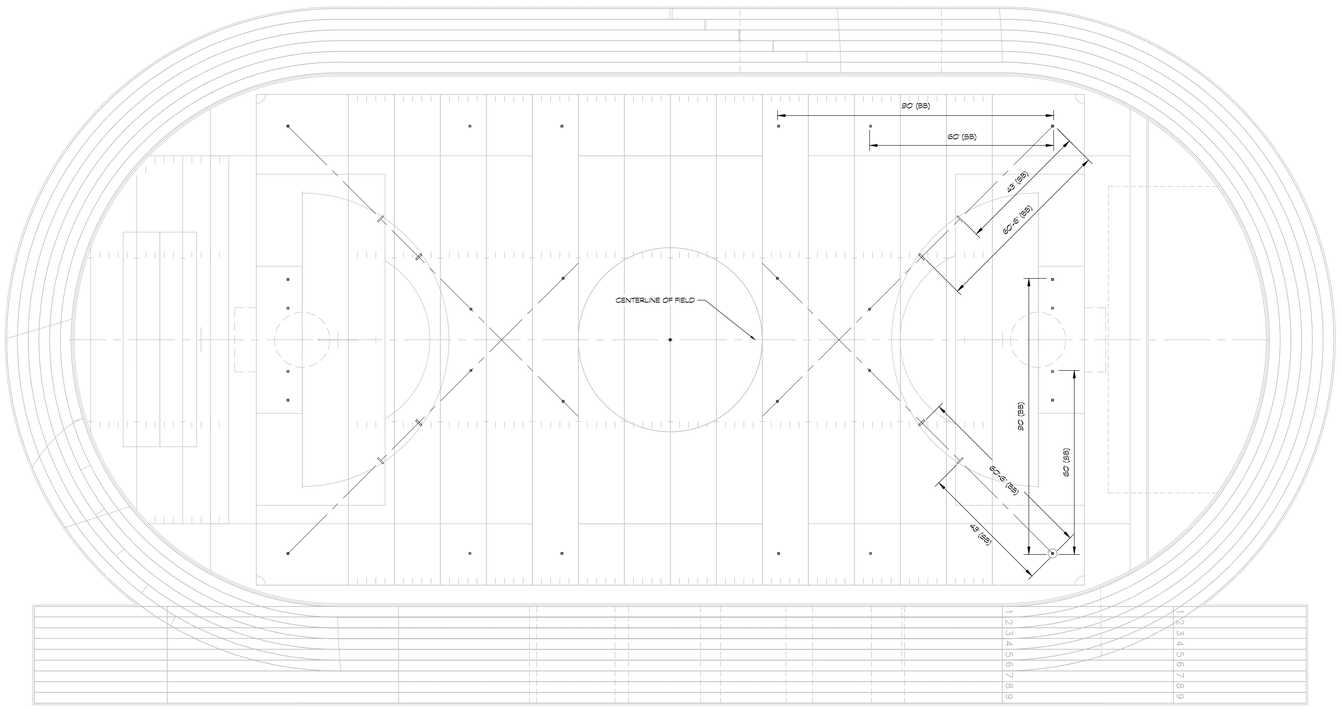


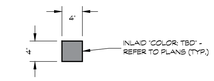
1 SYNTHETIC TURF LAYOUT
SCALE 1"=20'-0"



2 BASEBALL & SOFTBALL MARKINGS LAYOUT
SCALE 1"=20'-0"

NOTE: TICK MARKS TO BE INSTALLED SO EDGES ALIGN WITH BASE PATHS AS INDICATED ON DRAWINGS

MARKINGS SHALL BE INSTALLED IN OPPOSITE 'COLOR TBD' COLOR OF SURROUNDING TURF PANEL



HOME PLATE AND BASES



PITCHING RUBBER

3 INLAID BASEBALL/SOFTBALL DETAILS
SCALE 1"=1'-0"

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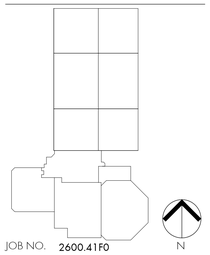
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07.30.2026



JOB NO. 2600.41F0

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SHEET TITLE

FIELD GRAPHICS PLAN

SHEET NO.

1205

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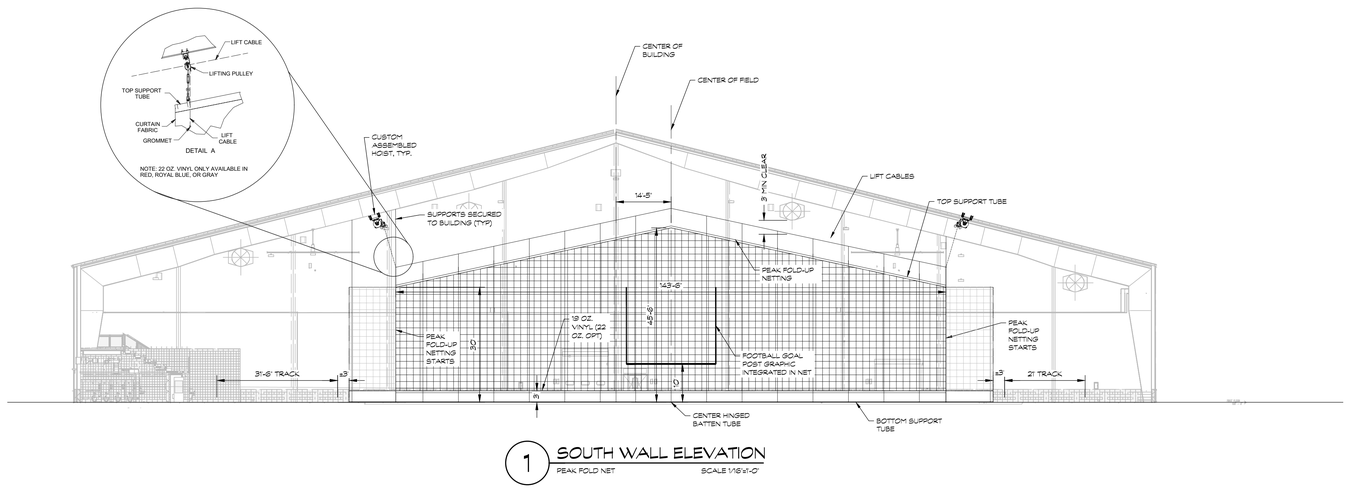
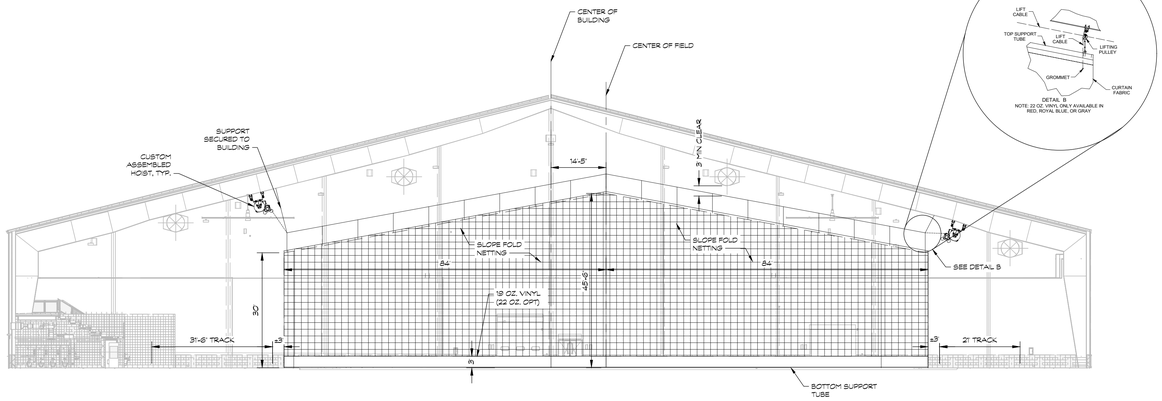
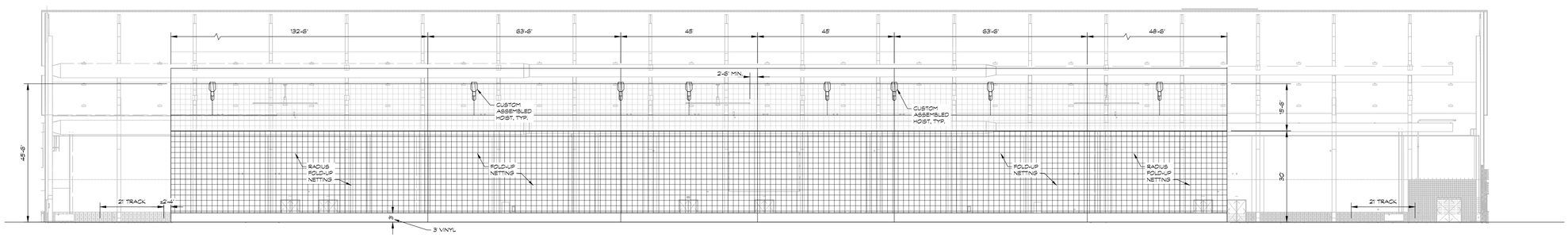


1 SOUTH WALL ELEVATION
PEAK FOLD NET — SCALE 1/16"=1'-0"



2 NETTING ELEVATION
SLOPE FOLD NET — SCALE 1/16"=1'-0"



3 WEST WALL ELEVATION
SCALE 1/16"=1'-0"

INDOOR PROTECTIVE NETTING
DELEGATED DESIGN NOTES:

1. DESIGN INTENT AND PROPOSED NETTING SYSTEM IS DIAGRAMMATIC ONLY. SYSTEM SHOWN IS INTENDED TO DEPICT GENERAL DESIGN LAYOUT, EXTENTS, AND HEIGHTS OF NEW PROTECTIVE NETTING SYSTEM REFLECTED ON THE DRAWINGS. FINAL DESIGN IS THE RESPONSIBILITY OF THE DELEGATED DESIGN ENGINEER. PROVIDE A COMPLETE DESIGN, ENGINEERING, AND FABRICATION OF THE PROTECTIVE NETTING SYSTEM, INCLUDING ALL STRUCTURAL COMPONENTS, CABLING, NETTING MATERIAL, MOTORS, AND CONTROLLERS.
2. THE PROTECTIVE NETTING SYSTEM AND FOUNDATIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER, LICENSED IN MICHIGAN, RETAINED BY THE CONTRACTOR/MANUFACTURER. ENGINEERED SYSTEM SHALL INCLUDE THE FOLLOWING:
   - NETTING MATERIAL AND MESH SIZING APPROPRIATE FOR INTENDED USE
   - SUPPORT SYSTEM: POSTS, POLES, AND CABLING AS NECESSARY
   - ANCHORAGE, EMBEDS, AND CONNECTION HARDWARE
   - TENSIONING SYSTEMS, CABLES, AND ATTACHMENT METHODS
   - INTERFACE WITH ADJACENT STRUCTURES (BUILDINGS, SUPPORT BEAMS, ETC.)
   - COMPLETE MOTOR OPERATED SYSTEM INCLUDING MOTORS, DRIVES, CONTROLLERS, LIMIT SWITCHES, SAFETY DEVICES, AND ALL ASSOCIATED ACCESSORIES. COORDINATE ELECTRICAL REQUIREMENTS INCLUDING POWER, CONTROLS, AND INTERFACES.
3. MANUFACTURER IS RESPONSIBLE TO PROVIDE SIGNED AND SEALED ENGINEERED DRAWINGS AND STRUCTURAL CALCULATIONS. SYSTEM SHALL BE DESIGNED FOR ANTICIPATED IMPACT LOADS ASSOCIATED WITH INTENDED USE, INCLUDING BUT NOT LIMITED TO BALL STRIKE LOADS AND REBOUND FORCES. DYNAMIC EFFECTS FROM MOTOR START/STOP AND NET DEPLOYMENT SHALL BE INCLUDED IN DESIGN.
4. ALL DIMENSIONS SHOWN OF PROPOSED ITEMS OR TO EXISTING FEATURES SHALL BE FIELD VERIFIED PRIOR TO FABRICATION OR INSTALLATION.
5. CONTRACTOR SHALL COORDINATE WITH STRUCTURAL ENGINEER FOR ACCEPTABILITY OF LOADS AND REQUIRED REINFORCEMENTS.
6. COORDINATE WITH ALL CONSULTANT DRAWINGS.
7. SYSTEM SHALL COMPLY WITH ALL APPLICABLE CODES.
8. MANUFACTURER SHALL PROVIDE INSTALLATION REQUIREMENTS AND SUPERVISION OR CERTIFICATION OF INSTALLATION AS REQUIRED TO ENSURE SYSTEM PERFORMS AS DESIGNED.
9. SYSTEM SHALL BE DESIGNED AS A COMPLETE FUNCTIONAL SYSTEM CAPABLE OF SAFE, RELIABLE OPERATION UNDER ALL INTENDED USE CONDITIONS.

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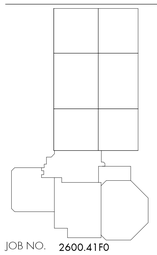

JOB NO. 2600.41F0

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SHEET TITLE
NETTING ELEVATION DETAILS

SHEET NO.
1206

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TASK	FURNISH	INSTALL
CEILING MOUNTED LOUDSPEAKERS	AV	AV
AUDIOVISUAL CABLE	AV	AV
AUDIOVISUAL EQUIPMENT AND RACK	AV	AV
TERMINATIONS OF AUDIOVISUAL CABLE	AV	AV
CABLE MANAGEMENT HARDWARE AT RACKS AND CONSOLES	AV	AV
CUSTOM COVER PLATES FOR FLOOR BOXES, BACK BOXES	AV	AV
UNISTRUT, ANCHORS, OR OTHER MATERIALS REQUIRED TO ATTACH AUDIOVISUAL EQUIPMENT MOUNTS TO STRUCTURE	AV	AV
FACILITY VOICE/DATA CABLING AND REQUIRED CONNECTION LOCATIONS	DC	DC
AC POWER, CONDUIT, RACEWAYS, ELECTRICAL BACKBOXES, JUNCTION BOXES, PULL BOXES, CABLE TRAYS, FLOOR BOXES AND ENCLOSED CABLE PATH INFRASTRUCTURE	EC	EC
FLOOR BOXES INCLUDING INTERNAL BRACKETS, TEMPORARY COVERS, AND PERMANENT COVERS	EC	EC
ROUGH OR FINISHED TRIM, CASEWORK, MILLWORK, EQUIPMENT CAVITIES, STRUCTURAL WORK, WHITE BOARDS, TACK BOARDS, OTHER NON-ELECTRONIC DISPLAY SURFACES, OR SPECIAL CONSTRUCTION	GC	GC
FLAT PANEL VIDEO DISPLAY BLOCKING FOR WALL MOUNTED DEVICES	GC	GC
TECHNICAL FURNITURE	GC	GC

DIVISON OF RESPONSIBILITY

The Electrical Contractor or "EC" will be responsible for the following:

*All high voltage wiring/terminations contained within this drawing set. Scope includes, but is not limited to:

PROVISION AND INSTALLATION OF:

*Conduit, gang boxes, pull boxes, and pull string required for the audio and video systems.

*All junction boxes and in-wall enclosures required for the audio communications system. Sizes of all junction boxes and enclosures will be indicated on the audio/video drawings. All junction boxes, pull boxes, and wall mounted enclosures are to be clearly labeled with permanent marker. Refer to audio/video drawings for labeling.

*AC power circuits, outlets, and interconnection of power to each video projector location.

*All AC power circuits, outlets, power panels and interconnection of power to the sound equipment racks.

*Wherever possible, all audio circuits shall be supplied from the same A/V electrical panel.

*The designated A/V power panel (if appropriate to the project) shall not furnish power to any other equipment.

*All high voltage wiring and terminations for projector screens and up/down switches

CONDUIT GENERAL NOTES FOR ELECTRICAL CONTRACTOR

- EC to provide and install all conduit, backboxes, gutter boxes, terminal cans, raceways, cable trays and access panels unless otherwise noted.

- EC to install pull lines in all conduits.

- EC shall not substitute conduit type without written permission from the consultant.

- Conduit runs are drawn for illustration only. Actual conduit paths & interim boxes to be determined by the EC.

- EC may increase the size of junction boxes, gutters & conduit as needed in the event that a conflict exists.

- EC to provide and install all high voltage (120V - 240V) cable and fixtures unless otherwise notes.

- Install applicable size pull boxes after 270 deg. of bend or if conduit run is more than 100'.

- Label all conduit for destinations such as box numbers and/or room locations.

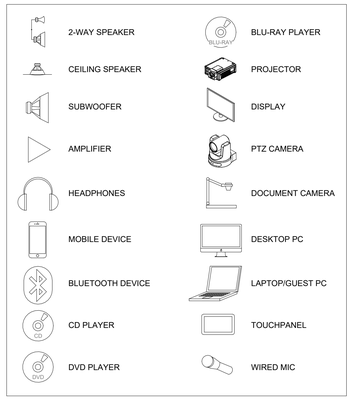
- Deburr all rough edges to prevent cable abrasion.

- Ensure all conduits are free from debris & water.

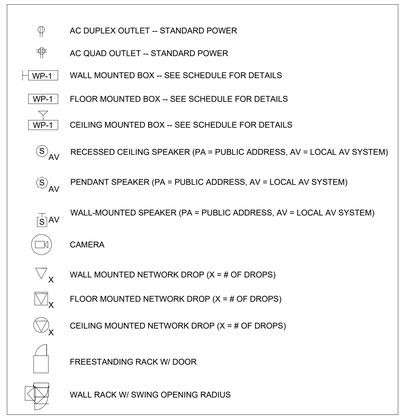
- Ensure all in ground pull boxes and vaults are weather proof & free of debris & water.

- Ensure conduit is electrically isolated from all equipment racks & enclosures.

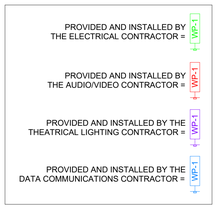
ADDITIONAL RESPONSIBILITIES



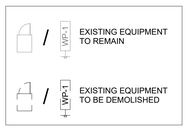
AV SCHEMATIC SYMBOLS



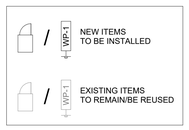
AV PLAN/RCP SYMBOLS



ITEM STYLE - TRADES BY COLOR



ITEM STYLE - EXISTING



ITEM STYLE - NEW

PREFIX	EQUIPMENT NAME ABBREVIATIONS
A	AUDIO AMPLIFIER
ADA	AUDIO DISTRIBUTION AMP
ADT	ANTENNA DISTRIBUTION
ALS	ASSISTED LISTENING SYSTEM
AMN	AUDIO MONITOR
ANT	ANTENNA
APB	AUDIO PATCHBAY
ASP	ANTENNA SPLITTER
ATX	AUDIO TRANSFORMER
AVR	AUDIO-VIDEO RACK
CAM	VIDEO CAMERA
CCU	CAMERA CONTROL UNIT
CFR	CARD/MODULE FRAME
CGN	VIDEO CHARACTER GENERATOR
CMB	SIGNAL COMBINER
COM	PRODUCTION COMMUNICATIONS
CON	DEVICE CONTROLLER
CPU	COMPUTER
CS	INTEGRATED CEILING LOUDSPEAKER & BACKCAN
CTL	CONTROL SYSTEM
CVT	VIDEO FORMAT CONVERTER
DPB	DATA PATCHBAY
DSP	DIGITAL SIGNAL PROCESSOR
DSW	DATA NETWORK SWITCH
DVD	DIGTIAL VIDEO DISC PLAYER/RECORDER
ER	EQUIPMENT RACK
FB	FLOOR BOX
GUI	GRAPHICAL USER INTERFACE
JB	JUNCTION BOX
MIC	WIRED MIC
MIX	AUDIO MIXER
MJ	MIC JUNCTION BOX
MON	VIDEO MONITOR

PREFIX	EQUIPMENT NAME ABBREVIATIONS
MP	MIC PLATE
PRB	ACTIVE PRESS BOX
PRJ	VIDEO PROJECTOR
PSU	POWER SUPPLY UNIT
PTC	PAN TILT CONTROLLER
PTU	PAN TILT UNIT
PWR	AC POWER DISTRIBUTION
RMT	REMOTE CONTROL
RP	RACK PANEL
RPB	RACKMOUNT PATCHBAY
RX	SIGNAL RECEIVER
SCR	PROJECTION SCREEN
SEQ	POWER SEQUENCING DEVICE
SIGN	DIGITAL SIGNAGE PLAYER
SJ	SPEAKER JUNCTION
SP	LOUDSPEAKER ENCLOSURE
SPLT	SIGNAL SPLITTER
SUB	SUBWOOFER
TP	TOUCH PANEL
TX	SIGNAL TRANSMITTER
VC	VOLUME CONTROL
VDA	VIDEO DISTRIBUTION AMP
VJ	VIDEO JUNCTION BOX
VP	VIDEO PLATE
VPB	VIDEO PATCHBAY
VSG	VIDEO SYNC GENERATOR
VSP	VIDEO SIGNAL PROCESSOR
VSW	VIDEO SWITCHER
WM	WIRELESS MICROPHONE
WP	WALL PLATE
WRX	WIRELESS RECEIVER
WTX	WIRELESS TRANSMITTER

EQUIPMENT NAME ABBREVIATIONS

CODE	GENERAL ABBREVIATIONS
AFF	ABOVE FINISHED FLOOR
AV	AUDIO VISUAL CONTRACTOR
DC	DATA COMMUNICATIONS CONTRACTOR
EC	ELECTRICAL CONTRACTOR
EXS	EXISTING EQUIPMENT
FBO	FURNISHED BY OTHERS
FC	FURNITURE CONTRACTOR
FL	FLUSH MOUNT
FOH	FRONT OF HOUSE
GC	GENERAL CONTRACTOR

CODE	GENERAL ABBREVIATIONS
LAN	LOCAL AREA NETWORK
NTS	NOT TO SCALE
O	OWNER
OFE	OWNER FURNISHED EQUIPMENT
RCP	REFLECTED CEILING PLAN
RK	RACK MOUNT
SR	SURFACE MOUNT
SSH	STANDARD SWITCH HEIGHT
SWL	SAFE WORKING LOAD
TBD	TO BE DETERMINED
UON	UNLESS OTHERWISE NOTED

GENERAL ABBREVIATIONS

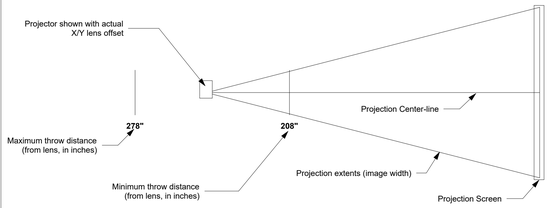
The detail drawing below shows a representation of the calculated throw range for the specified projector in each room layout's reflected ceiling plan (RCP).

**NOTE: This detail is provided as a reference ONLY.

All throw distances are based off of the center of the lens to the center of the projection screen.

Due to the variance in the outer edges of the actual lens optics, it is always a best practice to place the projector as closer to the center of the throw range as possible (also referred to as the "sweet spot").

Minimum and maximum extents are shown to define the possible locations of the projector should any mechanical issues in the field make it necessary to move the projector as a last resort.

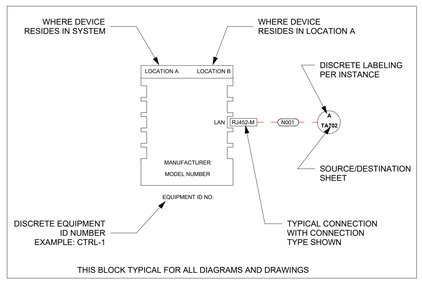


Installation teams shall always verify these calculations prior to any installation activities as a secondary process check.

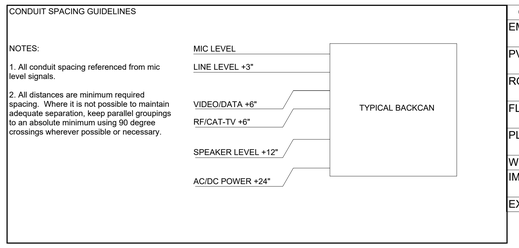
Prior to installation, these items should be reviewed and confirmed:

1. The projected light path is clear from interference, and/or any obstructions.
2. The area for the projector to be installed, physically, is clear of any mechanical obstructions, or items that will hinder the placement of the projector.

PROJECTOR THROW RANGE DETAIL (RCP ONLY)



SCHEMATIC DEVICE KEY

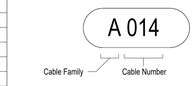


CONDUIT SEPARATION TOLERANCES AND TYPES

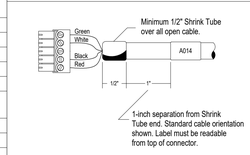
CODE	CONDUIT TYPES
EMT	ELECTRICAL METALLIC TUBING
PVC	POLY-VINYL CHLORIDE
RGD	GALVANIZED RIGID METAL
FLX	FLEXIBLE METALLIC TUBING
PLS	FLEXIBLE PLASTIC TUBING
WMT	WIRE MOLD TRACK
IMC	INTERMEDIATE METAL CONDUIT
EXST	EXISTING CONDUIT

FAMILY	SIGNAL TYPE
A	Serial
B	Broadband
C	Video
D	DVI Video
E	Digital Media
F	Fiber Optic
G	AES/EBU
H	HDMI
I	IR/S
J	Optical Audio
K	Control Network
L	Line-Level
M	Microphone
N	Network
O	I/O
P	Power
Q	Component Video
R	Relay
S	Speaker
T	DMX
U	UTP Signal
V	Digital Video
W	RGB Signal
X	Antenna
Y	Y/C S-Video
Z	SDI Video

CABLE LABEL DETAIL



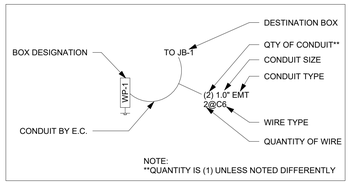
SHRINK WRAP DETAIL



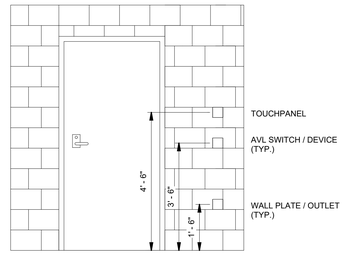
NOTES:

1. All exposed cable strip-points must have heat-shrink tubing applied.
2. Consult project documents for specific colors if required.

CABLE LABELING



WIRE PULL PLAN/RCP DETAIL



NOTE: ALL MOUNTING HEIGHTS FOR AVL BOXES IN THIS PROJECT MEASURED TO CENTER OF BOX

MOUNTING HEIGHT DETAIL

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE

SHEET LIST - TA SERIES	
NUMBER	NAME
TA001	AV SYMBOLS, NOTES, DIVISION OF LABOR
TA002	AV SCHEDULES
TA201	AV PLAN - FIRST FLOOR - UNIT 1400 OVERALL
TA201A	AV PLAN - FIRST FLOOR - UNIT 1400A, 1400B
TA201B	AV PLAN - FIRST FLOOR - UNIT 1400C, 1400D
TA201C	AV PLAN - FIRST FLOOR - UNIT 1400E, 1400F
TA201D	AV PLAN - FIRST FLOOR - UNIT 1300A
TA202B	AV PLAN - SECOND FLOOR - UNIT 1400C, 1400D
TA202C	AV PLAN - SECOND FLOOR - UNIT 1400E, 1400F
TA202D	AV PLAN - SECOND FLOOR - UNIT 1300A
TA211	AV RCP - FIRST FLOOR - UNIT 1400 OVERALL
TA211A	AV RCP - FIRST FLOOR - UNIT 1400A, 1400B
TA211B	AV RCP - FIRST FLOOR - UNIT 1400C, 1400D
TA211C	AV RCP - FIRST FLOOR - UNIT 1400E, 1400F
TA211D	AV RCP - FIRST FLOOR - UNIT 1300A
TA301	AV SECTIONS, ELEVATIONS
TA401	AV RACKS, PLATES, DETAILS
TA402A	AV DETAILS - LED-1 - GENERAL DIMENSIONS
TA402B	AV DETAILS - LED-1 - DIMENSIONS, MOUNTING
TA402C	AV DETAILS - LED-1 - POWER DISTRIBUTION
TA402D	AV DETAILS - LED-1 - DATA DISTRIBUTION
TA402E	AV DETAILS - LED-1 - CABINET INDEXING DETAIL
TA403	AV TOUCHPANEL LAYOUTS
TA701	AUDIO SCHEMATIC - FIELD HOUSE
TA702	AUDIO SCHEMATIC - MULTIPURPOSE
TA703	VIDEO SCHEMATIC - FIELD HOUSE LED-1

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ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026

JOB NO. 2600.41F

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SHEET TITLE

AV SYMBOLS, NOTES, DIVISION OF LABOR

SHEET NO.

TA001

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AV BOX SCHEDULE - FIELDHOUSE

BOX #	LOCATION	TYPE	MOUNTING HEIGHT	MOUNTING TYPE	BOX & CONDUIT BY	DEVICE / CONN. PLATE BY	COMMENTS
ANT-A	FIELD HOUSE 1401	4 SQ	33' - 0"	WALL	EC	AV	
ANT-B	FIELD HOUSE 1401	4 SQ	33' - 0"	WALL	EC	AV	
ANT-C	GALLERY SEATING 2204	4 SQ	33' - 0"	WALL	EC	AV	
ANT-D	GALLERY SEATING 2204	4 SQ	33' - 0"	WALL	EC	AV	
AVR-1	TECH 2103	BGR-4532	0' - 0"	FLOOR	N/A	AV	
BT-1	FIELD HOUSE 1401	2 GANG	3' - 6"	FLUSH	EC	AV	
BT-2	FIELD HOUSE 1401	2 GANG	3' - 6"	FLUSH	EC	AV	
JB-1	TECH 2103	24x6x6	1' - 6"	SURFACE	EC	AV	
TP-1	FIELD HOUSE 1401	2 GANG	4' - 6"	FLUSH	EC	AV	
TP-2	FIELD HOUSE 1401	2 GANG	4' - 6"	FLUSH	EC	AV	
WP-1	FIELD HOUSE 1401	2 GANG	1' - 6"	FLUSH	EC	AV	
WP-2	FIELD HOUSE 1401	2 GANG	1' - 6"	FLUSH	EC	AV	
WP-3	FIELD HOUSE 1401	3 GANG	1' - 6"	FLUSH	EC	AV	

AV DISPLAY SCHEDULE

LABEL	LOCATION	MAKE	MODEL	DEVICE / CONN. PLATE BY
LED-1	FIELD HOUSE 1401	SBC GLOBAL	P4 DIAMOND 320 SERIES	AV

AV BOX SCHEDULE - MULTIPURPOSE

BOX #	LOCATION	TYPE	MOUNTING HEIGHT	MOUNTING TYPE	BOX & CONDUIT BY	DEVICE / CONN. PLATE BY	COMMENTS
ANT-E	MULTI-PURPOSE 1112	4 SQ	23' - 0"	WALL	EC	AV	
ANT-F	MULTI-PURPOSE 1113	4 SQ	23' - 0"	WALL	EC	AV	
BT-1	MULTI-PURPOSE 1112	2 GANG	3' - 6"	FLUSH	EC	AV	
BT-2	MULTI-PURPOSE 1113	2 GANG	3' - 6"	FLUSH	EC	AV	
TP-1	MULTI-PURPOSE 1112	2 GANG	4' - 6"	FLUSH	EC	AV	
TP-2	MULTI-PURPOSE 1113	2 GANG	4' - 6"	FLUSH	EC	AV	
WP-1	MULTI-PURPOSE 1112	2 GANG	1' - 6"	FLUSH	EC	AV	
WP-2	MULTI-PURPOSE 1113	2 GANG	1' - 6"	FLUSH	EC	AV	

AV LOUDSPEAKER SCHEDULE - FIELDHOUSE

LABEL	LOCATION	MAKE	MODEL	MOUNTING HEIGHT
SP-P1	UPPER LOBBY 2201	INNOVOX	CPS12PT-wht	32' - 0"
SP-P1	GALLERY SEATING 2204	INNOVOX	CPS12PT-wht	32' - 0"
SP-P1	GALLERY SEATING 2204	INNOVOX	CPS12PT-wht	32' - 0"
SP-P1	GALLERY SEATING 2204	INNOVOX	CPS12PT-wht	32' - 0"
SP-P1	GALLERY SEATING 2204	INNOVOX	CPS12PT-wht	32' - 0"
SP-P1	GALLERY SEATING 2204	INNOVOX	CPS12PT-wht	32' - 0"
SP-P1	GALLERY SEATING 2204	INNOVOX	CPS12PT-wht	32' - 0"
7				
SP-P2	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	40' - 0"
SP-P2	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P2	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P2	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P2	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	41' - 6"
5				
SP-P3	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	40' - 0"
SP-P3	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P3	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P3	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P3	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	41' - 6"
5				
SP-P4	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	40' - 0"
SP-P4	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P4	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P4	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P4	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	41' - 6"
5				
SP-P5	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	40' - 0"
SP-P5	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P5	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P5	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P5	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	41' - 6"
5				
SP-P6	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P6	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P6	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P6	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	41' - 6"
SP-P6	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	40' - 0"
5				
SP-P7	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P7	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P7	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P7	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	41' - 6"
SP-P7	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	40' - 0"
5				
SP-P8	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P8	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P8	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P8	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	39' - 0"
SP-P8	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	39' - 0"
5				
SP-P9	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P9	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P9	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P9	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	41' - 6"
SP-P9	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	40' - 0"
5				
SP-P10	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P10	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P10	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	50' - 0"
SP-P10	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	41' - 6"
SP-P10	FIELD HOUSE 1401	INNOVOX	CPS12PT-wht	40' - 0"
5				
SP-SUB	FIELD HOUSE 1401	INNOVOX	SBA-218	59' - 10"
SP-SUB	FIELD HOUSE 1401	INNOVOX	SBA-218	59' - 10"
SP-SUB	FIELD HOUSE 1401	INNOVOX	SBA-218	59' - 10"
SP-SUB	FIELD HOUSE 1401	INNOVOX	SBA-218	59' - 10"
4				

AV LOUDSPEAKER SCHEDULE - MULTIPURPOSE

LABEL	LOCATION	MAKE	MODEL	MOUNTING HEIGHT
SP-P	MULTI-PURPOSE 1112	INNOVOX	CPS12PT-wht	20' - 0"
SP-P	MULTI-PURPOSE 1112	INNOVOX	CPS12PT-wht	20' - 0"
SP-P	MULTI-PURPOSE 1113	INNOVOX	CPS12PT-wht	20' - 0"
SP-P	MULTI-PURPOSE 1113	INNOVOX	CPS12PT-wht	20' - 0"
SP-P	MULTI-PURPOSE 1113	INNOVOX	CPS12PT-wht	20' - 0"
SP-P	MULTI-PURPOSE 1113	INNOVOX	CPS12PT-wht	20' - 0"
6				
SP-SUB	MULTI-PURPOSE 1113	INNOVOX	SBA-218	20' - 0"
1				

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HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026

JOB NO. 2600.41F

SHEET TITLE

AV SCHEDULES

SHEET NO.

TA002

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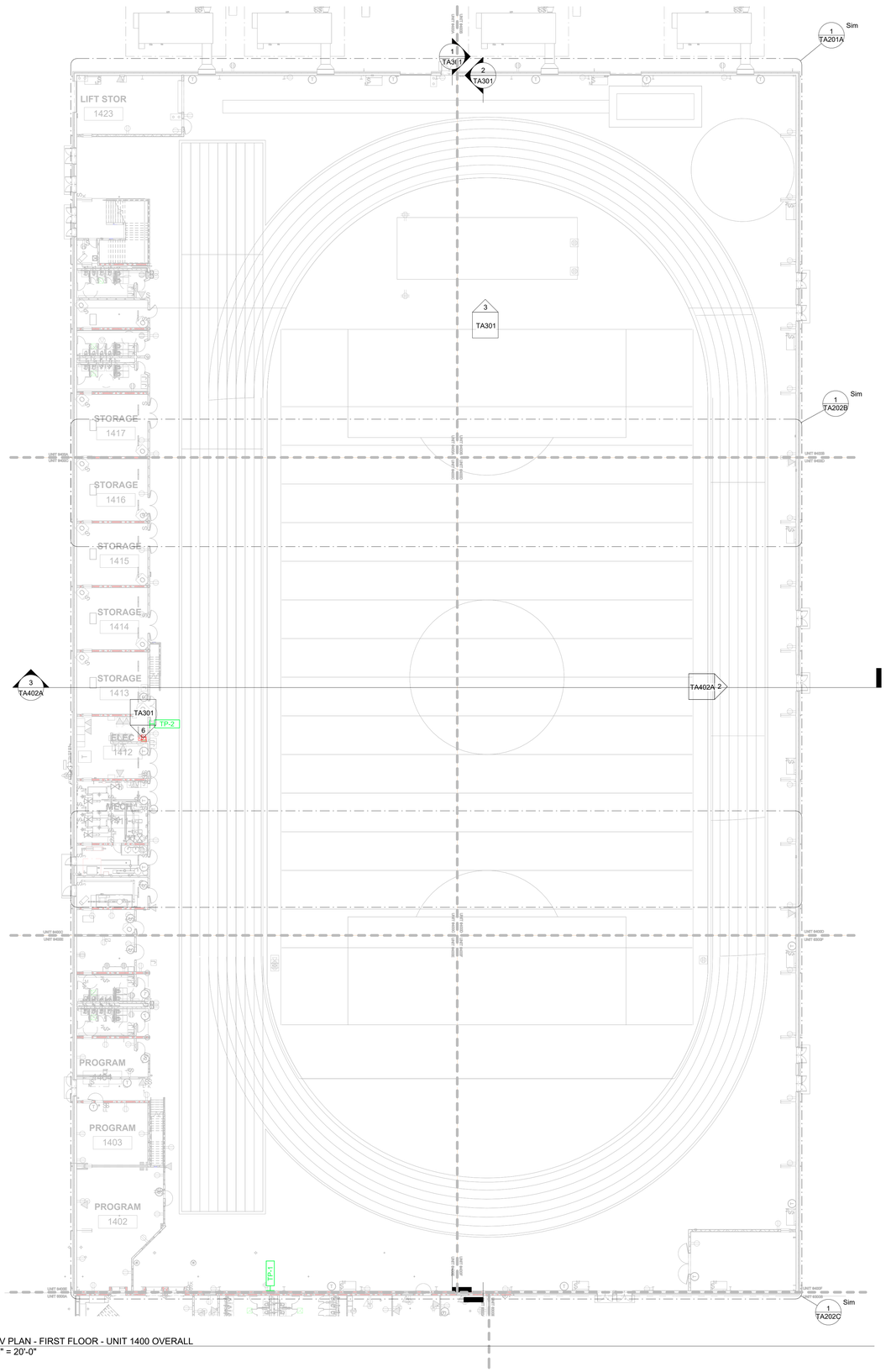

1 AV PLAN - FIRST FLOOR - UNIT 1400 OVERALL
1" = 20'-0"

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE

0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

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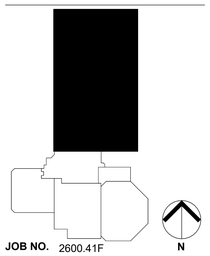
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026



JOB NO. 2600.41F

SHEET TITLE
AV PLAN - FIRST FLOOR - UNIT 1400 OVERALL

SHEET NO.
TA201

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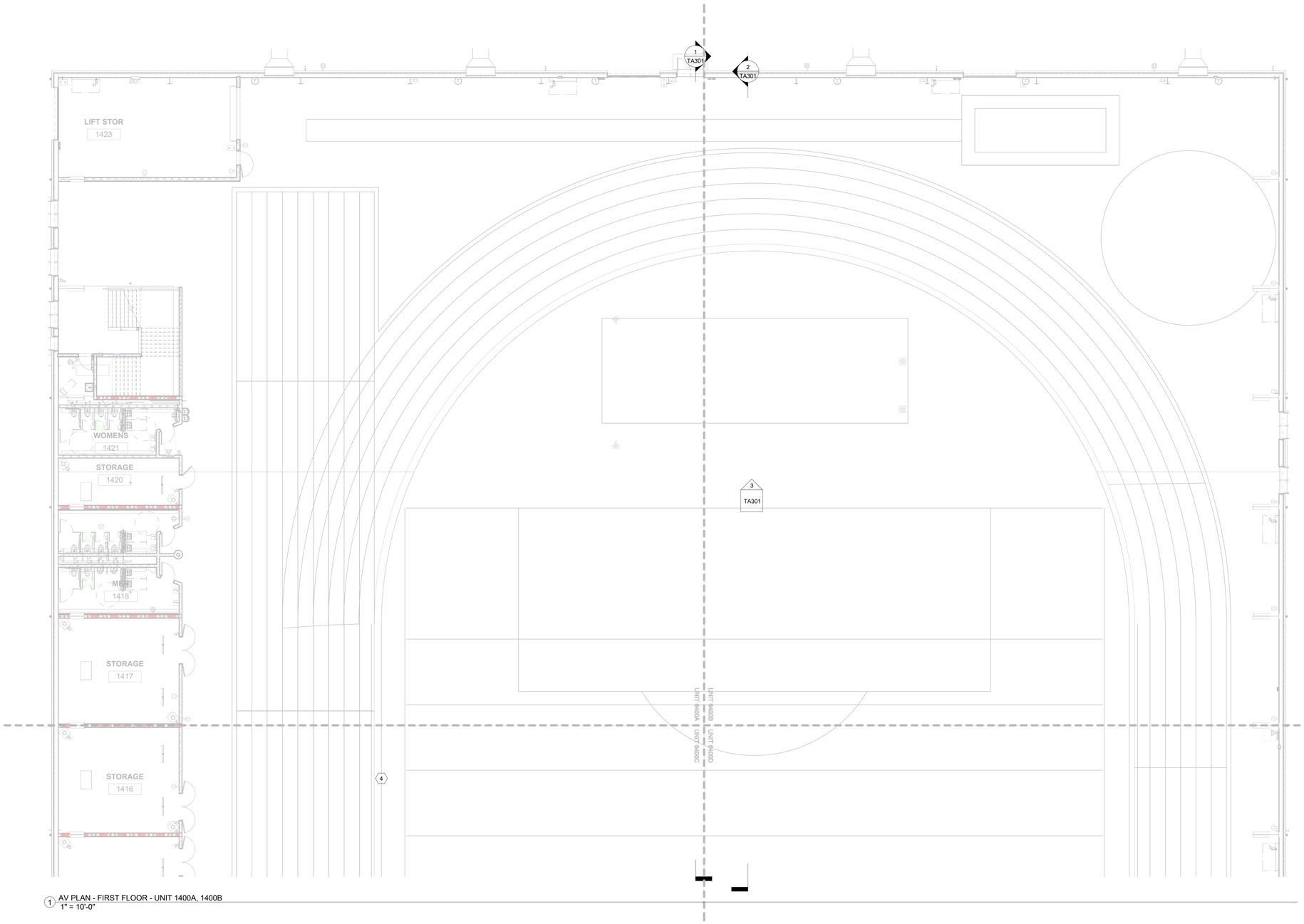
0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE



1 AV PLAN - FIRST FLOOR - UNIT 1400A, 1400B
1" = 10'-0"

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

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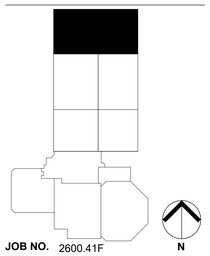
CONSTRUCTION DOCUMENTS	07/30/2026



JOB NO. 2600.41F

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SHEET TITLE
AV PLAN - FIRST FLOOR - UNIT 1400A, 1400B

SHEET NO.
TA201A

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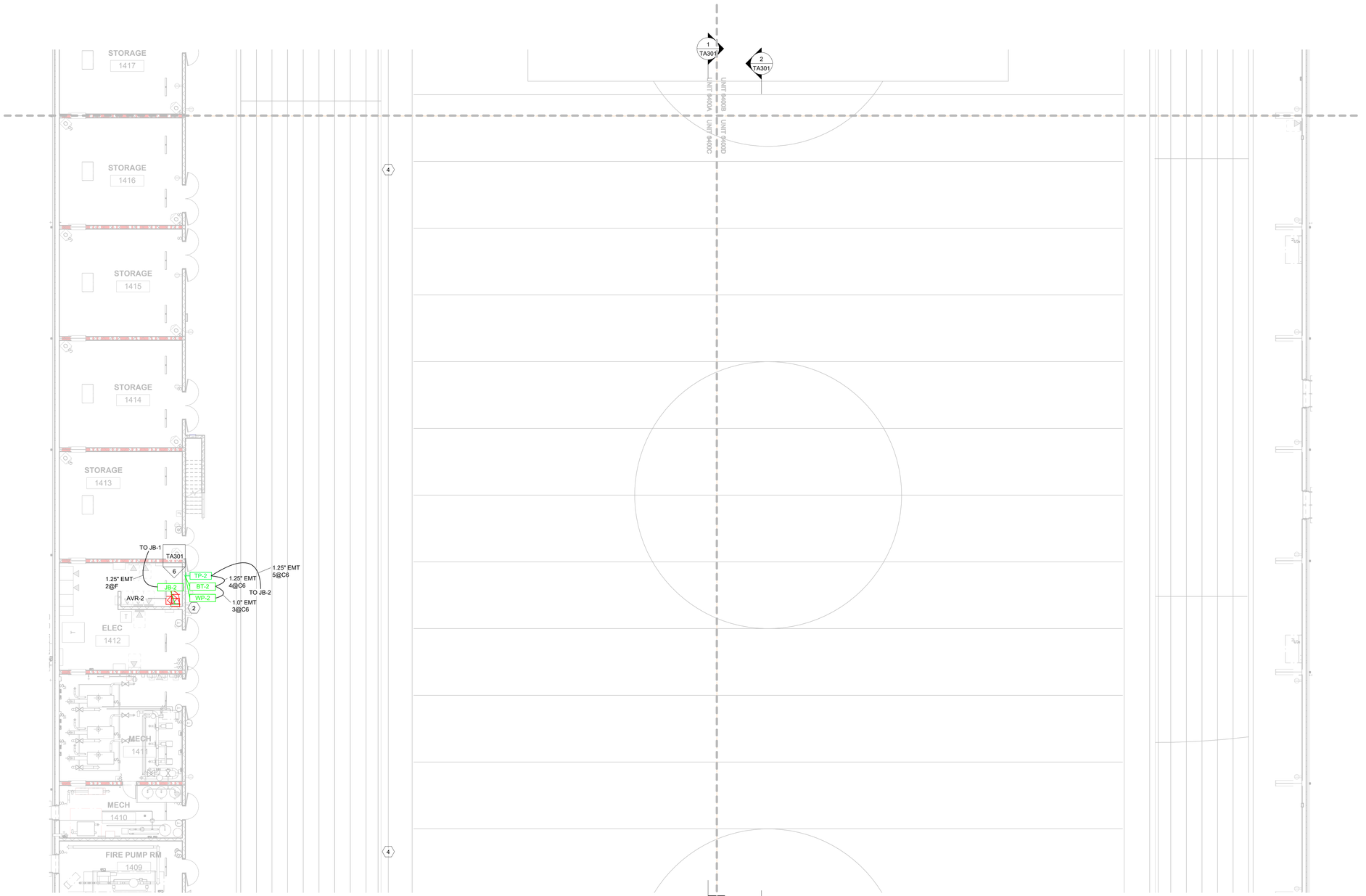
0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE



1 AV PLAN - FIRST FLOOR - UNIT 1400C, 1400D
1" = 10'-0"

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HOWELL PUBLIC SCHOOLS
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HOWELL PUBLIC SCHOOLS

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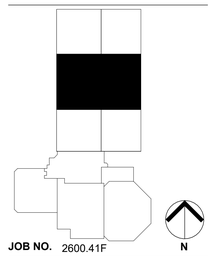

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SHEET TITLE
AV PLAN - FIRST FLOOR - UNIT 1400C, 1400D

SHEET NO.
TA201B

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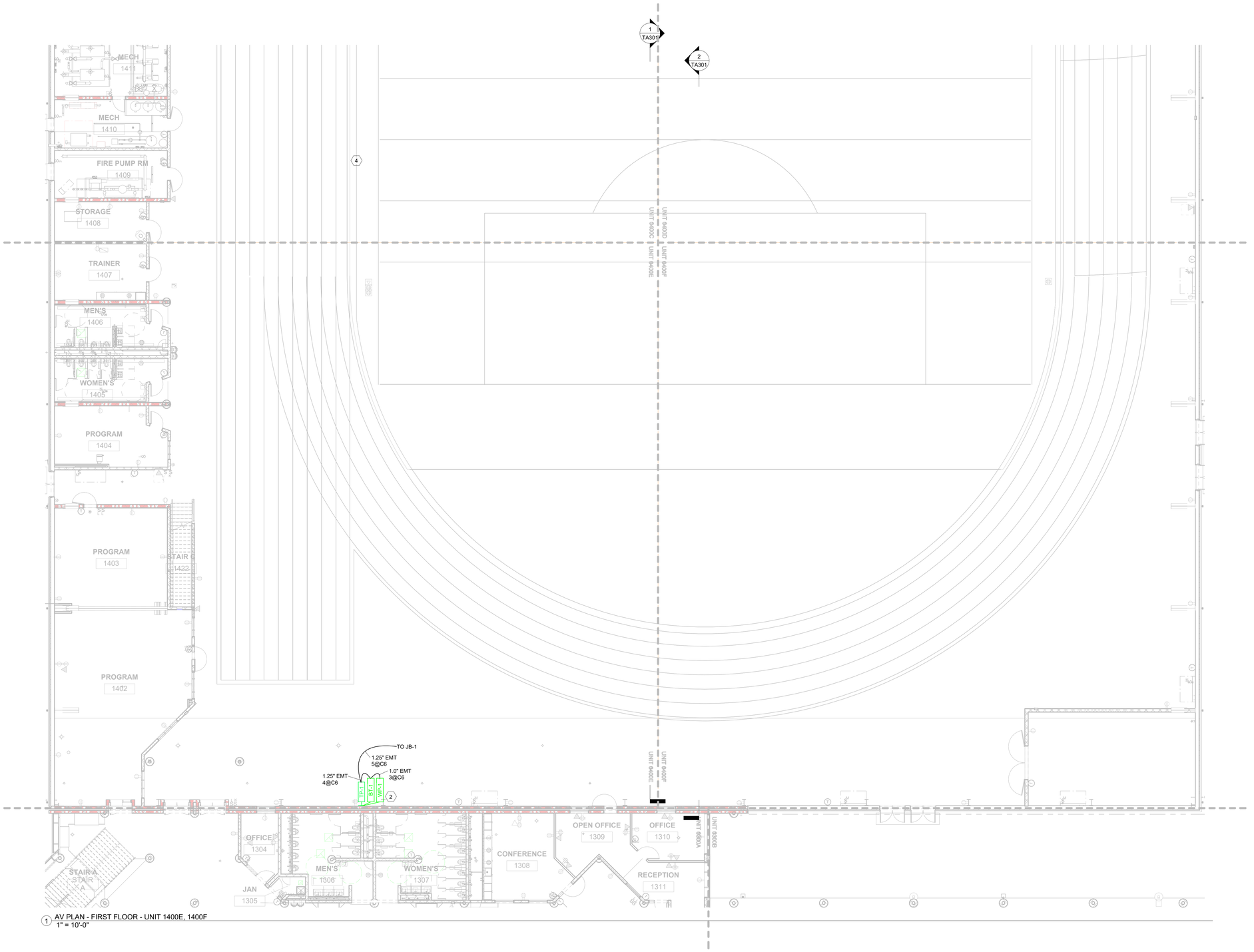
0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE



1 AV PLAN - FIRST FLOOR - UNIT 1400E, 1400F
1" = 10'-0"

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026

JOB NO. 2600.41F

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SHEET TITLE
AV PLAN - FIRST FLOOR - UNIT 1400E, 1400F

SHEET NO.
TA201C

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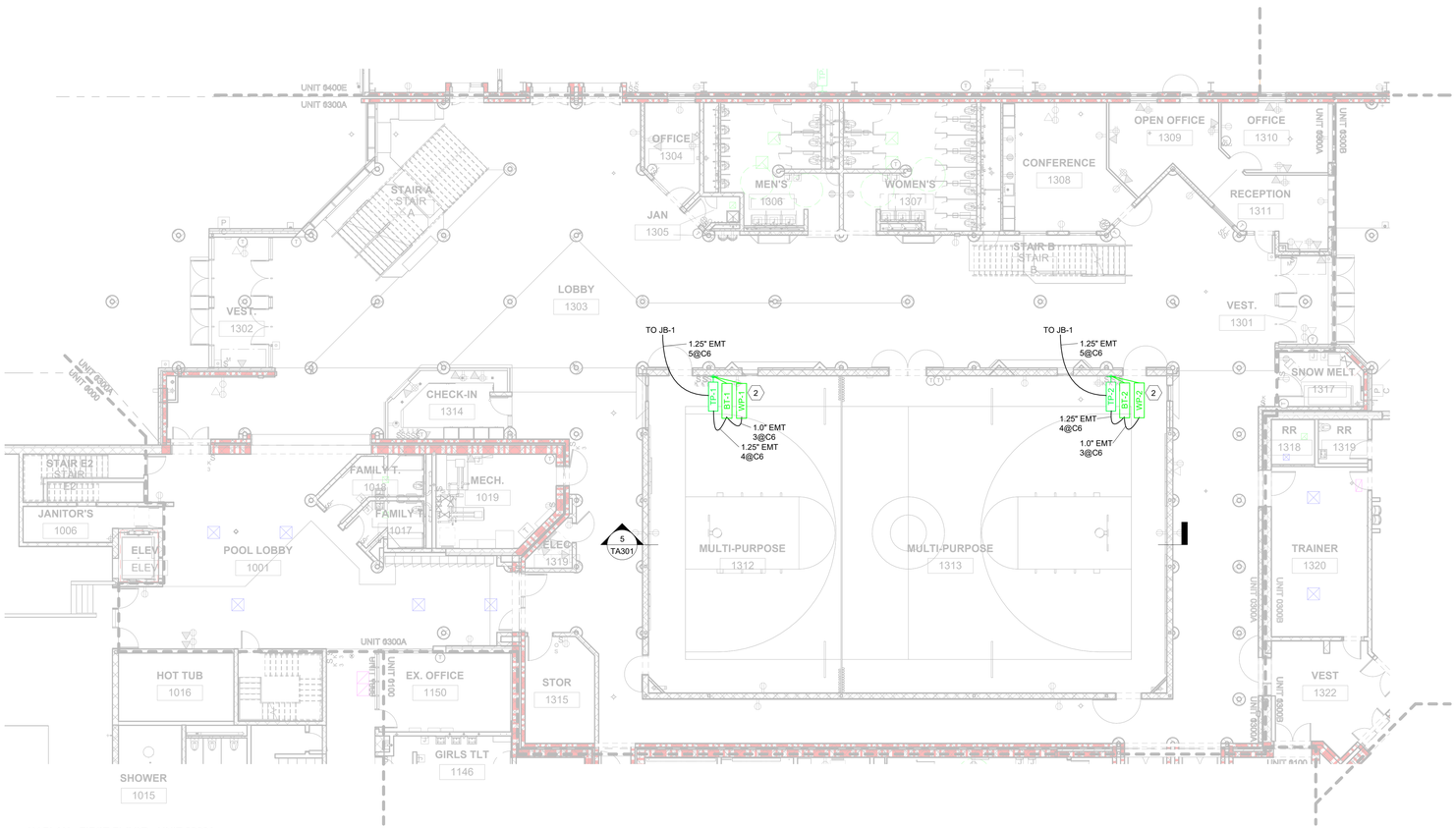
0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE



1 AV PLAN - FIRST FLOOR - UNIT 2300A
1" = 10'-0"

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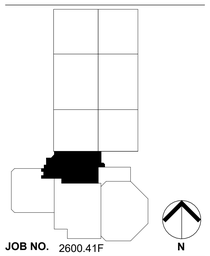
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026



JOB NO. 2600.41F

N

SHEET TITLE
AV PLAN - FIRST FLOOR - UNIT 1300A

SHEET NO.
TA201D

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0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE

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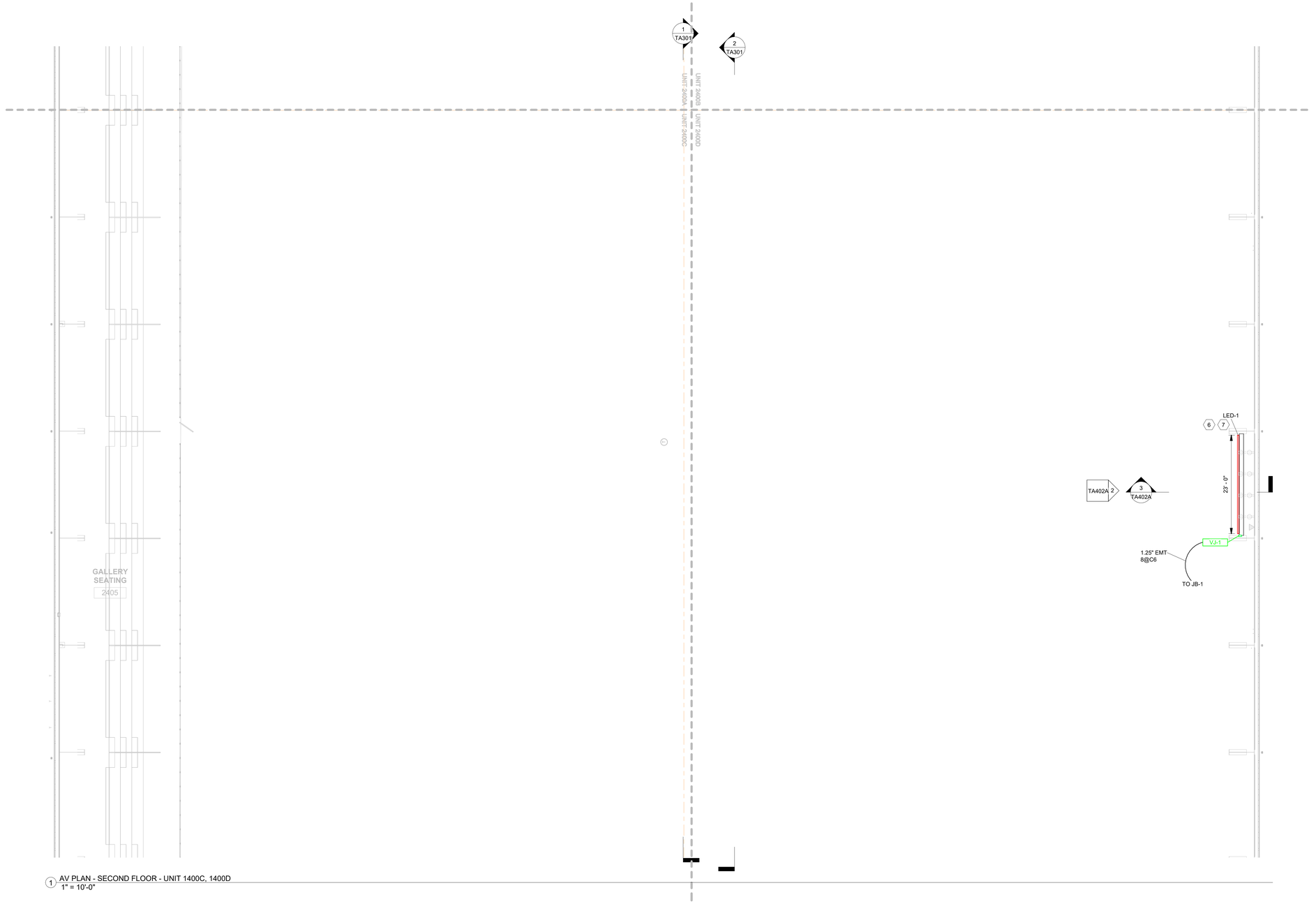


1 AV PLAN - SECOND FLOOR - UNIT 1400C, 1400D
1" = 10'-0"

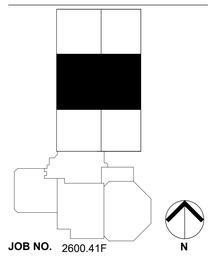
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026



JOB NO. 2600.41F

N

SHEET TITLE

AV PLAN - SECOND FLOOR - UNIT 1400C, 1400D

SHEET NO.

TA202B

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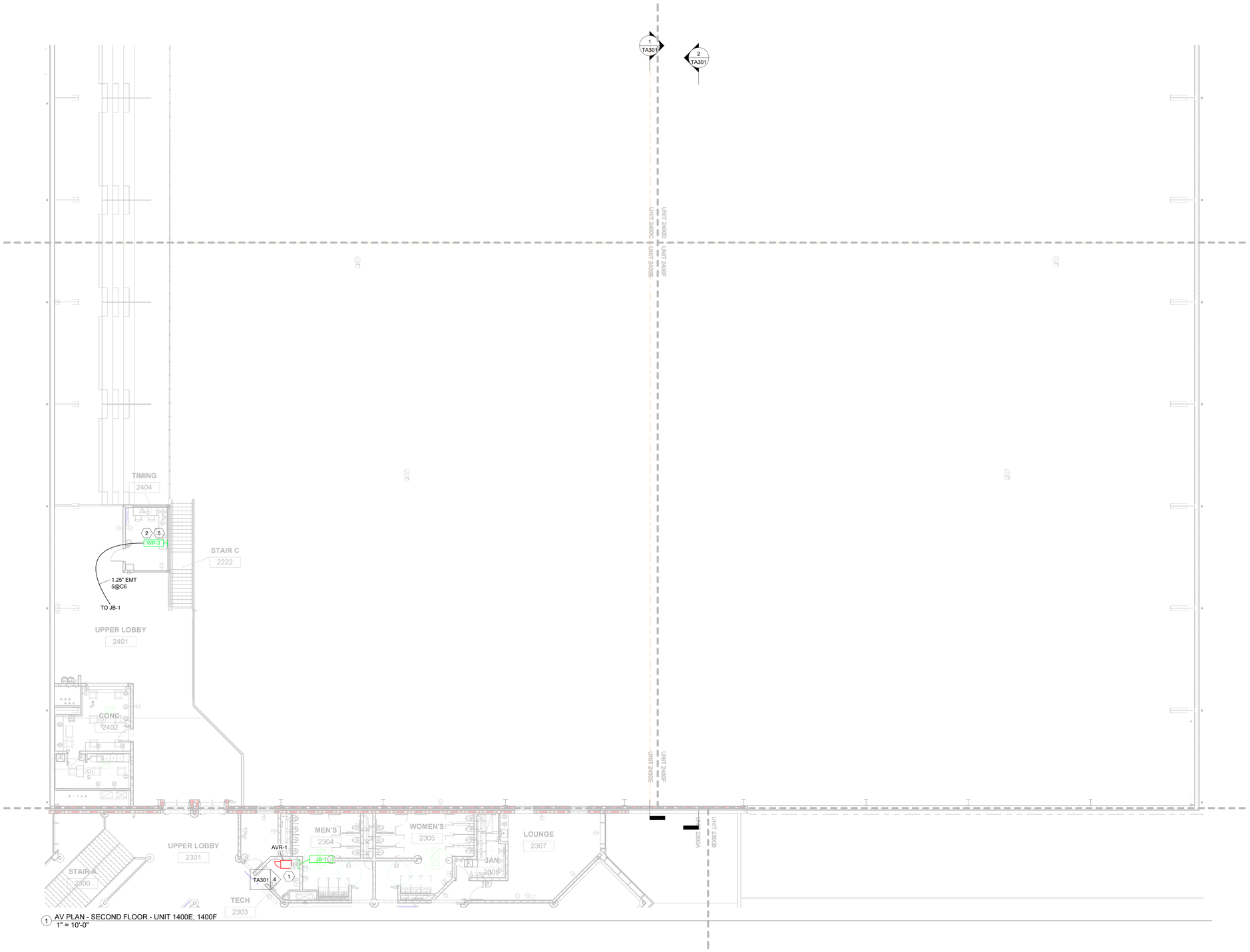
0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE



1 AV PLAN - SECOND FLOOR - UNIT 1400E, 1400F
1" = 10'-0"

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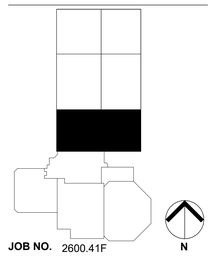
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026



JOB NO. 2600.41F

SHEET TITLE
AV PLAN - SECOND FLOOR - UNIT 1400E, 1400F

SHEET NO.
TA202C

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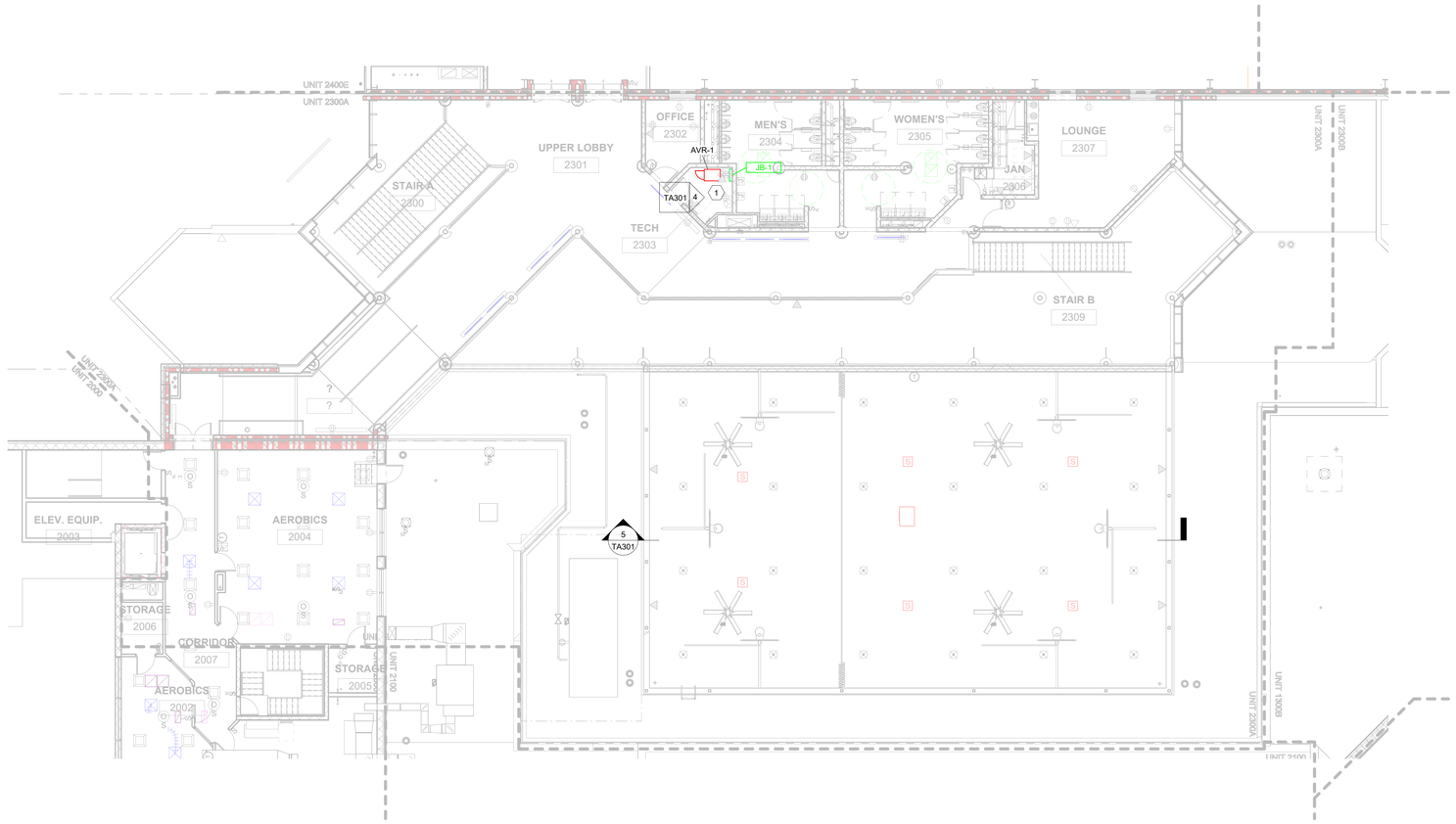
0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE



1 AV PLAN - SECOND FLOOR - UNIT 1300A
1" = 10'-0"

HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

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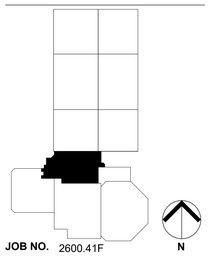
CONSTRUCTION DOCUMENTS	07/30/2026



JOB NO. 2600.41F

N

SHEET TITLE

AV PLAN - SECOND FLOOR - UNIT 1300A

SHEET NO.

TA202D

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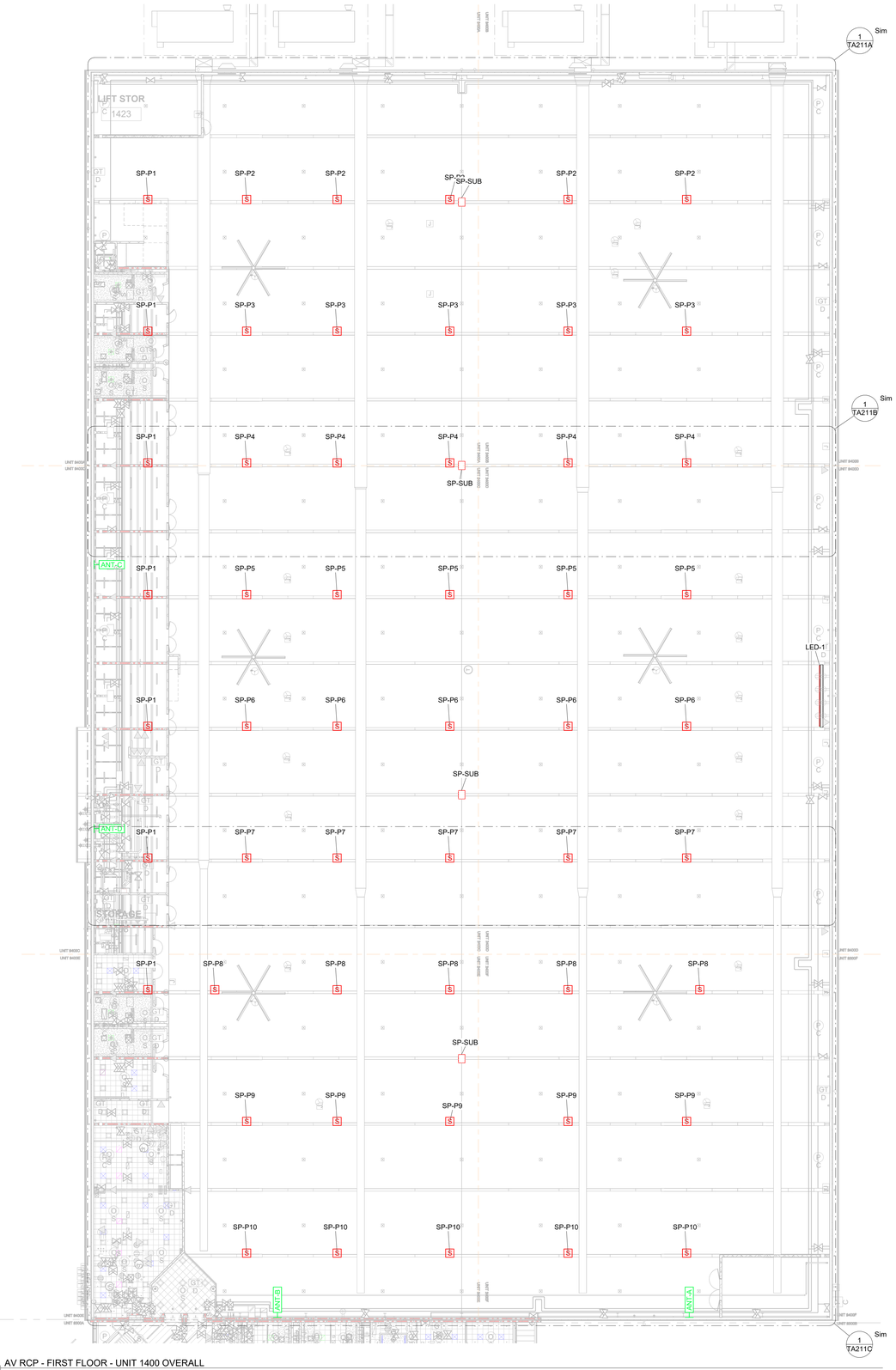

1 AV RCP - FIRST FLOOR - UNIT 1400 OVERALL
1" = 20'-0"

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE

0 GENERAL NOTES - AV	
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
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HOWELL PUBLIC SCHOOLS

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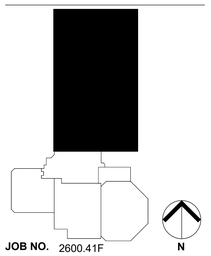

JOB NO. 2600.41F

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SHEET TITLE
AV RCP - FIRST FLOOR - UNIT 1400 OVERALL

SHEET NO.
TA211

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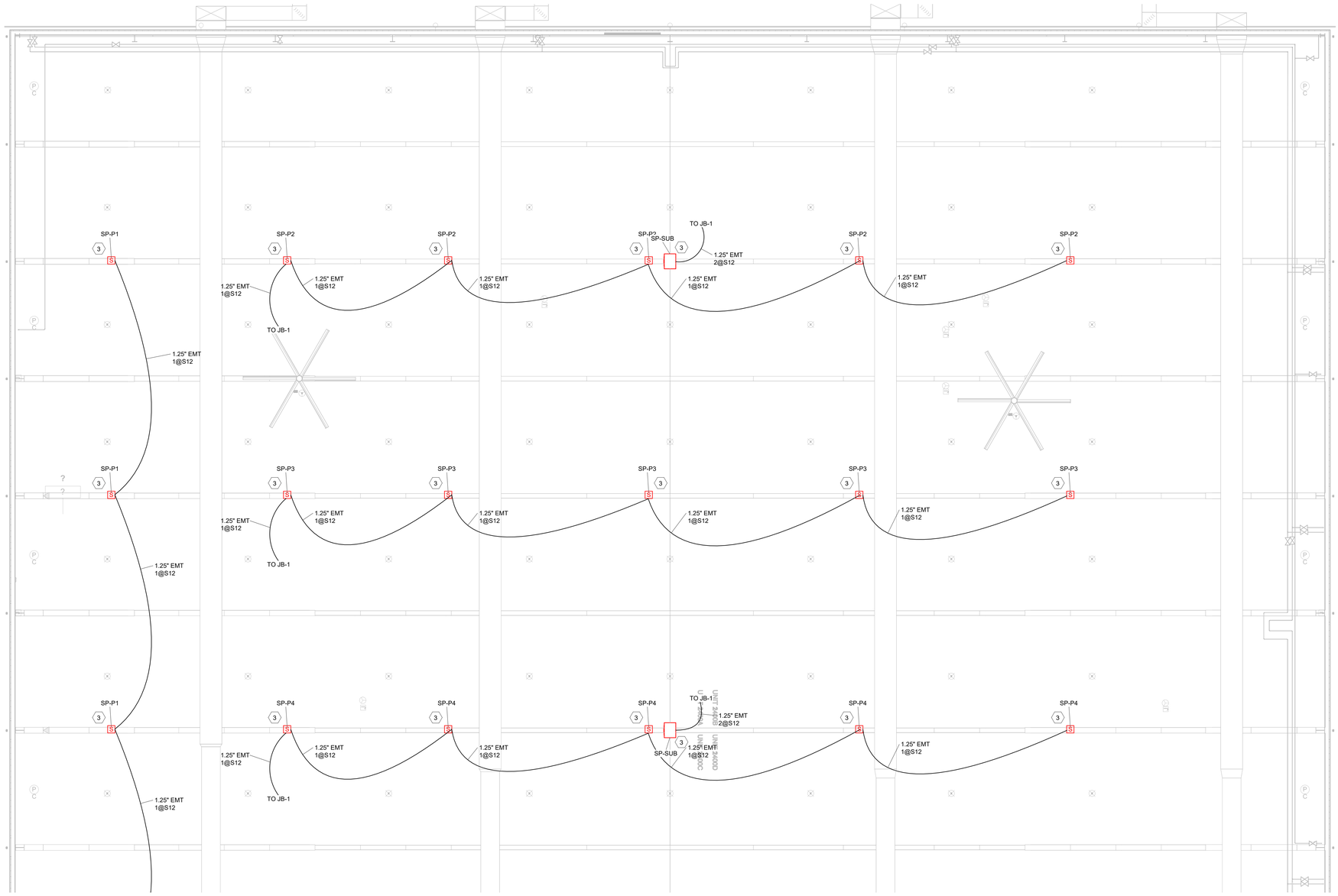
0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE



1 AV RCP - FIRST FLOOR - UNIT 1400A, 1400B
1" = 10'-0"

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS
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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026

JOB NO. 2600.41F

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SHEET TITLE
AV RCP - FIRST FLOOR - UNIT 1400A, 1400B

SHEET NO.
TA211A

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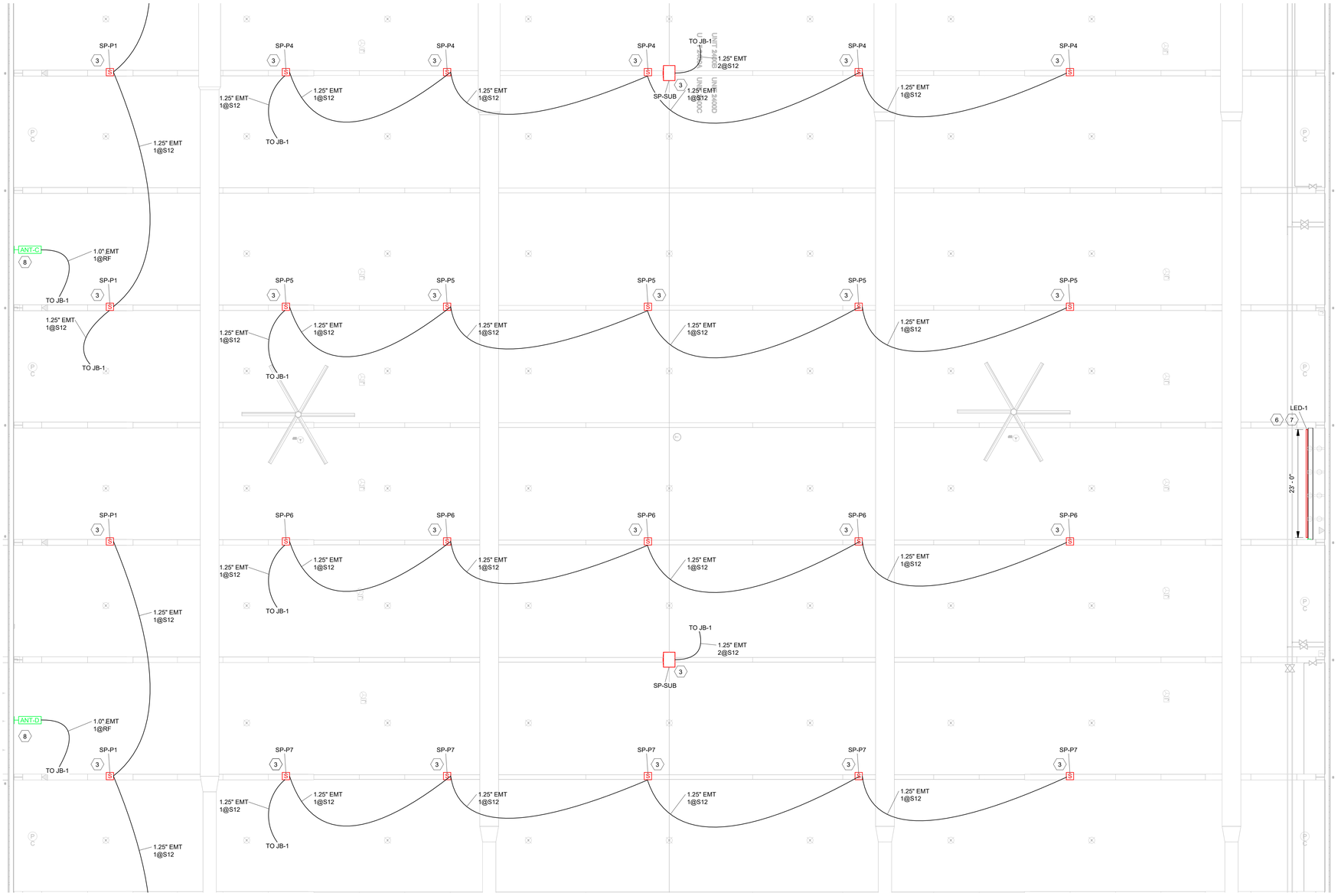
0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE



1 AV RCP - FIRST FLOOR - UNIT 1400C, 1400D
1" = 10'-0"

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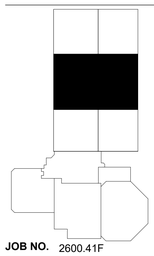
HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

1224 W GRAND RIVER AVE, HOWELL, MI 48843

HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026



JOB NO. 2600.41F

N

SHEET TITLE

AV RCP - FIRST FLOOR - UNIT 1400C, 1400D

SHEET NO.

TA211B

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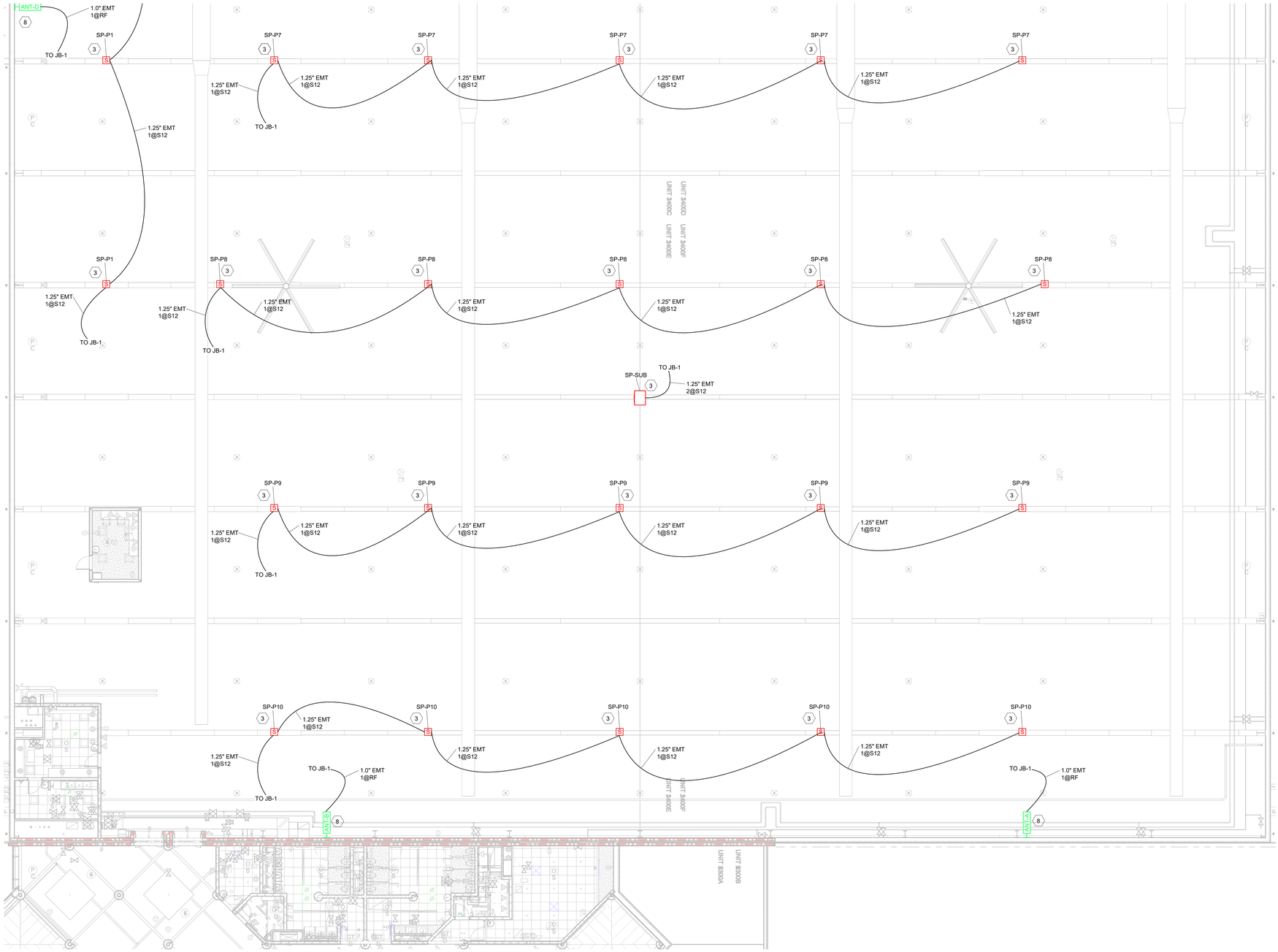
0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE



1 AV RCP - FIRST FLOOR - UNIT 1400E, 1400F
1" = 10'-0"

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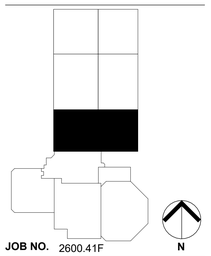
HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026



JOB NO. 2600.41F

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SHEET TITLE
AV RCP - FIRST FLOOR - UNIT 1400E, 1400F

SHEET NO.
TA211C

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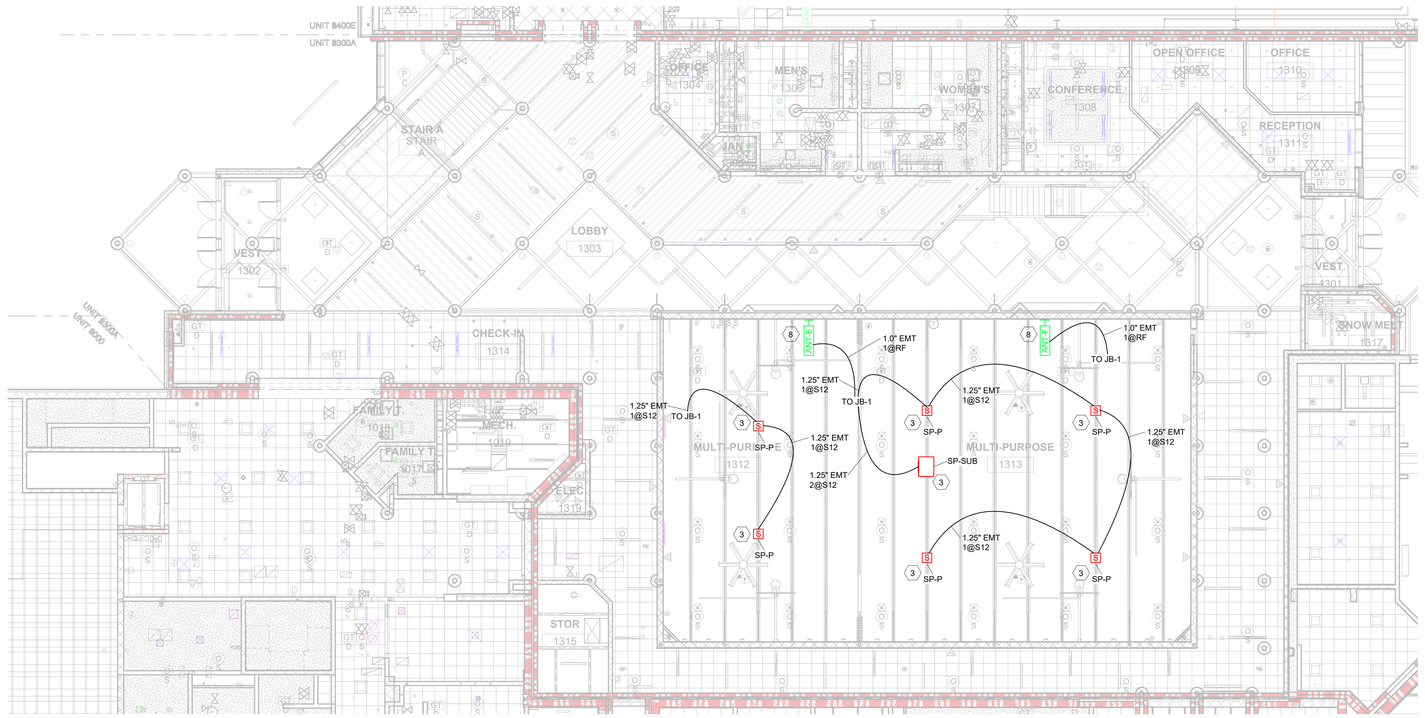
0	GENERAL NOTES - AV
#	NOTES
1	EC TO PROVIDE (3) 20A/120V CIRCUITS ON QUADRUPLEX RECEPTACLES FOR AV EQUIPMENT IN AVR-1
2	EC TO PROVIDE (1) 20A/120V CIRCUIT ON QUADRUPLEX RECEPTACLE NEXT TO WP-x AT THIS LOCATION
3	EC TO PROVIDE 4-SQUARE JUNCTION BOX AT STRUCTURAL MEMBERS FOR CONDUIT AND WIRING. SEE DETAIL 3 / 4 ON TA401 FOR LOUDSPEAKER / SUBWOOFER RIGGING DETAILS
4	EC TO PROVIDE 1.25" EMT CONDUIT FROM FLOORBOX AT THIS LOCATION TO JB-2 FOR FUTURE AV DEVICES / CONNECTIVITY
5	AV TO PROVIDE AND INSTALL TOUCHPANEL W/ TABLETOP STAND (TP-3) AND BLUETOOTH RX WITH 2-GANG DESKTOP BOX (BT-3) ON TABLE WITHIN SPACE. COORDINATE DETAILS W/ ARCHITECT
6	EC TO PROVIDE (12) 20A/120V CIRCUITS FOR LED WALL AT THIS LOCATION. COORDINATE FINAL ELECTRICAL NEEDS AND DETAILS WITH SCOREBOARD SUBMITTALS
7	STRUCTURAL STEEL FOR MOUNTING LED-1 TO BE PROVIDED AND INSTALLED BY OTHERS. STRUCTURAL TO ACCOUNT FOR APPROXIMATELY 2000 LB LED WALL. COORDINATE DETAILS W/ GC
8	AV TO INSTALL WIRELESS MIC ANTENNA ATOP ANT-x BOX AT THIS LOCATION

CABLE TYPES - AV					
CODE	DESRIPTION	BELDEN	WEST PENN	WINDY CITY	OTHER
C6	CAT6 - 4 UNSHIELDED, TWISTED PAIR	7883A	4246	CAT6	
CNT	CONTROL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
F	FIBER WIRE	1801B	DA252401	OCC-DZ006TSLX9YP	
HDMI	PRETERMINATED HDMI CABLE	-	-	-	4K60 CAPABLE
L	LINE - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
M	MIC - 1 PR 22 GA W/ SHIELD	9451	454	22-1PREZ	
RF	ANTENNA CABLE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE
S10	SPEAKER - 1 PAIR 10 GA SPEAKER WIRE	6T00UP	25210	10-02P	
S12	SPEAKER - 1 PAIR 12 GA SPEAKER WIRE	6000UE	227	12-02	
S16	SPEAKER - 1 PAIR 16 GA SPEAKER WIRE	6200UE	225	16-02	
SDI	VIDEO COAXIAL WIRE	-	-	-	CABLE TYPE AS REQUIRED BY DEVICE



1 AV RCP - FIRST FLOOR - UNIT 1300A
1" = 10'-0"

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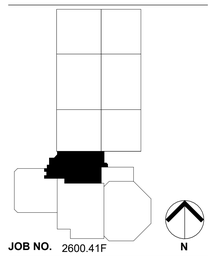
CONSTRUCTION DOCUMENTS	07/30/2026



JOB NO. 2600.41F

SHEET TITLE
AV RCP - FIRST FLOOR - UNIT 1300A

SHEET NO.
TA211D

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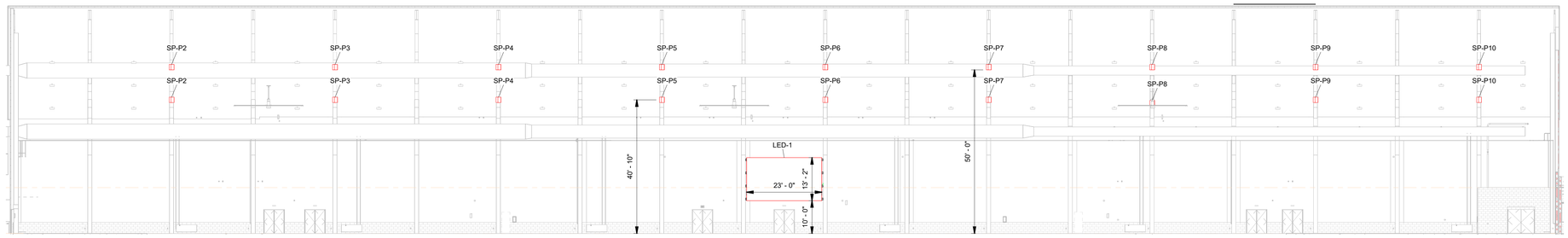
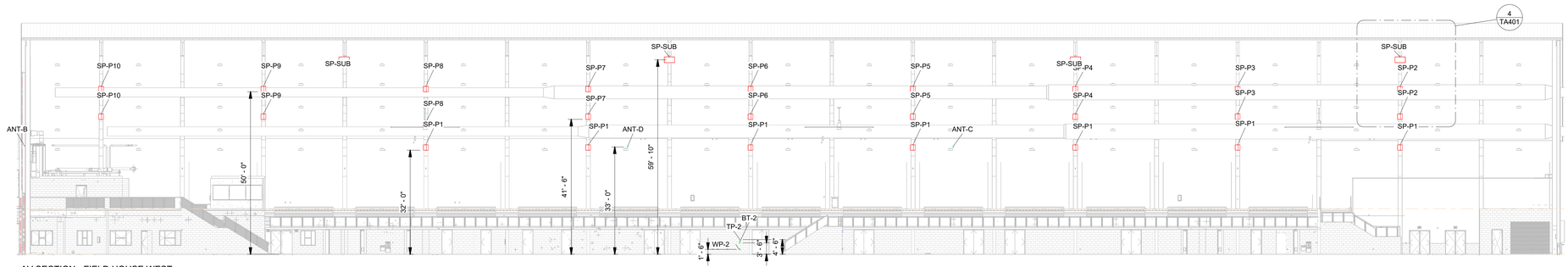
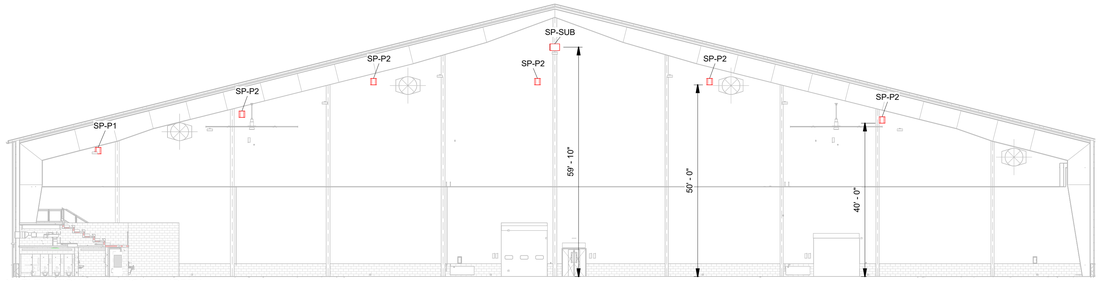


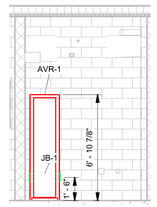
1 AV SECTION - FIELD HOUSE EAST
1/16" = 1'-0"



2 AV SECTION - FIELD HOUSE WEST
1/16" = 1'-0"



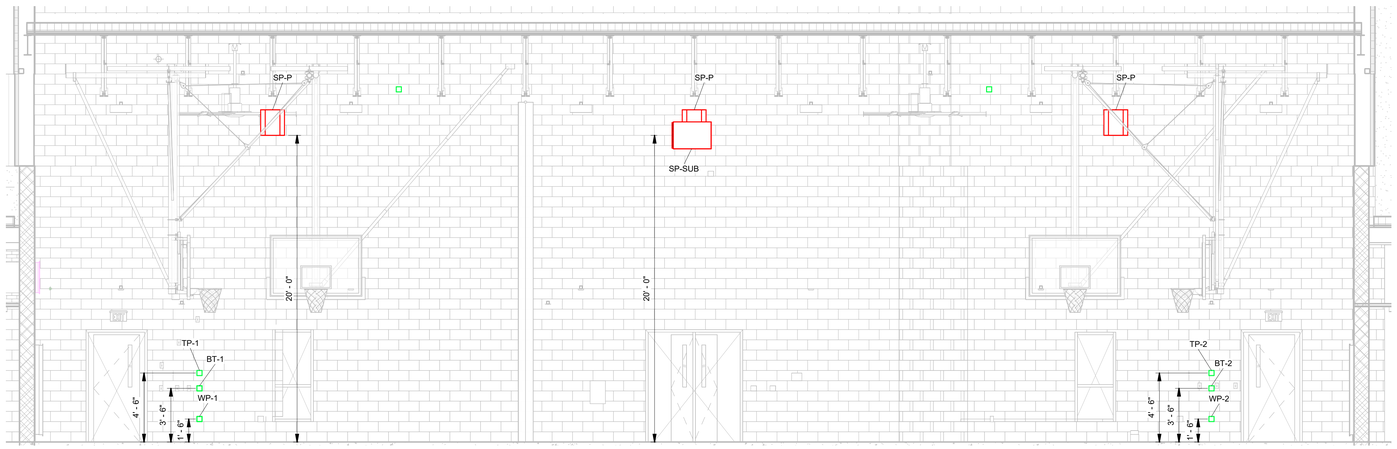
3 AV ELEVATION - FIELD HOUSE NORTH
1/16" = 1'-0"



4 AV ELEVATION - TECH 2103 EAST
1/4" = 1'-0"



6 AV ELEVATION - AVR-2 SOUTH
1/4" = 1'-0"



5 AV SECTION - MULTIPURPOSE 1312, 1313 NORTH
1/4" = 1'-0"

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ISSUANCES	DATE
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JOB NO. 2600.41F

SHEET TITLE
AV SECTIONS, ELEVATIONS

SHEET NO.
TA301

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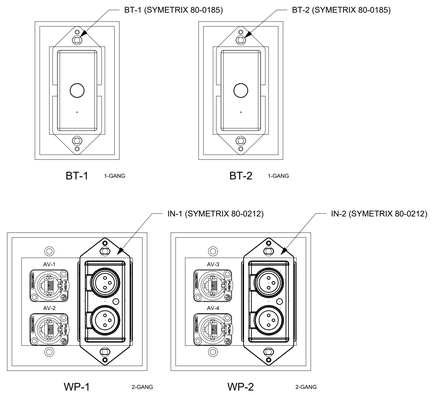
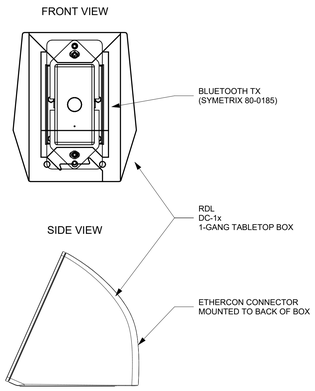
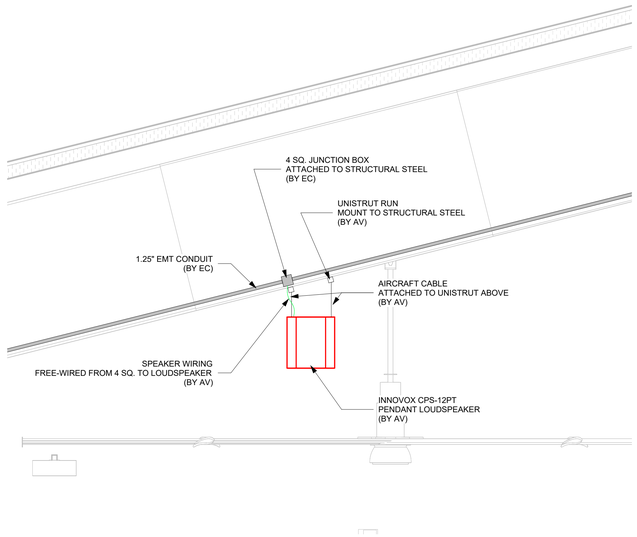


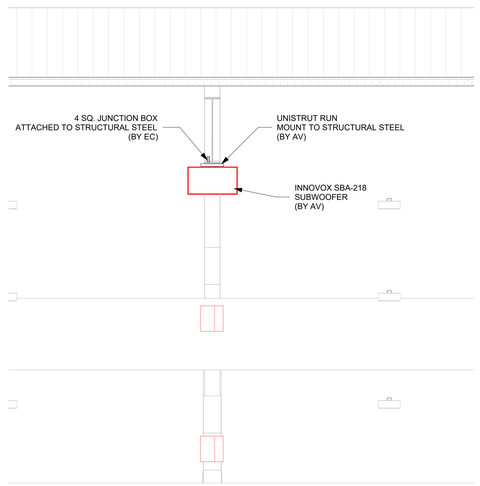
1 AV DETAIL - PLATE LAYOUTS
6" = 1'-0"



5 AV DETAIL - MOBILE BLUETOOTH INPUT - RDL DC-1x
6" = 1'-0"



3 AV DETAIL - INNOVOX CPS-12PT RIGGING
1/2" = 1'-0"



4 AV DETAIL - INNOVOX SBA-218 RIGGING
1/4" = 1'-0"

RACK NOTES:

1. INSTALL RACK RAILS AT APPROPRIATE DISTANCE FROM BACK OF EQUIPMENT FOR LACER BARS.
2. ALL WIRING IN BACK OF RACKS SHOULD BE SECURED TO THE LACER BARS.
3. WIRING TO AND FROM THE RACK SHALL BE RUN ON THE LEFT HAND SIDE OF THE RACK AS YOU FACE THE REAR OF THE RACK.
4. ALL POWER CONNECTIONS AND WIRING SHALL BE RUN ON THE RIGHT HAND SIDE OF THE RACK AS YOU FACE THE REAR OF THE RACK.
5. ALL WIRES TERMINATING IN THE EQUIMENT RACK MUST HAVE A UNIQUE LABEL. SEE DRAWINGS FOR LABELING DETAILS.
6. ALL NETWORKED DEVICES SHALL BE CLEARLY LABELED WITH THE NETWORK IP ADDRESS.
7. ALL NETWORKED DEVICES SHALL HAVE STATIC IP ADDRESSES. COORDINATE WITH THE SCHOOL IT DEPARTMENT FOR RESERVATIONS.
8. PROGRAM AMPLIFIERS FOR SLEEP MODE WHEN THE SYSTEM IS POWERED OFF.

AVR-1
BGR-4532-AV
45-SP FLOOR RACK

1 RU	BLANK (BR1)	MISC.
1 RU	YWP-1 (COLORLIGHT X8m)	VIDEO WALL PROCESSOR
1 RU	BLANK (BR1)	MISC.
1 RU	LED-1 (VPX-TC1-PRO)	LED-1 RX
1 RU	BLANK (BR1)	MISC.
1 RU	BLANK (BR1)	MISC.
1 RU	SPLT-1 (EW-D ASA)	ANTENNA SPLITTER
1 RU	WM-1, 2 (EM 300-500)	WIRELESS RX
1 RU	WM-3, IMR-1 (EM 300-500)	WIRELESS RX
1 RU	BLANK (BR1)	MISC.
2 RU	UPS-1 (UPX-2000R-2)	BATTERY BACKUP
1 RU	BLANK (BR1)	MISC.
1 RU	DSP-1 (QSC CORE 8 FLEX)	DIGITAL SIGNAL PROCESSOR
1 RU	SW-1 (GSM4249PX)	AV NETWORK SWITCH
1 RU	BLANK (BR1)	MISC.
1 RU	A-01 (QSC CX-Q 8k4)	MAINS
1 RU	BLANK (BR1)	MISC.
1 RU	A-02 (QSC CX-Q 8k4)	MAINS
1 RU	BLANK (BR1)	MISC.
1 RU	A-03 (QSC CX-Q 8k4)	MAINS
1 RU	BLANK (BR1)	MISC.
1 RU	A-04 (QSC CX-Q 8k4)	SUBS
1 RU	BLANK (BR1)	MISC.
1 RU	A-05 (QSC CX-Q 8k4)	SUBS
2 RU	DRAWER (UD2)	MISC.
2 RU	DRAWER (UD2)	MISC.
2 RU	DRAWER (UD2)	MISC.
2 RU	DRAWER (UD2)	MISC.
1 RU	BLANK (BR1)	MISC.

AVR-1

AVR-1
DWR-10-22
10-SP WALL RACK

2 RU	BLANK (BR2)	MISC.
2 RU	BLANK (BR2)	MISC.
1 RU	SW-1 (GSM4230PX)	AV NETWORK SWITCH
1 RU	BLANK (BR1)	MISC.
2 RU	UPS-1 (UPX-2000R-2)	BATTERY BACKUP
2 RU	BLANK (BR2)	MISC.

AVR-2

MR-1
3i-2011M72U
2-SP MOBILE RACK

1 RU	RU-RA3R	MIX-1, BT-3, IN-1	MIXING, I/O
1 RU	BLANK (BR1)		MISC.

MR-1

2 AV DETAIL - RACK LAYOUTS
1 1/2" = 1'-0"

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JOB NO. 2600.41F

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SHEET TITLE
AV RACKS, PLATES, DETAILS

SHEET NO.
TA401

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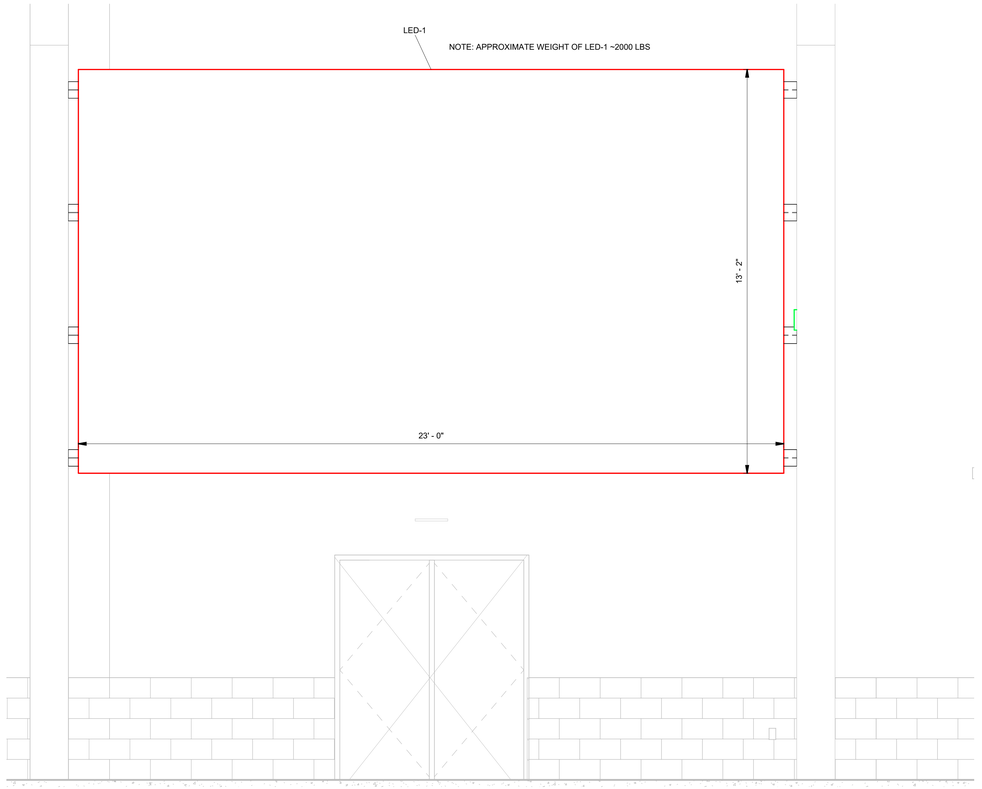
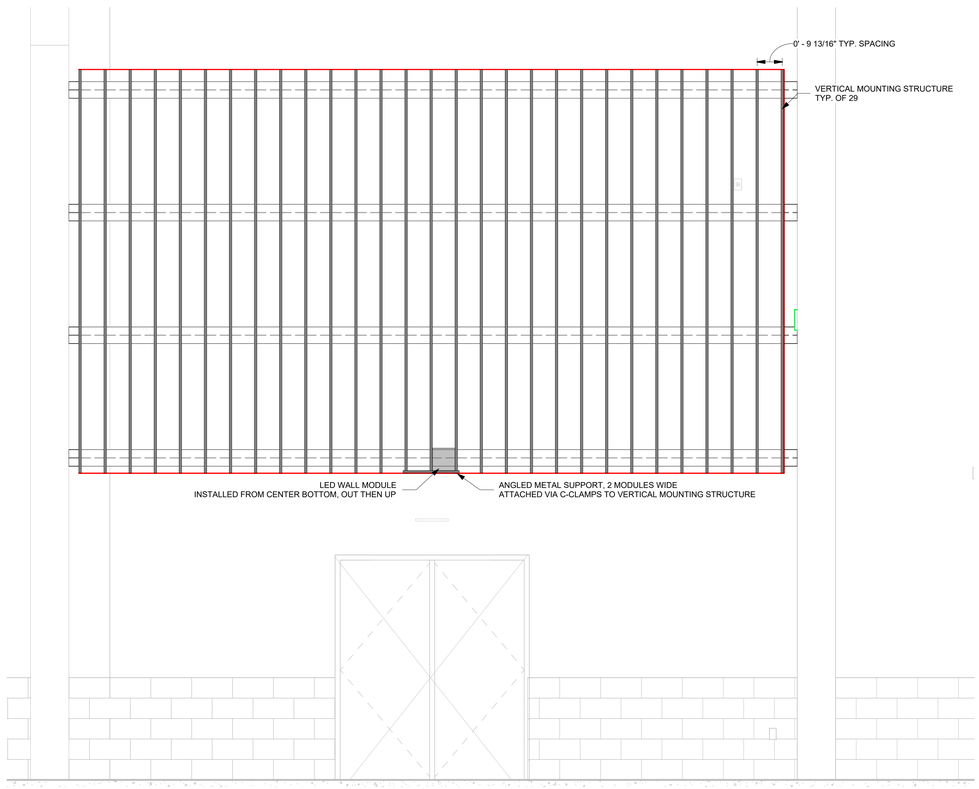
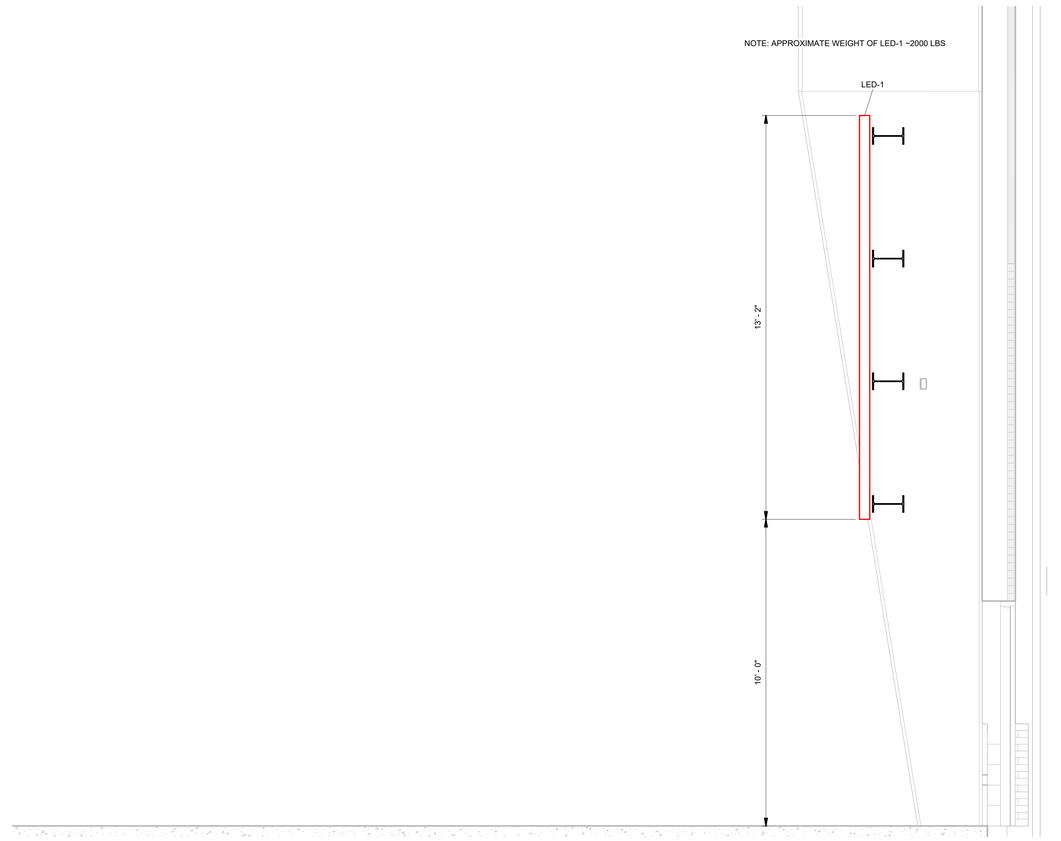


1 AV DETAIL - LED-1 - DIMENSIONS
1/2" = 1'-0"



2 AV DETAIL - LED-1 - MOUNTING STRUCTURE
1/2" = 1'-0"



3 AV SECTION - LED-1 NORTH
1/2" = 1'-0"

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HOWELL PUBLIC SCHOOLS

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JOB NO. 2600.41F

SHEET TITLE
AV DETAILS - LED-1 - GENERAL DIMENSIONS

SHEET NO.
TA402A

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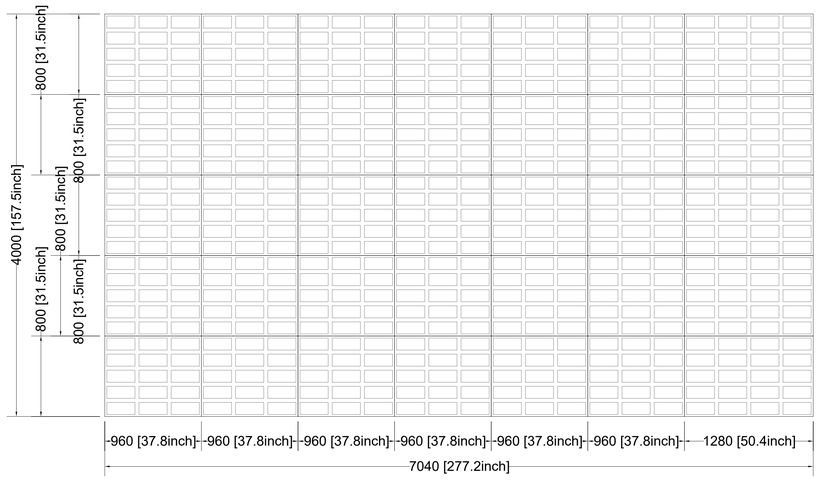
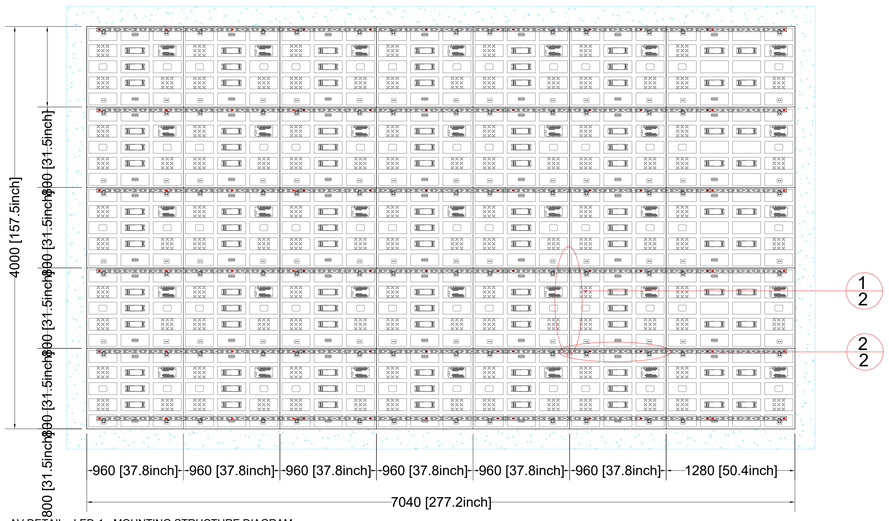
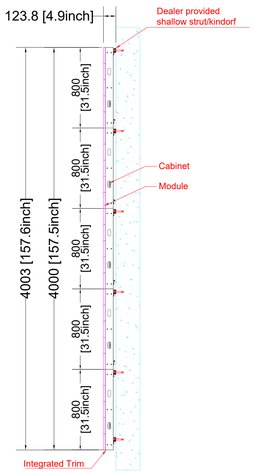


Product Series	Diamond 320 IN	
Pixel Pitch(mm)	P4 SMD	
Modules Size(W*H)	320*160mm[12.6*6.3inch]	
Modules Resolution(W*H)	80 * 40	
Cabinet Size(W*H)	960*800mm[37.8*31.5inch]	1280*800mm[50.4*31.5inch]
Cabinet Resolution(W*H)	240 * 200	320 * 200
Cabinet Weight	≈23 kg[50.7 lbs]	≈30 kg[66.1 lbs]
Cabinet Array(W*H)	6*5	1*5
Cabinet Quantity	30 PCS	5 PCS
Cabinet power Avg.	120 W	160 W
Cabinet power max.	300 W	400 W
Screen Area	28.16 m^2	
Screen Size(W*H)	7040*4000 mm[277.2*157.5 inch]	
Screen Resolution(W*H)	1760 * 1000	
Screen power max./pcs	11 KW	
Trim Kit	YES	
BTU/hr	37537.5 BTU/hr	
Brightness (nits, after calibration)	600	

1 AV DETAIL - LED-1 - CABINET OVERVIEW DIAGRAM
1/2" = 1'-0"





2 AV DETAIL - LED-1 - MOUNTING STRUCTURE DIAGRAM
1/2" = 1'-0"

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HOWELL COMMUNITY CENTER

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HOWELL
PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026

JOB NO. 2600.41F

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SHEET TITLE
AV DETAILS - LED-1 - DIMENSIONS, MOUNTING

SHEET NO.
TA402B

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1 AV DETAIL - LED-1 - POWER DISTRIBUTION DIAGRAM
1" = 1'-0"

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HOWELL COMMUNITY CENTER

HOWELL PUBLIC SCHOOLS

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HOWELL PUBLIC SCHOOLS

ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026

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JOB NO. 2600.41F

SHEET TITLE
AV DETAILS - LED-1 - POWER DISTRIBUTION

SHEET NO.
TA402C

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Video Input

Colorlight X8m

Category cables , 4+1 （ spare） main from X8m to LED

① AV DETAIL - LED-1 - DATA DISTRIBUTION DIAGRAM
1" = 1'-0"

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CONSTRUCTION DOCUMENTS	07/30/2026

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SHEET TITLE
AV DETAILS - LED-1 - DATA DISTRIBUTION

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TA402D

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1 AV DETAIL - LED-1 - CABINET INDEXING DETAIL
NOT TO SCALE

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ISSUANCES	DATE
CONSTRUCTION DOCUMENTS	07/30/2026

JOB NO. 2600.41F

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SHEET TITLE
AV DETAILS - LED-1 - CABINET INDEXING DETAIL

SHEET NO.
TA402E

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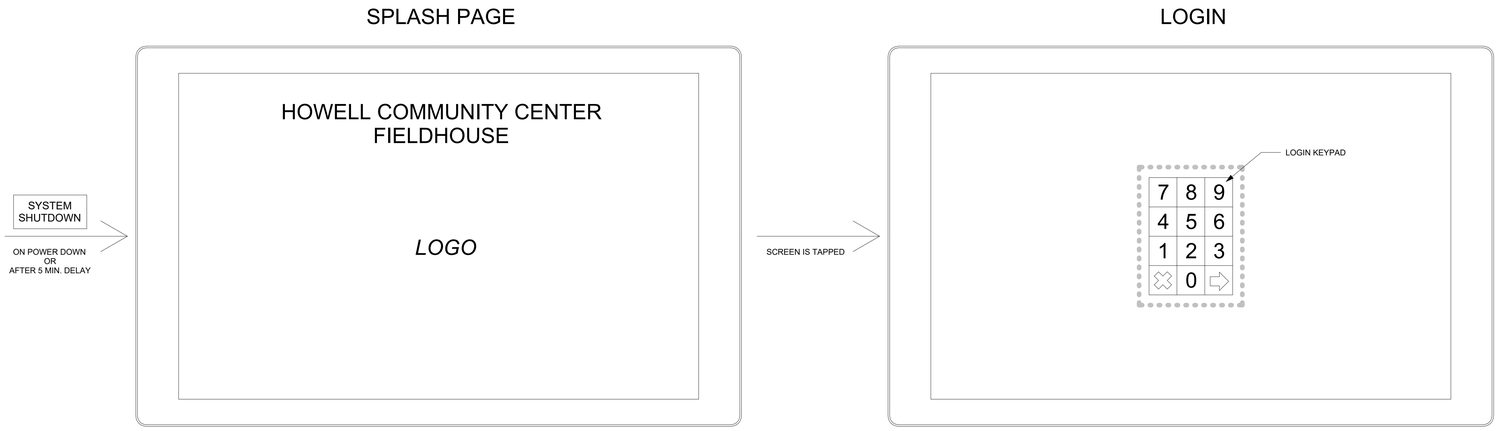

1 AV TOUCHPANEL STORYBOARD - TSC-101-G3
12" = 1'-0"

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SHEET TITLE
AV TOUCHPANEL LAYOUTS

SHEET NO.
TA403

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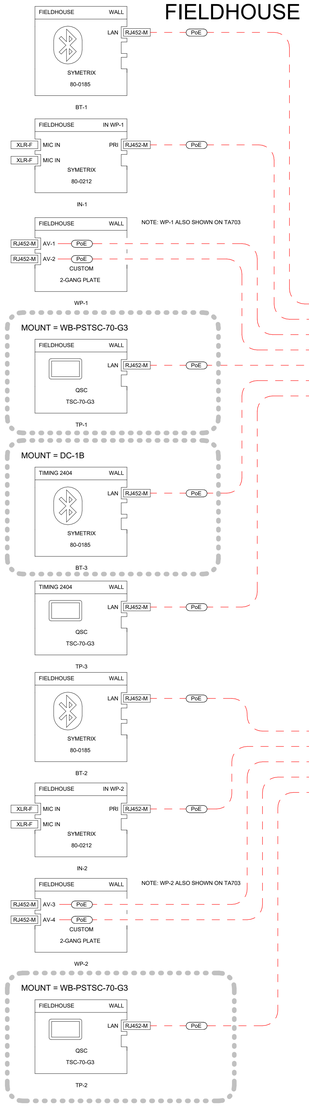
FIELDHOUSE



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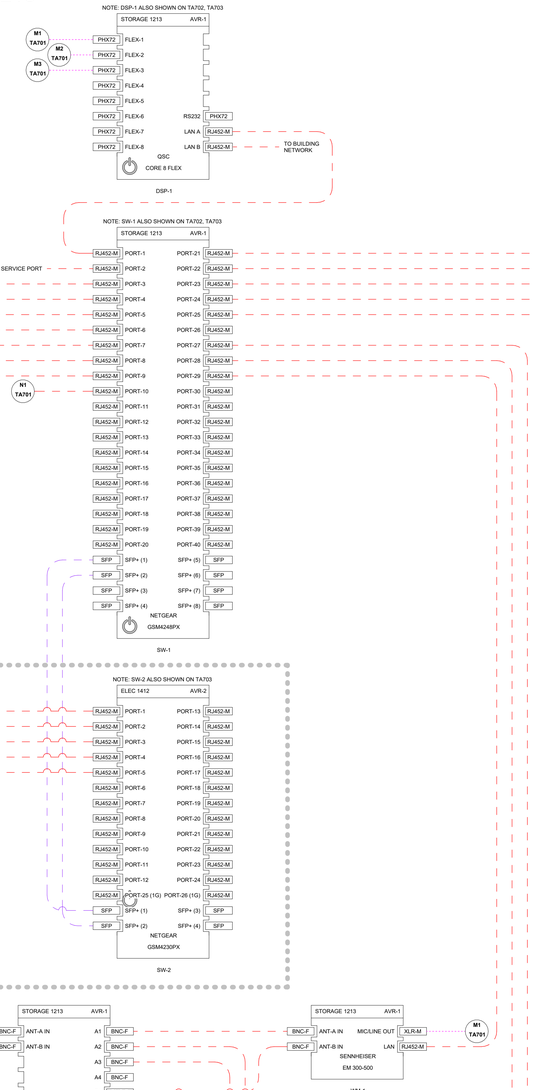

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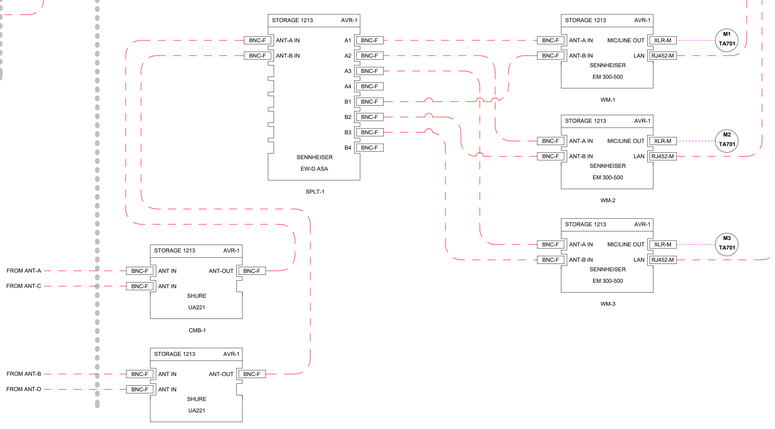

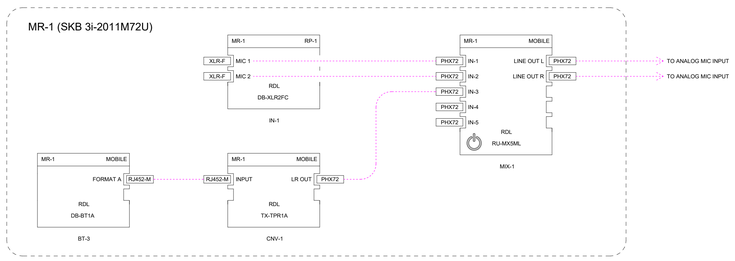

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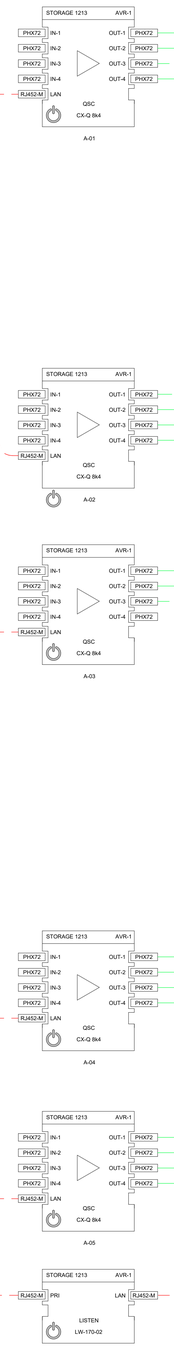

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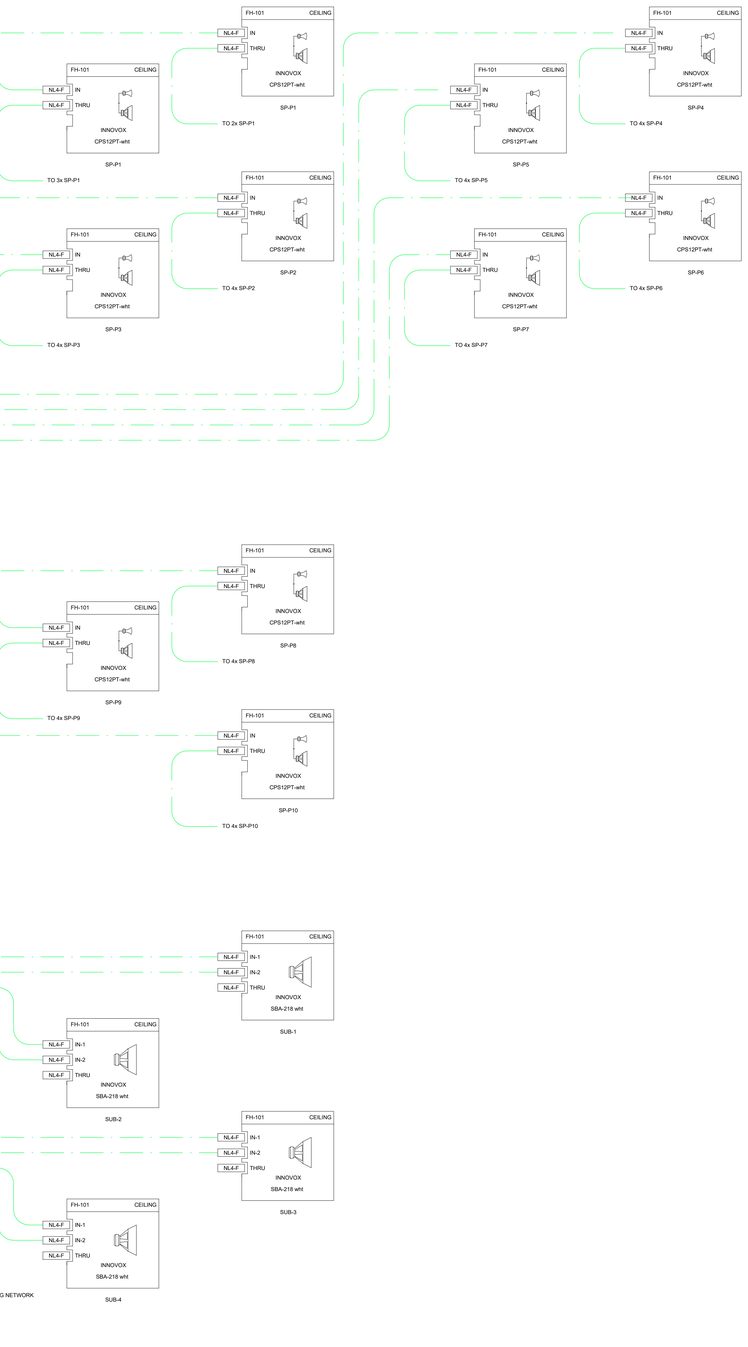

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ISSUANCES	DATE
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JOB NO. 2600.41F

SHEET TITLE

AUDIO SCHEMATIC - FIELD HOUSE

SHEET NO.

TA701

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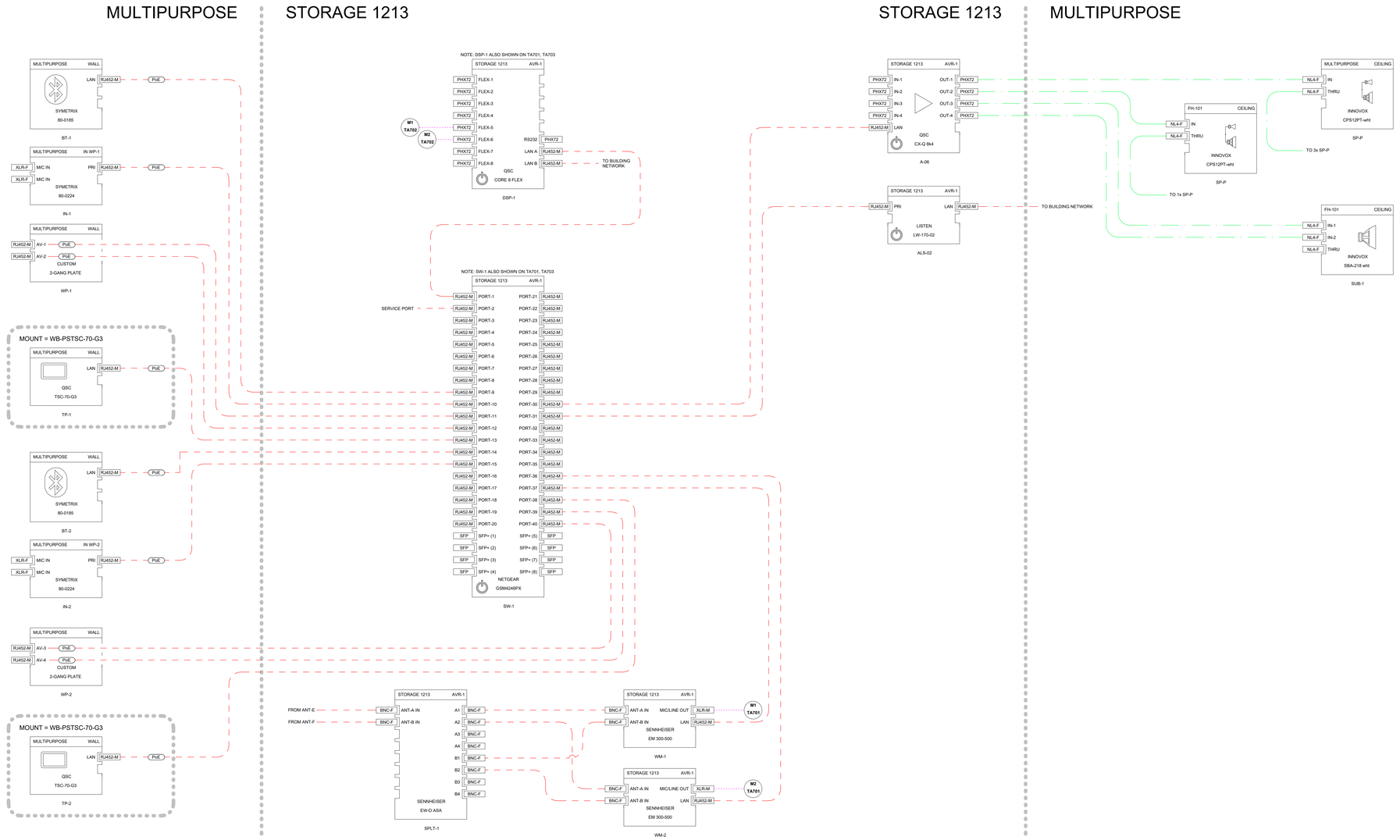
1 AUDIO SCHEMATIC - FIELD HOUSE
NOT TO SCALE

SCHEMATIC LINE TYPES - AV

- LINE/MIC WIRE
- SPEAKER WIRE
- VIDEO WIRE
- DATA/NETWORK WIRE
- FIBER WIRE
- CONTROL WIRE



1 AUDIO SCHEMATIC - MULTIPURPOSE
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LINE/MIC WIRE
SPEAKER WIRE
VIDEO WIRE
DATA/NETWORK WIRE
FIBER WIRE
CONTROL WIRE

SCHEMATIC LINE TYPES - AV

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SHEET TITLE
AUDIO SCHEMATIC - MULTIPURPOSE

SHEET NO.
TA702

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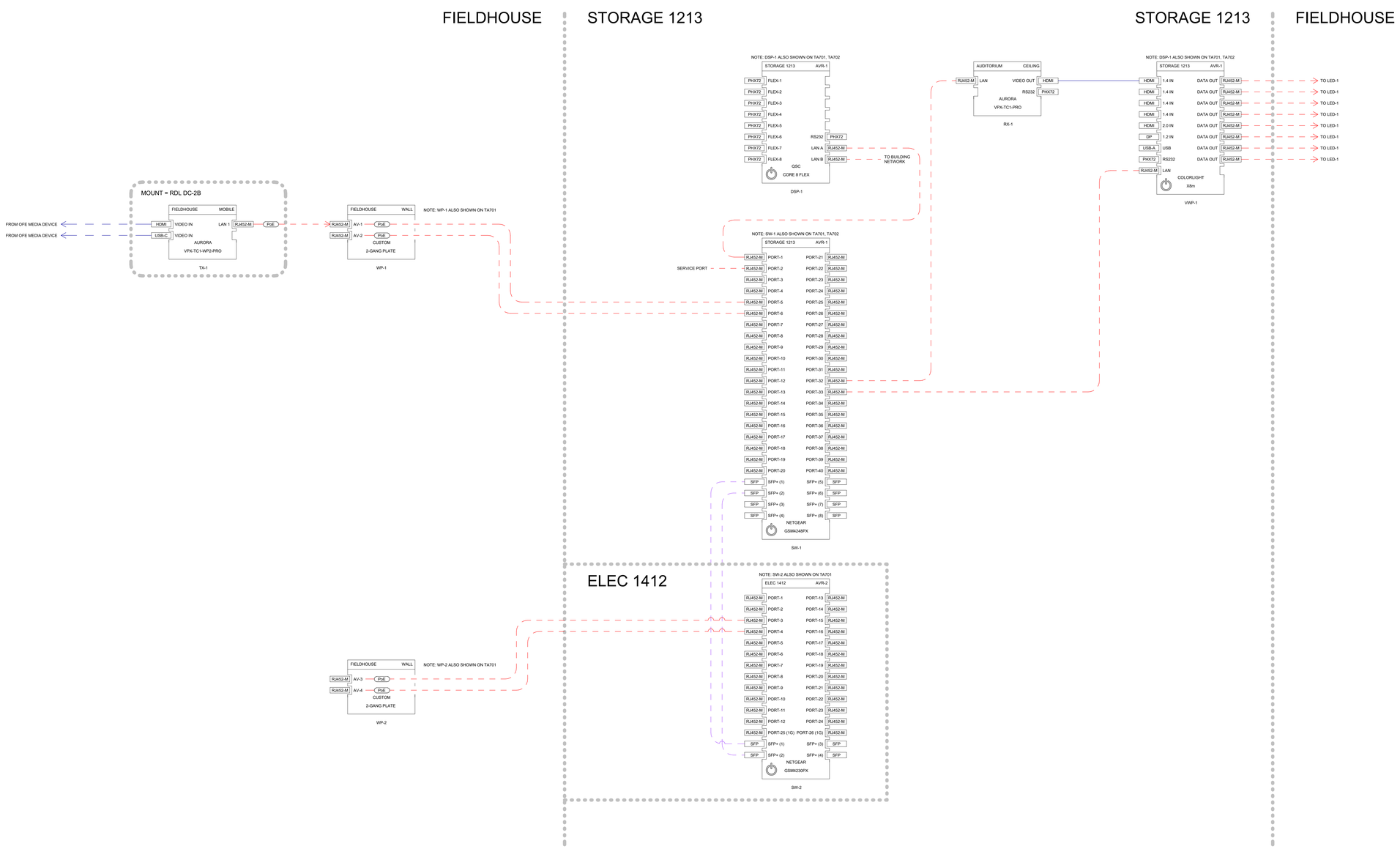

1 VIDEO SCHEMATIC - FIELD HOUSE LED-1
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LINE/MIC WIRE
SPEAKER WIRE
VIDEO WIRE
DATA/NETWORK WIRE
FIBER WIRE
CONTROL WIRE

SCHEMATIC LINE TYPES - AV

JOB NO. 2600.41F

SHEET TITLE
VIDEO SCHEMATIC - FIELD HOUSE LED-1

SHEET NO.
TA703

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