West Bloomfield School District
New Doherty Elementary School
Structured Cabling Systems
Bid Package No. T4
West Bloomfield, Michigan

Project Manual

IDS Project No. 25225-1000 BP-T4

October 26, 2026
Bids

Project Manual

West Bloomfield School District
New Doherty Elementary School
Bid Package No. T4
West Bloomfield, Michigan

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IDS Project No. 23235-1000 BP-T4

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SECTION 00 1113 - ADVERTISEMENT FOR BIDS

DATE:	October 21, 2026
PROJECT:	West Bloomfield School District New Doherty Elementary School - Structured Cabling Systems Bid Package No. T4 West Bloomfield, Michigan
OWNER:	West Bloomfield School District 5810 Commerce Road West Bloomfield, Michigan 48324
ENGINEERING/ TECHNOLOGY DESIGNER:	Integrated Design Solutions, LLC Architecture, Engineering, Interiors & Technology 1441 W. Long Lake, Suite 200 Troy, MI 48098 (248) 823-2100 (248) 823-2200 fax
BIDS RECEIVED:	Until 2:00 PM local time on November 23, 2026 the Owner will receive sealed Bids for the work as set forth in the Bidding Documents at: Mr. Jamie Stottlemyer Assistant Superintendent of Facilities and Operations West Bloomfield School District 5810 Commerce Road West Bloomfield, MI 48324

At which time and place all bids will be publicly opened and read aloud. Should the District be closed due to inclement weather, bids will be due at the same time on the next business day. A bid tabulation summary will be available.

The Bidding Documents will be on file on and after October 26, 2026. The Engineering/Technology Designer will furnish electronic documents to the Bidders. The documents may be downloaded from the USAC-ERATE site via Form 470 for this project. Bidders are responsible to check the website from time to time to verify they have all addenda, requests for information and other documents related to the Bid.

The Bid must be accompanied by a sworn and notarized Familial Relationship Disclosure Statement. The Board of Education will not accept a Bid that does not include this sworn and notarized disclosure statement.

All Bids must include an Iran Sanctions Affidavit of Compliance.

Each bid shall be accompanied by a certified check, cashier's check, money order or bid bond made payable to West Bloomfield School District in an amount not less than five percent (5%) of the Base Bid as a proposal guarantee. Bid Bond shall be provided by a company licensed to do business in the State of Michigan

A pre-bid conference scheduled for November 2, 2026 at 3:30 PM local time. The pre-bid conference will be held virtually via a **Microsoft Teams meeting.**

Join: https://teams.microsoft.com/meet/2245759683006997?p=Dw4bfkmYBfo1aKCwHB
Meeting ID: 224 575 968 300 699 7
Passcode: Cu9Hw79o

Successful bidders whose proposals are $50,000 or more will be required to furnish a Satisfactory Performance and Payment Bond in the amount of 100% of their bid. The cost of the Bond shall be included in each proposal.

The Board of Education reserves the right to reject any and/or all bids in whole or in part and to waive any information therein. The Board of Education reserves the right to accept that bid which in its opinion, is in the best interest of the Owner.

END OF ADVERTISEMENT FOR BIDS

SECTION 00 2113 - INSTRUCTIONS TO BIDDERS

1. DEFINITIONS

A. Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement for Bids**,** Instruction to Bidders, the Bid Form and other bidding and contract forms. The proposed Contract Documents consist of the form of an Agreement between Owner and Contractor, Specifications, Drawings and Addenda issued prior to execution of the Contract.

B. Addenda are written or graphic instruments issued by the Technology Designer prior to the execution of the Contract, which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

C. A Bidder is a person or entity who submits a Bid.

D. A Bid is a complete and properly signed proposal to do the work for the sums stipulated therein submitted in accordance with the Bidding Documents.

E. The Base Bid is the amount stated in the Bid for which the Bidder offers to perform the work as described in the Bidding Documents as the base, to which work may be added to or deleted from, for the amounts stated in the Alternates.

F. An Alternate is an amount stated in the Bid Form to be added to or deducted from the amount of the Base Bid if the described Alternate is accepted.

G. A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment or services or a portion of the work as described in the Bidding Documents.

H. Project Manual consists of the Bidding Documents and is the means used to assemble all of the Bidding Documents.

2. SECURING BIDDING DOCUMENTS

A. Bidding is by public advertisement and invitation.

B. The Engineer/Technology Design will furnish electronic documents to the Bidders. The documents may be downloaded from the USAC E-Rate site via the Form 470 for this project. Bidders are responsible to check the website from time to time to verify they have all addenda, requests for information and other documents related to the Bid.

C. Bidding Documents remain the property of the Technology Designer.

3. PREPARATION AND SUBMISSION OF BIDS

A. Bids shall be submitted on forms bound in the Project Manual of the Bidding Documents.

B. All blanks on the Bid Form must be filled in by typewriter or by hand in ink.

C. Amounts shall be expressed in both words and figures. In case of a discrepancy the amount stated in words shall govern.

D. Alterations by erasure or interlineations must be initialed by the Bidder.

E. All Mandatory Alternates must be bid. If no change in the Base Bid is required, enter “No Change.”

F. Submit the Bid, along with the bid security and any other documents required to be submitted with the Bid, to the Owner, and deliver to the address given in the Advertisement for Bids on or before the day and hour set for receipt of the Bids.

1. Enclose each Bid in a sealed opaque envelope bearing the title of the work "NEW Doherty ELEMENTARY SCHOOL - STRUCTURED CABLING SYSTEMS - BID PACKAGE NO. T4", the name of the Bidder, and the date and hour of the Bid opening, with the notation "SEALED BID ENCLOSED".
2. Do not change the wording of the Bid Form, and do not add words to, or delete words from the Bid Form.
3. Unauthorized conditions, limitations, or provisions attached to the Bid will be cause for rejection of the Bid.
4. Submit only duplicate signed copies of the Bid. Clearly distinguish the original bid from the duplicated copies of the bid.
5. It is the sole responsibility of the Bidder to see that their bid is received on time.
6. Telephonic, telegraphic, facsimile (fax), or e-mail Bids or telephonic, telegraphic, facsimile (fax) or e-mail modification of a Bid will not be considered.
7. Bids received after the time fixed for receiving them will not be considered and will be returned to the Bidder unopened.
8. Properly identified Bids received on time will be publicly opened and read aloud. A bid tabulation summary will be available.
9. The "AFFIDAVIT OF BIDDER" and "AFFIDAVIT OF COMPLIANCE – IRAN ECONOMIC SANCTIONS ACT" found in the bid form must be completed.

G. The Bidder in submitting a Bid represents that:

1. The Bidder has read and understands the Bidding Documents, including the Drawings, Specifications and other proposed Contract Documents.
2. The Bid is made in compliance with the Bidding Documents.
3. The Bidder has visited the site of the Work and become informed as to existing conditions and limitations under which the Work is to be performed and included in their Bid a sum to cover the cost necessary to perform the Work as set forth in the Bidding Documents. No allowance will be made to a Bidder because of a lack of such examination or knowledge.
4. The Bid is based upon materials, equipment and systems required by the Bidding Documents without exception and without substitutions.
5. The Bidder agrees that it will provide a "Turnkey Solution" to the Owner.

4. AFFIDAVIT OF BIDDER

A. Each Bid shall be accompanied by the Affidavit of Bidder in compliance with MCL.380.1267. The Bid proposal must be accompanied by this sworn and notarized statement disclosing Familial Relationship that exists between the Bidder or any employee of the Bidder and any member of the Board of Education of the School District, or the Superintendent of the School District. The School District will not consider a Bid Proposal that does not include this sworn and notarized Affidavit.

5. AFFIDAVIT OF COMPLIANCE – IRAN ECONOMIC SANCTIONS ACT

A. Each Bid shall be accompanied by the Affidavit of Compliance – Iran Economic Sanctions Act in compliance with Michigan Public Act No. 517 of 2012 and attach this information to the bid proposal. The Bid proposal must be accompanied by this sworn and notarized statement certifying that the Bidder is not an "Iran Linked Business", nor if awarded the Contract will become an "Iran Linked Business" within the meaning of Michigan Public Act 512 of 2012 at any time during the course of performing under the contract. The School District will not consider a Bid Proposal that does not include this sworn and notarized Affidavit.

6. BID SECURITY AND BONDS

A. Each bid shall be accompanied by a certified check, cashier's check, money order or bid bond made payable to West Bloomfield School District in an amount not less than five percent (5%) of the Base Bid as a proposal guarantee. Bid Bond shall be provided by a company licensed to do business in the State of Michigan.

B. The successful Bidder shall provide a Performance Bond and a Labor and Material Payment Bond, covering the faithful performance of the Contract and payment of all obligations arising there under, each in the amount of one hundred percent (100%) of the contract amount. Bonds shall be provided by a company licensed to do business in the State of Michigan. The cost of such bonds shall be included in the Bid.

C. The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to be commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this paragraph.

D. All surety companies providing bonds shall be listed in the latest version of the Department of Treasury Circular 570 entitled “Companies Holding Certificates of Authority as Acceptable Sureties of Federal Bonds and as Acceptable Reinsuring Companies.”

E. All surety companies providing bonds shall have an A. M. Best rating of B+ or better and be authorized to do business in the state of Michigan.

F. Should the Bidder refuse to enter into a Contract or fail to furnish such bonds, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.

G. The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either the Contract has been executed and bonds have been furnished or the specified time has elapsed so that the Bid may be withdrawn or all Bids have been rejected.

7. SUBMITTALS – BID REQUIREMENTS

A. Provide one (1) original Bid submission and the number of copies as required on the Bid Form. Provide hard copies of all submittal requirements with the original Bid submission. For all copies, provide hard copies of the Bid Form and Bill of Materials. All other submittal requirements may be provided as either hard copy or electronically. Electronic copies shall be provided as a USB key or other storage method with each copy. Email is not an acceptable medium and may result in a rejection of the Bid submission for non-compliance.

B. Provide a complete bill of materials depicting quantities, model numbers, unit and extended pricing, catalog cuts, operating characteristics, physical characteristics, and equipment configuration for all equipment, software, wiring, and miscellaneous appurtenances included in this bid.

C. The information shall be assembled in three ring binders complete with Table of Contents. All pages shall have page numbers, which shall be included in the Table of Contents.

D. The Table of Contents shall be as follows:

1. Tab No. 1 Cover Letter.
2. Tab No. 2 Bid Form.
3. Tab No. 3 Voluntary Alternates.
4. Tab No. 4 Names and Company Profiles for Prime Contractors, Major Subcontractors and Major Suppliers
5. Tab No. 5 Organizational Chart/Schedule/Manpower

6. Tab No. 6 Wiring and Equipment
7. Tab No. 7 Maintenance Agreements and Service Agreements and Warranties
8. Tab No. 8 Miscellaneous (Optional)

E. Description of Contents.

1. Tab No. 1, Cover Letter, shall include an executive overview of the project depicting the Bidder's complete understanding of the project.
2. Tab No. 2, Bid Form shall include a completed Bid as found in Section 00 4100, and the Bid Bond as a requirement to submit a qualified Bid.
3. Tab No. 3, Voluntary Alternates, in a section, which is optional and made available to permit all Bidders to submit alternates to the Bidding Documents. These Voluntary Alternates shall clearly define the intent of the alternate, cost impact to implement the alternates, and a description of the deviation in functions and features between the alternates and the base Bidding Documents. Include catalog cuts in this section for each alternate product required. The catalog cuts shall be keyed to the description of the alternate. Each alternate shall be independent of any alternate and shall be uniquely identified i.e. TAL -1 (Technology Alternate No. 1) TAL-2, TAL-3, etc.
4. Tab No. 4, List the names and company profiles for Prime Contractor, Major Subcontractors and Major Suppliers. In addition to the above information, describe each of the following:

    a. The roles of the Prime Contractor, Subcontractors and Suppliers.
    b. Description of corporate history for the Prime Contractor and planned Subcontractors, including dates of incorporation/founding, dates of any corporate mergers and/or acquisitions of Contractors and all present and former subsidiaries.
    c. The number of years installing similar systems in facilities similar to the Owner's.
    d. List of references that would be considered peers to the Owner utilizing similar systems.
    e. Name of active projects, their sites and scope of work.
    f. Provide recent customer references for similar work performed during the past twelve (12) months and provide documentation on installation staff training and certification.
    g. Indicate whether Prime Contractor or any planned Subcontractor are currently in litigation over other projects or have been involved in litigation over other projects in the previous five (5) years.

5. Tab No. 5, Organizational Chart, shall depict the prime contractor, the subcontractors, major suppliers, trainers, project managers, name of project leader, executive staff of each firm. The organizational chart shall include the names of the individuals occupying those positions, telephone numbers and E-mail addresses of all individuals on the organizational chart.

    a. Provide a detailed schedule, indicating specific dates that you would plan to be working within the building(s). This schedule shall include major milestones required to achieve the completion dates previously specified.
    b. Provide copies of any required certifications for installing Engineers or Project Managers.
    c. Specify total man hours included in the Bid to complete the project.

6. Tab No. 6, Wiring and equipment shall include the following information:

    a. Description of system operation.
    b. Complete bill of materials indicating quantities and take-offs for the products being provided. The bill of materials shall separate labor and materials cost on a building-by-building basis. Include Bill of Materials for any and all subcontractors.
    c. Equipment model numbers.
    d. Catalog cuts for all equipment being provided.
    e. Manufacturer's product specifications.
    f. A complete itemization of any software products with catalog cuts.
    g. Software product specifications, if applicable.

7. Tab Nos. 7 and 8 are self-descriptive as to their intended content.

8. MODIFICATIONS AND WITHDRAWAL OF BIDS

A. A Bidder may not modify, withdraw or cancel a Bid, for a period of sixty (60) days following the time and date designated for receipt of Bids, and by submitting a Bid each Bidder shall so agree.

B. A Bidder may withdraw their Bid, either personally or by written request, at any time prior to the scheduled time for receipt of bids. A withdrawn Bid may be resubmitted up to the date and time designated for receipt of Bids.

C. Prior to the time and date for receipt of Bids, a Bidder may modify a Bid by notice to the party receiving Bids, at the place designated for receipt of Bids. Such notice shall be in writing over the signature of the Bidder. Written notice and the signature of the Bidder shall be received, and date and time stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be worded as not to reveal the amount of the original Bid.

9. SPECIFICATIONS OF BID

A. Whenever any material or equipment is specified by patent or proprietary name or by the name of the manufacturer, unless stated differently, such specification shall be considered as if followed by the words “or acceptable equal”, whether or not such words appear. The Bidder may offer material or equipment with equal or better qualities and performance in substitution for those specified, which he considers would be in the Owner’s interest to accept. Any such offers shall be made in writing to the Owner for consideration with the submission of the proposal and the Bidder shall include sufficient data (i.e. technical literature and/or detailed product brochures) which, together with any other data the Owner may require, will enable the Owner to assess the acceptability of the material or equipment. Such acceptance by the Owner shall not relieve the Bidder from full responsibility from the efficiency and quality and performance of the substitute material or equipment, in the same manner and degree as the material and equipment specified by name.

10. CONSIDERATION OF BIDS

A. The Owner reserves the right to reject any or all Bids submitted either in whole or part, to reject a bid not accompanied by the required Bid security or by other data required by the Bidding Documents or to reject a Bid which is any way incomplete or irregular and to waive informality and irregularity in the Bids and in the Bidding and to award the contract to other than the low Bidder.

B. The Owner reserves the right to accept alternates in any order or combination and to determine the low Bidder on the basis of the sum of the Base Bid and the alternates accepted and to make the awards that the Owner determines are in its best interest. The decision of the Owner is final and not subject to appeal.

C. The Owner reserves the right to negotiate with any Bidder without rebidding the project in whole or in part.

11. INTERPRETATION OF CONTRACT DOCUMENTS PRIOR TO BIDDING

A. Bidders shall study and compare the Bidding Documents with each other, shall examine the site and local conditions by appointment with the Owner and if in doubt as to the true meaning of any part of the Bidding Documents, or finds discrepancies, inconsistencies, ambiguities or errors in or omissions from any part of the Bidding Documents, the Bidder may submit to the Engineer/Technology Designer a written Request For Interpretation (RFI) thereof. Submit RFI’s to Shawn Tyburski, Integrated Design Solutions, LLC, 1441 W. Long Lake, Suite 200, Troy, Michigan 48098, (248) 823-2195, styburski@ids-michigan.com. The person submitting the request shall be responsible for its prompt delivery. The bidding schedule is as follows:

Bids Available:	October 26, 2026
Pre-Bid Conference:	November 2, 2026; 3:30 PM via Microsoft Teams meeting: https://teams.microsoft.com/meet/2245759683006997?p=Dw4bfkmYBfo1aKCwHB Meeting ID: 224 575 968 300 699 7 Passcode: Cu9Hw79o

Deadline for RFI Submissions:	November 9, 2026; 12:00 PM
Deadline for RFI Responses:	November 10, 2026; 5:00 PM
Bids Due:	November 23, 2026; 2:00 PM*
Bid Opening:	November 23, 2026; 2:01 PM*
Post-Bid Interviews:	November 30, 2026; Hosted online via MS Teams meeting
Anticipated Board of Education Award:	December 15, 2026

* Should the District be closed due to inclement weather, bids will be due at the same time on the next business day.

B. Interpretation, correction or changes to the proposed Contract Documents will be made only by Addendum. Explanations, interpretations, corrections or changes of the Bidding Documents by any other method will not be binding.

12. ADDENDA/RESPONSES TO RFI'S

A. Addenda and responses to RFI's will be posted to the website where Bidding documents are available as indicated on the Advertisement for Bids.

B. Hard copies of Addenda will be made available for inspection wherever Bidding Documents are on file.

C. Addenda will be issued no later than three (3) days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which postpones the date for receipt of Bids.

D. Each Bidder shall ascertain prior to submitting his bid that he has received all Addenda issued and shall acknowledge their receipt on the Bid Form.

E. Each Bidder shall be responsible for compliance with all issued Addenda.

13. UNIT PRICES

A. Each Bidder must bid on all unit prices listed in the Bidding Documents that are applicable to its Base Bid. They will be fully considered in awarding the Contract.

B. Bids are considered irregular and may be rejected if unit prices contained in the Bid are obviously unbalanced either in excess of, or below, reasonable cost analysis values.

C. Any unit price which, in the sole opinion of the Owner, is unbalanced or excessive, may be rejected without affecting the validity of the Bid or other unit prices. An entire Bid may be rejected if, in the sole opinion of the Owner, rejection of individual unit prices materially affects the Bid.

D. Unit prices shall be applicable to the additions to or deletions from the scope of work indicated in the Bidding Documents and may be utilized at any time prior to substantial completion, or as defined in the Bidding Documents, whichever is longer.

E. Unit prices for deletions from the scope of work may be utilized at any time prior to installation of said unit through substantial completion, or as defined in the Bidding Documents, whichever is longer.

14. SPECIFICATIONS OF BID

A. Material or equipment specified by manufacturer and/or part number is specified as a basis of design. Whenever any material or equipment is specified by patent or proprietary name or by the name of the manufacturer, unless stated differently, such specification shall be considered as if followed by the words "or Acceptable Equal", whether or not such words appear.

B. Acceptable Equal shall be defined as a component, material or piece of equipment that is equal or superior in all aspects to the product specified as a basis of design. Any Acceptable Equal products included in your bid response shall be provided with the same warranty, service and support as the specified product and shall integrate with the rest of the system components with no additional changes to the rest of the system as specified. The proposed Acceptable Equal product shall not affect dimensional and functional clearances upon installation.

C. Clearly delineate within your bid response any and all Acceptable Equal products that are being proposed. Include all drawings, cut sheets, performance and test data, samples and other information necessary for an evaluation of the product as an Acceptable Equal.

D. The burden of proof of Acceptable Equal status is upon the Bidder. Failure to provide supporting data will result in the product being rejected. The Technology Designer's decision of approval or disapproval of a proposed Acceptable Equal shall be final.

15. SUBSTITUTIONS

A. No substitutions to the specifications of the Bidding Documents will be considered prior to receipt of Bids, unless a written request for approval has been received by the Technology Designer at least ten (10) days prior to the date for receipt of Bids.

B. Such request for substitutions shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, samples and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work shall be included.

C. The burden of proof of the merit of the proposed substitution is upon the Bidder. The Technology Designer's decision of approval or disapproval of a proposed substitution shall be final.

D. If the Technology Designer approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum.

E. The Bidder may offer material or equipment with equal or better qualities and performance via a voluntary alternate. Any such offers shall be made in writing in the space indicated on the Bid Form and shall include the cost to add or to deduct from the Base Bid amount. The Bidder shall include sufficient data (i.e. technical literature and/or detailed product brochures) to enable the Owner to assess the acceptability/desirability of the alternate material or equipment. Such acceptance by the Owner shall not relieve the Bidder from full responsibility from the efficiency and quality and performance of the substitute material or equipment, in the same manner and degree as the originally specified material and equipment.

F. No substitutions will be considered after Contract award unless specifically provided for in the Contract Documents.

16. EXECUTION OF AGREEMENT

A. The successful Bidder will be required to execute a modified AIA Standard Abbreviated Form of Agreement between Owner and Contractor, AIA Document A104-2017. A draft copy including modifications is included. The bidding documents and Bidder's response shall be part of the contract. The contract documents will be available for review and signatures within seven (7) days of contract award. The Owner will issue an Owner's Purchase Order for the Owner's accounting purposes only.

B. The Bidder to whom the Contract is awarded shall, within five (5) calendar days after notice of award and receipt of Agreement forms from the Owner, sign and deliver required copies to the Owner.

C. At or prior to delivery of the signed Agreement, the Bidder to whom the Contract is awarded shall deliver to the Owner those Certificates of Insurance required by the Owner.

D. The Owner shall approve Bonds and Certificates of Insurance and any required state or local permits before the successful Bidder may proceed with the Work. Failure or refusal to provide Bonds or Certificates of Insurance or required permits in a form satisfactory to the Owner shall subject the successful Bidder to loss of time from the allowable construction period equal to the time of delay in furnishing the required material.

E. After award of the Contract and prior to the first payment request, the Bidder to whom the Contract is awarded shall deliver to the Owner a schedule of values broken down by labor and material on a building by building basis.

17. TAXES

A. Installation services for the tangible personal property purchased by the Owner are not subject to sales taxation. Moreover, the Owner is exempt from taxation on all tangible personal property purchased by the Owner for its use and consumption; however this exemption would not apply to any materials required under the Bidding Documents that are deemed to be a component of a construction/improvement project to the Owner's facilities. The Owner will provide their Federal and State tax-exempt number(s) upon award.

B. All prices submitted on the Bid Form shall be inclusive of all applicable taxes.

18. GENERAL INDEMNIFICATION

A. Bidders shall indemnify, defend and hold harmless the Owner, its Board of Education and its Board members, in their official and individual capacities, administrators, employees, agents, architects, contractors, successors and assignees, from and against any and all costs, expenses, damages, and liabilities, including reasonable attorney's fees, arising out of the: (i) negligent act or willful misconduct of the Contractor [Bidder], its officers, directors, employees, successors, assignees, contractors, subcontractors and agents; (ii) any breach of the terms of this Agreement [the Bidding Documents] by Contractor [Bidder]; or (iii) any breach of any representation or warranty by Contractor [Bidder] under this Agreement [the Bidding Documents].

19. INTELLECTUAL PROPERTY INDEMNIFICATION

A. Bidders shall indemnify, defend and hold harmless the Owner, its Board of Education and its Board members, in their official and individual capacities, administrators, employees, agents, contractors, successors and assignees, from and against any and all liabilities, damages, costs and expenses, including reasonable attorney fees, incurred in connection with any claim or suit brought against the Owner arising from any claims of violation of U. S. copyright, patent or trade secret by any third party resulting from Contractor's [Bidders] or the Owner's use of any equipment, software, technology, documentation and/or data development in connection with the Work, services and products described in the Bidding Documents; provided that Contractor [Bidder] is notified in writing within thirty (30) days from the date the Owner knew of such claim. The Owner retains the right to offset against any amounts owed Contractor [Bidder] hereunder or any such monies expended by the Owner in defending itself against such claims. Following written notification of an infringement claim, Contractor [Bidder] may, at its expense, and in its sole and absolute discretion (but without obligation to do so) either (i) procure for the Owner the right to continue to use the alleged infringing products or services; or (ii) replace, modify or provide substitute products or services to the Owner which are, in the Owner's sole opinion, of equal or greater quality to make it non-infringing; or (iii) refund to the Owner all monies paid to Contractor with respect to the infringing products or services, as well as all reasonable losses related to the infringing product(s) and all reasonable expenses related to the installation and conversion to the new product(s).

20. TURNKEY SOLUTION

A. The Bidding Documents set forth the terms and conditions upon which the Bidder will provide a "turnkey" solution for the installation and operation of the included systems for use by the Owner. The Bidder agrees that it will provide a "turnkey solution" to the Owner and represents and warrants that the design, operation and functionality of the included systems are in accordance with the Bidding Documents. All prices provided by the Bidder on the Bid Form must include all cables, connectors, equipment, etc., that are necessary to the make the included systems fully operational for the intent and purpose stated in the Bidding Documents.

21. BID PREPARATION COSTS

A. The Bidder is responsible for any and all costs incurred by the Bidder, or any agents of Bidder, in responding to this Request for Proposal.

22. PERMITS AND FEES

A. All Bids shall include costs of all applicable permits and fees. Include time in your bid response to walk the inspector through the buildings during any and all inspections.

23. TIME OF COMPLETION

A. The Bidder, if awarded the Contract, agrees to complete the Work on or before the Contract Completion dates stated in the Bid Form.

24. EQUAL OPPORTUNITY

A. The Bidder and the Bidder's Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. The Contractor shall take steps to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

B. The Bidder and the Bidder's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf; state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.

25. POST BID INFORMATION

A. Bidders to whom Contract award is under consideration shall submit to the Technology Designer, upon request, a properly executed AIA Document A305, Contractor's Qualification Statement.

END OF SECTION 00 2113

SECTION 00 4100 - BID FORM

OWNER: West Bloomfield School District
5810 Commerce Road
West Bloomfield, Michigan 48324

PROJECT: West Bloomfield School District
New Doherty Elementary School
Structured Cabling Systems
Bid Package No. T4
West Bloomfield, Michigan

ENGINEER/ TECHNOLOGY DESIGNER: Integrated Design Solutions, LLC
Architecture, Engineering, Interiors & Technology
1441 W. Long Lake Road, Suite 200
Troy, Michigan 48098
(248) 823-2100
(248) 823-2200 fax

NAME OF BIDDER: _____

ADDRESS: _____

_____

TELEPHONE: _____

E-MAIL: _____

E-RATE SERVICE PROVIDER NUMBER (SPIN): _____

E-RATE FEDERAL COMMUNICATIONS REGISTRY NUMBER (FCCRN): _____

BID

Pursuant to and in compliance with the Advertisement for Bids, Instructions to Bidders and other documents relating thereto, the undersigned proposes and agrees to furnish equipment, materials, and labor and perform all work necessary to complete the West Bloomfield School District Contract for the New Doherty Elementary School – Structured Cabling Systems project in accordance with the Bidding Documents prepared by Integrated Design Solutions, LLC dated October 26, 2026, and agrees to accept payment as herein provided.

BASE BID

Lump sum bid for all Work specified and as shown on the Drawings to provide all equipment, labor, cabling, miscellaneous equipment, and connections for a turnkey solution (including a $10,000.00 Owner allowance for Owner requested moves, adds, or changes):

_____

_____ Dollars ($_____).

NOTE: The amounts shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern.

BASE BID – BREAKDOWN

The award of the Contract shall be based on the Base Bid amount. The Contractor shall provide separate prices for accounting purposes only.

Sections 01 0000, 27 0015 and 27 1000, 27 1323, 27 1517	$_____
Performance, Labor and Materials Bonds	$_____
Owner Allowance	$10,000.00
Base Bid	$_____

BASE BID – MANDATORY ALTERNATES

None.

BASE BID - VOLUNTARY ALTERNATES

Voluntary Alternate No. 1: _____

Add/Deduct _____

_____ Dollars($_____).

Voluntary Alternate No. 2: _____

Add/Deduct _____

_____ Dollars($_____).

BASE BID - UNIT PRICES

The Bidder shall include a complete bill of materials as part of their bid submission. Refer to specifications section 00 2113 paragraph "SUBMITTALS - BID REQUIREMENTS" for additional information. The bill of materials will be considered to be the unit price schedule for additions to or deletions from the scope of work from the date of award until the date of completion.

The bill of materials shall be formatted to include all charges for labor, materials and equipment, overhead and profit, general conditions, supervision, insurance, taxes and incidental expenses in such a way that unit pricing can be easily derived.

Indicate below acceptance of these unit pricing terms, acceptance with modifications as indicated or exception taken.

☐ Included bill of materials is considered the unit pricing schedule for the duration of the project.

☐ Exception taken. Included bill of materials is not valid for unit pricing for additions to or deletions from the scope of work for the duration of the project.

☐ Included bill of materials is considered the unit pricing schedule for the duration of the project with the following modifications:

_____

_____

_____

In addition, provide unit pricing for the following:

Said unit prices shall be applicable to the pricing of additions to, or deletions from, the Work indicated in the Contract Documents.

		ADD	DEDUCT	% E-RATE ELIGIBLE
UP-1:	Cost to provide and install a Category 6 data outlet including labor, wire, jacks, terminations, connectors, testing and tagging (assume 250-foot run).	$_____	$_____	_____%
UP-2:	Cost to provide and install a Category 6a data outlet including labor, wire, jacks, terminations, connectors, testing and tagging (assume 250-foot run).	$_____	$_____	_____%
UP-3:	Cost to provide and install a 48-port unpopulated patch panel.	$_____	$_____	_____%
UP-4:	Cost to provide and install a 24-port unpopulated patch panel.	$_____	$_____	_____%

BASE BID - EXTENDED UNIT PRICES

The Bidder proposes extended unit prices in accordance with the following schedule. Said unit prices shall include all charges for labor, materials and equipment, overhead and profit, inflation/escalation, general conditions, supervision, insurance, applicable taxes and incidental expenses.

Said extended unit prices shall be applicable to the pricing of additional work beyond Substantial Completion. Said extended unit prices shall be valid from the date of substantial completion to twelve (12) months after the date of substantial completion.

For each unit price stated above, include with your bid proposal a pricing schedule, standard escalation percentages or other form of pricing the District may utilize for future work extending beyond Substantial Completion for the time period specified on a yearly basis.

_____

_____

_____

_____

_____

_____

_____

_____

_____

BID SECURITY

Each Bid shall be accompanied by a Bid Security in the form of a certified check, cashier's check, or money order made payable to the Owner or a Bid Bond naming the Owner as the oblige in an amount not less than five percent (5%) of the Base Bid as a Bid guarantee. Bid Bonds shall be issued by a company licensed to do business in the State of Michigan.

ADDENDA

The undersigned acknowledges the receipt of the following addenda:

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

TIME OF COMPLETION

The undersigned agrees to substantially complete the project by: February 25, 2028.

WITHDRAWAL OF BIDS

The undersigned agrees that its Bid shall not be withdrawn for a period of sixty (60) days after the date set for receipt of Bids.

NON-COLLUSION

The undersigned certifies that the Bid has not been prepared in collusion with any other bidder and that the prices, discounts, terms and conditions thereof have not been directly or indirectly communicated by or on behalf of the Bidder to any such person other than the recipient of such Bid, and will not be communicated to any such person prior to the official opening of said Bid. The undersigned fully understands that no premiums, rebates, or gratuities are permitted either with, prior to or after signing the Contract.

This certification may be treated as if it were a sworn statement made under oath, and is made subject to the provisions of 18 U. S. C., 1001, relating to the making of false statements.

SIGNATURE AND LEGAL STATUS OF BIDDER

Signed and sealed this _____ day of _____, 20_____.

_____
(Individual, Partnership, Corporation)

_____
State of Incorporation

Affix Corporate Seal By: _____
(Authorized Signature of Bidder)

_____
(Print or Type Name of Bidder)

_____
Title

_____
Business Address

_____
E-mail

Instructions: Submit one (1) original, three (3) hard copies, and one (1) electronic copy to the Owner and retain one (1) copy for the Bidder's records. Clearly label each copy submitted as either "original" or "copy."

AFFIDAVIT OF BIDDER

The undersigned, the owner or authorized officer of _____ (the "Bidder"), pursuant to the familial disclosure requirement provided in the _____ (the "School District") advertisement for construction bids, hereby represent and warrant, except as provided below, that no familial relationships exist between the owner(s) or any employee of _____ and any member of the Board of Education of the School District or the Superintendent of the School District.

List any Familial Relationships:

BIDDER:

_____

By: _____

Its: _____

STATE OF MICHIGAN)
)ss.
COUNTY OF _____)

This instrument was acknowledged before me on the _____ day of _____, 20___, by _____.

_____
, Notary Public
_____ County, Michigan
My Commission Expires: _____
Acting in the County of: _____

AFFIDAVIT OF COMPLIANCE – IRAN ECONOMIC SANCTIONS ACT

MICHIGAN PUBLIC ACT NO. 517 OF 2012

The undersigned, the owner or authorized officer of _____ (the "Bidder"), pursuant to the compliance certification requirement provided in the _____ (the "School District") Advertisement for Bids, hereby certifies, represents and warrants that the Bidder (including its officers, directors and employees) is not an "Iran Linked Business" within the meaning of the Iran Economic Sanctions Act, Michigan Public Act No. 517 of 2012 (the "Act"), and that in the event Bidder is awarded a Contract as a result of the aforementioned Advertisement for Bids, the Bidder will not become an "Iran Linked Business" at any time during the course of performing under the Contract.

The Bidder further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than $250,000.00 or 2 times the amount of the Contract or proposed Contract for which the false certification was made, whichever is greater, the cost of the School District's investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on an Advertisement for Bids for three (3) years from the date that it is determined that the person has submitted the false certification.

BIDDER:

_____
Name of Bidder

By: _____

Its: _____

STATE OF MICHIGAN)
)ss.
COUNTY OF _____)

This instrument was acknowledged before me on the _____ day of _____, 20____, by _____.

_____
, Notary Public
_____ County, Michigan
My Commission Expires: _____
Acting in the County of: _____

END OF BID FORM

SECTION 00 7373 – SERVICE PROVIDER/VENDOR CRITERIA (E-RATE)

1.1 GENERAL

A. West Bloomfield School District is seeking funding from the Federal E-Rate Program and has filed an FCC Form 470 for this procurement, coincidental with the issuance of this RFP. Vendors responding to this RFP must demonstrate a full understanding and be in compliance with all Federal E-Rate program Requirements.

B. Purchase and installation of products and services must be between July 1, 2027 and September 30, 2027.

C. All bidders must adhere to the Lowest Corresponding Price (“LCP”) guidelines as dictated by the Schools and Libraries Division.

D. All bidders understand that the District may choose more than one provider for one type of service.

1.2 USAC E-RATE REGISTRATION

A. To bid on this project, all vendors shall submit with its proposal a valid Form 498 ID (formerly “SPIN”) and a valid Federal Communications Commission Registration Number (“FCRN”). Vendors have access to E-Rate regulations and policies via the E-Rate Administrator’s Website: http://www.usac.org/sl/ . Direct all questions regarding the USF E-Rate requirements in their RFP to the Universal Service Administration Company (“USAC”), Schools and Library Division (“SLD”) at 888-203-8100.

1.3 USAC PARTICIPATION AND COOPERATION

A. Vendors shall agree to participate in the USAC Schools and Library Federal E-Rate Program. Vendor shall agree to fully cooperate in all respects with the District, USAC and any agency or organization administering the E-Rate Program to ensure the District receives all of the E-Rate funding for which it has applied and is entitled in connection with the Vendor’s services and/or products. The District expects that all vendors will be thoroughly familiar with and abide by any rules or regulations regarding the E-Rate Program.

B. Vendors shall have the 2023 Service Provider Annual Certification Form 473 on file with USAC.

1.4 USAC E-RATE ELIGIBLE SERVICES

A. The items requested within this RFP may or may not be USF eligible. All bid responses must clearly identify which services/materials are E-Rate eligible, partially eligible (% of eligibility) and not eligible. Please use the 2026 USF Eligible Services List located on the USAC website (http://www.usac.org/sl/). It is the vendors responsibility to check for updates and corrections prior to submitting their bid.

B. Invoicing for E-Rate: All billing for services and equipment MUST occur on or after July 1, 2027 to comply with the E-Rate 2027-2028 year.

C. Invoicing Procedures. Vendors shall itemize, price, and invoice all materials or services that are eligible and ineligible for E-rate funding. Vendor must include the following information on all invoices to the District for E-rate eligible equipment and/or services:

1. Date of invoice.
2. Dates of service.
3. District Purchase Order or Contract number.
4. Concise breakdown of amount(s) to be billed to USAC (discounted portion of eligible charges) and amount(s) to be billed to the District (non-discounted amount of eligible charges).

1.5 USAC E-RATE DISCOUNTED INVOICING AND REIMBURSEMENT PROCESSES

A. Vendors shall, at the District's request, either (a) invoice the District only for the non-discounted amounts due on E-rate approved transactions and simultaneously invoice the Universal Service Administrative Company ("USAC") for the balance [Discounted Invoice Process] or (b) remit to the District within twenty days of receipt the reimbursement payments it receives from USAC or any other third party payer for the discounted portions of E-rate approved transactions involving the District [Reimbursement or "BEAR" Process].

1.6 USAC E-RATE INFORMATION AND DOCUMENTATION

A. Selected Vendor shall provide to FPS staff and/or the District's E-rate consultant within reasonable period of time, all information and documentation that the Vendor has or that Vendor reasonably can acquire which the District may need to prepare its E-rate applications and/or to document transactions eligible for Erate support. Vendor shall maintain all bids, quotes, records, correspondence, receipts, and other data relating to Vendor's services to the District in compliance with E-Rate retention rules.

1.7 CONTRACT TERM MODIFICATION.

A. The District will reserve the right to extend or abbreviate the contract period if such extension or abbreviation is necessary to make the Contract term coincide with an E-Rate "program year" or coincide with a "service delivery deadline extension," as those terms are defined by the Federal Communications Commission ("FCC") or the Universal Service Administrative Company ("USAC").

END OF SECTION 27 0513

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Standard Short Form of Agreement Between Owner and Contractor

AGREEMENT made as of the «December» day of «fifteenth» in the year «2026 »
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

«West Bloomfield School District »« »
«5810 Commerce Road »
«West Bloomfield, Michigan 48324 »
« »

and the Contractor:
(Name, legal status, address and other information)

« »« »
« »
« »
« »

for the following Project:
(Name, location and detailed description)

«West Bloomfield School District »
« New Doherty Elementary School – Structured Cabling Systems »
« Bid Package No. T4 »
«West Bloomfield, Michigan »

The Architect:
(Name, legal status, address and other information)

«Integrated Design Solutions, LLC »« »
«1441 W. Long Lake Road, Suite 200 »
«Troy, Michigan 48098 »

«IDS Project No. 23235-1000 BP-T4 »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

DRAFT

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ARTICLE 1 THE CONTRACT DOCUMENTS

§1.1 The Contractor shall faithfully and competently complete the Work described in the Request for Proposal dated October 23 , 2026, (collectively "the RFP"), including Advertisement or Invitation to Bid, Instructions to Bidders, Drawings and Specifications and the Contract Documents for the Project, or as reasonably inferable as necessary or incidental, to produce the results intended by the Contract Documents. ~~Contract Documents for the Project.~~ The Contract Documents consist of

.1 this Agreement signed by the Owner and Contractor;

.2 all the ~~d~~Drawings and ~~s~~Specifications prepared by the Architect~~, dated « », and enumerated as follows:~~ for construction for the Project, attached hereto by this reference, and including (but not necessarily limited to) the following:

Drawings:

Number	Title	Date
Refer to attached List of Drawings		

Specifications:

Section	Title	Pages
See attached Table of Contents		

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.3 addenda, if any, prepared by the Architect as follows:

Number	Date	Pages

.4 written orders for changes in the Work, pursuant to Article 10, issued after execution of this Agreement; and

.5 other Contract dDocuments, if any, identified as follows:

Contractor's Bid Form; Pre-Bid Meeting Notes; and Minutes of Bid Review Conference»

§1.2 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. Work called for on the Drawings and not mentioned in the Specifications, or vice versa, shall be performed as though fully set forth in both. Nothing in this Section 1.2, however, shall relieve the Contractor of any of its obligations under the Contract Documents. Other conflicts between or among the Contract Documents shall be resolved under the following rules of construction:

.1 the specific shall govern over the general;

.2 specified dimensions shown on the Drawings shall govern, even though they may differ from dimensions scaled on the Drawings, if any;

.3 Drawings of larger scale shall govern over those of smaller scale; any special Drawing details shall govern over standard detail;

.4 Specifications shall govern over Drawings in matters of material or equipment specified; Drawings shall govern over Specifications in matters of construction or installation detail;

.5 documents of later date shall always govern; except that the Agreement shall govern over all other documents, regardless of their dates; and

.7 in the event of any inconsistency or ambiguity between this Agreement and the Contract Documents, the terms that requires a higher standard of performance by the Contractor shall prevail.

§1.3 Work not particularly detailed, marked or specified shall be the same as similar parts that are detailed, marked or specified. On certain Contract Documents, only a portion of the detail may be fully shown and the remainder indicated in outline, in which case the general detail shall be understood as also applying to other like portions of the Work.

§1.4 The organization of the Specifications into divisions, sections, and/or articles, and the arrangement of the Drawings, shall not dictate to the Contractor in any way how the Work is to be divided among Subcontractors, or establish the extent of Work to be performed by any trade. Similarly, the organization of the Contractor's duties into different phases or categories in the Agreement is for convenience only and shall not limit the generality of the Contractor's obligation to provide all of the services whenever necessary.

§1.5 All references in the Contract Documents to standards (such as commercial standards, federal specifications, trade association standards or similar standards), whether for materials, processes, assemblies, workmanship, performance or any other purpose, shall mean, unless otherwise noted, the most recent available published version of such standard as of the date of that part of the Contract Documents bearing the reference. All standards referred to, except as modified in the Contract Documents, shall have the same force and effect as though printed therein. These standards will not be furnished to the Contractor, as the Contractor and all members of the construction team are required to be familiar with their requirements.

§1.6 Whenever a provision of the Contract Documents conflicts with agreements or regulations in force among members of trade associations, unions or councils, which regulate or distinguish the portions of the Work which shall or shall not be performed by a particular trade, the Contractor shall make necessary arrangements to reconcile the conflict without delay, damage, cost or recourse to the Owner. Delays in the Work resulting from the failure of the Contractor to use its best efforts to reconcile any such conflicts shall not result in an extension of the Project Schedule and shall not result in the increase of the Contract Sum.

§1.7 The Contractor acknowledges that there may be items of the Work, which the Contractor is responsible to provide under the Agreement that are not drawn or specified in the Design but are necessary for the proper execution and

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completion of the Work and are consistent with and reasonably inferable from the Drawings and Specifications. All such items shall be provided as part of the Work without delay in its progress and without any increase in the Contract Sum.

ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 2.1 The Contract Time is the number of calendar days available to the Contractor to substantially complete the Work.

§ 2.2 Date of Commencement:

Unless otherwise set forth below, the date of the commencement of the Work shall be the date of this Agreement.
(Insert the date of commencement if other than the date of this Agreement.)

« »

§ 2.3 Substantial Completion:

Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion, as defined in Section 12.5, of the entire Work:
(Check the appropriate box and complete the necessary information.)

~~[« »] Not later than « » (« ») calendar days from the date of commencement.~~

~~[« »] By the following date: « »~~

Portion of Work	Substantial Completion Date
Structured Cabling Systems	February 25, 2028

ARTICLE 3 CONTRACT SUM

§ 3.1 The Contract Sum shall include all items and services necessary for the proper execution and completion of the Work. Subject to additions and deductions in accordance with Article 10, the Contract Sum is:

« X » ~~($ « »)~~Stipulated Sum, in accordance with Section 3.2 below

§ 3.2 For purposes of payment, the Contract Sum includes the following values related to portions of the Work:
(Itemize the Contract Sum among the major portions of the Work.)

Portion of the Work	Value

§ 3.3 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and hereby accepted by the Owner:
~~*(Identify the accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)*~~

§ 3.3.1 The following alternates are included in the Contract Sum:

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Item	Price

~~« »~~

§ 3.3.2 The Contract Sum does not include the following alternates, which are described in the Contract Documents and may be accepted by the Owner in writing; provided, however, that the Contractor shall furnish the Owner with not less than fourteen (14) days' prior written notice of the date upon which any of the alternates set forth below in this Section 3.3.2 must be accepted by the Owner in order for the Contractor to perform the Work covered by such alternates for the price set forth below in this Section 3.3.2 and without any adjustment to a milestone date or in the Contract Time.

Item	Price
None	

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§ 3.4 Allowances, if any, included in the Contract Sum are as follows:
(Identify each allowance.)

Item	Price
Owner Allowance	$10,000.00

§ 3.4.1 Use of any Allowance shall be at the sole direction and written approval of the Owner. Costs allocated against an Allowance, and any overage on an Allowance, shall be calculated by adding the Contractor's Actual Cost for labor and material plus the Contractor's overhead and profit of «ten » (« 10 »%) provided for each item.

§ 3.5 Unit prices, if any, are ~~as follows:~~ set forth in the "Schedule of Unit Prices" attached hereto and made part of this Agreement as **Exhibit A**. Such Unit prices are considered complete and include: (i) all materials, equipment, labor, delivery, installation, overhead, and profit; and (ii) any and all other costs or expenses in connection with, or incidental to, the performance of that portion of the Work to which such unit prices apply.

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(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)
See Exhibit A (contractor bid form), which is attached hereto and made part of this Agreement.		

ARTICLE 4 PAYMENTS

§ 4.1 Based on Contractor's Applications for Payment certified by the Architect, the Owner shall pay the Contractor, in accordance with Article 12, as follows:

~~*(Insert below timing for payments and provisions for withholding retainage, if any.)*~~

§ 4.1.1 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 4.1.2 Provided that a complete Application for Payment is received by the Architect not later than the 10th day of a month, the Owner shall make payment of undisputed portions of the certified amount to the Contractor not later than the «last» day of the same month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than «forty-five» (45) days after the Architect certifies the Application for Payment.

§ 4.1.3 Retainage. Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

.1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of «ten» percent («10»%). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included;

.2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of «ten» percent («10»%);

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment.

§ 4.1.4 The progress payment amount determined in accordance with Section 4.1.3 shall be further modified under the following circumstances:

.1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and

.2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable.

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~~« »~~

§ 4.2 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate below, or in the absence thereof, at the legal rate prevailing at the place of the Project.
(Insert rate of interest agreed upon, if any.)

«Zero » % «0 »

ARTICLE 5 INSURANCE AND BONDS

§ 5.1 The Contractor shall maintain the following types and limits of insurance until the expiration of the period for correction of Work as set forth in Section 14.2, subject to the terms and conditions set forth in this Section 5.1:

§ 5.1.1 Commercial General Liability insurance for the Project, written on an occurrence form, with policy limits of not less than ~~« » ($ « ») each occurrence, « » ($ « ») general aggregate, and « » ($ « ») aggregate for products-completed operations hazard.~~ the minimum coverages indicated in Section 5.1.7 below.

§ 5.1.2 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than the minimum coverages indicated in Section 5.1.7 below ~~« » ($ « ») per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance, and use of those motor vehicles~~ along with any other statutorily required automobile coverage.

§ 5.1.3 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided that such primary and excess or umbrella insurance policies result in the same or greater coverage as those required under Section 5.1.~~1 and 5.1.2~~, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 5.1.4 Workers' Compensation at statutory limits.

§ 5.1.5 Employers' Liability with policy limits not less than the minimum coverages indicated in Section 5.1.7 below.~~« » ($ « ») each accident, « » ($ « ») each employee, and « » ($ « ») policy limit.~~

§ 5.1.6 ~~The Contractor shall provide builder's risk insurance to cover the total value of the entire Project on a replacement cost basis.~~ The Owner shall purchase and maintain a property insurance written on a builder's risk "all-risk" or equivalent form in the amount and with deductibles determined by the Owner. Except as otherwise provided in the Contract Documents, if the property insurance requires deductibles, the Contractor shall be responsible to pay costs, resulting from the acts or omission of the Contractor and its subcontractors, not covered because of such deductibles.

§ 5.1.7 Other Insurance Provided by the Contractor (See Contractor's Insurance Certificate(s) attached hereto as **Exhibit C** and made a part of this Agreement)
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage	Limits
Workers' Compensation	Statutory
Employer's Liability:	
Bodily Injury by Accident:	$1,000,000.
Bodily Injury by Disease, Policy Limit	$1,000,000.
Bodily Injury by Disease, Each Employee	$1,000,000.
General Liability:	
Each Occurrence (Bodily Injury and	$1,000,000.

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Property Damage)	
Personal & Advertising Injury	$1,000,000.
Medical Payments Coverage	$5,000.
Fire Damage Liability	$100,000
General Aggregate & Completed Operations Aggregate	$2,000000. $2,000,000.
Excess Umbrella Liability:	
Each Occurrence	$2,000,000.
General Aggregate	$2,000,000.
Automobile Liability:	
a. Bodily Injury - Each Person	$1,000,000.
Each Accident	$1,000,000.
b. Property Damage – Each Accident or	$1,000,000.
c. Combined Single Limit – Each Accident (Bodily Injury and Property Damage)	$2,000,000.

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§ 5.1.8 Contractor shall require all contractors, Subcontractor and/or their agents to name Owner as an additional insured on General Liability, Umbrella / Excess Liability, Automobile Liability policies.

§ 5.1.9 Insurance coverage and surety bond required under this Agreement shall be written with insurance and surety carriers authorized to do business in the State of Michigan. Insurance coverage and surety bonds shall be in a form and provided by an insurer acceptable to the Owner with an A.M. Best rating of A, XII or better.

§ 5.1.10 The Contractor shall furnish payment and performance bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source, and the cost thereof shall be included in the Cost of the Work. The amount of each bond shall be equal to one hundred percent (100%) of the Contract Sum. The Contractor shall deliver the required bonds to the Owner at least three (3) days before the commencement of any Work at the Project site. The Contractor shall only subcontract with Subcontractors that are trustworthy, financially able, and have a track record in successfully completing trade works of similar size and complexity.

§ 5.1.11 Insurance coverages, shall be written on an occurrence basis, and shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents. The Contractor shall notify the Owner any disruption in coverage occurs and shall provide "tail coverage" at no cost to the Owner.

§ 5.2 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance and shall provide property insurance to cover the value of the Owner's property. The Contractor is entitled to receive an increase in the Contract Sum equal to the insurance proceeds related to a loss for damage to the Work covered by the Owner's property insurance however, the Contractor shall be responsible to pay costs resulting from the acts or omission of the Contractor and its subcontractors not covered because of any deductibles..

§ 5.3 The Contractor shall obtain an endorsement to its Commercial General Liability insurance policy to provide coverage for the Contractor's obligations under Section 8.12.

§ 5.4 Prior to commencement of the Work, the Contractor~~each party~~ shall provide certificates of insurance showing its~~their respective~~ coverages. The Owner may require additional proof of coverage in the form of a true and accurate copy of the polices of insurance, themselves. The maintenance of the insurance in strict compliance with the requirements of this Agreement shall be condition precedent to Owner's obligation to make any payment under this Agreement.

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§ 5.5 ~~Unless specifically precluded by the Owner's property insurance policy, the Owner and Contractor waive all rights against (1) each other and any of their subcontractors, suppliers, agents, and employees, each of the other; and (2) the Architect, Architect's consultants, and any of their agents and employees, for damages caused by fire or other causes of loss to the extent those losses are covered by property insurance or other insurance applicable to the Project, except such rights as they have to the proceeds of such insurance.~~ The Contractor shall be solely responsible for insuring against any loss or damage to all owned, borrowed or rented property, including but not limited to tools, materials, supplies, equipment, forms, scaffolding, towers, staging, bunkhouses and other temporary structures including their contents, which do not form a permanent part of the Project. The Owner shall in no event be liable for any loss or damage to any of the aforementioned items, or the Work connected with the Contractor, or employees, agents or servants of same, which is not to be included in and remain a permanent part of the Project.

ARTICLE 6 GENERAL PROVISIONS

§ 6.1 The Contract

The Contract represents the entire and integrated agreement between the parties and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a written modification in accordance with Article 10.

§ 6.2 The Work

~~The term "Work" means the construction and services required by the Contract Documents, and includes all other labor, materials, equipment, and services provided, or to be provided, by the Contractor to fulfill the Contractor's obligations.~~ The term "Work" consists of all goods and services, such as labor, transportation, materials, tools, and equipment (i) to be incorporated into the Project (or the Contractor's portion of the Project if the Contractor is not responsible for the entire Project), (ii) required of the Contractor under the Contract Documents, or (iii) necessary or appropriate to fully construct, fixture, operate and maintain the Project (or the Contractor's portion of the Project if the Contractor is not responsible for the entire Project). The Work shall be performed in accordance with the Contract Documents. The Work may constitute the whole or a part of the Project. The term "Work" also shall include labor, materials, equipment and services provided or to be provided by Subcontractors, Sub-Subcontractors, material suppliers or any other entity for whom the Contractor is responsible under or pursuant to the Contract Documents.

§ 6.3 Intent

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

§ 6.4 Consent, Approve, Satisfactory, Proper, and As Directed

The words "consent," "approved," "satisfactory," "proper," "as directed," any derivatives of them, or similar terms, mean written approval by the Owner, and may include approval of the Architect if the Owner so directs. Except where a different standard is specifically established, the Owner has the right to grant or withhold such approval in its sole discretion.

§ 6.5 Provide

The word "provide" and any derivatives thereof, and similar terms, mean to properly fabricate, complete, transport, deliver, install, erect, construct, test and furnish all labor, materials, equipment, apparatus, appurtenances, and all items and expenses necessary to properly complete in place, ready for operation or use under the terms of the Contract Documents.

§ 6.6 Knowledge

The terms "known," "knowledge," "recognize," "believe," and "discover," and any derivatives thereof and similar terms, when used in reference to the Contractor, shall mean that which the Contractor knows or should reasonably know, recognizes or should reasonably recognize, and discovers or should reasonably discover in exercising the care, skill, and diligence required of the Contractor by the Agreement. The expression "reasonably inferable" and similar terms mean reasonably inferable by a Contractor familiar with the Work and exercising the care, skill and diligence required of the Contractor by the Agreement.

§ 6.7 Including

The word "including" shall not be a word of limitation, but instead shall be construed as introducing one or more nonexclusive examples.

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§ 6.8 Abbreviations

Words or abbreviations that are not defined but have well-known technical, trade or construction industry meanings, shall have those meanings ascribed to them. The singular shall include the plural and vice versa. Pronouns are interchangeable. The word "person" includes human beings and recognized legal entities. Unless the context clearly requires otherwise, reference to a Section shall include all subsections beneath it bearing identical introductory numbers.

§ 6.94 Ownership and Use of Architect's Drawings, Specifications and Other Documents

Documents prepared by the Architect are instruments of the Architect's service for use solely with respect to this Project. ~~The Architect shall retain all common law, statutory, and other reserved rights, including the copyright. The Contractor, subcontractors, sub-subcontractors, and suppliers are authorized to use and reproduce the instruments of service solely and exclusively for execution of the Work. The instruments of service may not be used for other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the Architect.~~ All plans, Drawings, Specifications, computations, sketches, data, surveys, models, photographs, renderings, and other like materials relating to the services ("Documents") shall become the property of the Owner at the conclusion of the Project, or termination of the services of the Contractor, whichever is earlier, and shall be delivered to the Owner clearly marked and identified in good order. The Owner may use the Documents in connection with the Project, including maintenance, repair, or expansion of the Project or as a reference for other projects, but the Contractor and the Contractor's Architect shall incur no liability for the Owner's use of the Documents other than in connection with the Project, and the Owner hereby releases the Contractor from any loss or damage, including attorneys' fees, incurred solely as a result of Owner's use of the Documents other than in connection with the Project, or as a reference for other projects, if and only if the Contractor and/or its Architect is not involved in such use.

§ 6.10 Access and Cooperation

§6.10.1 The Owner shall cooperate with the Contractor and shall provide the Contractor reasonable access to the Owner's site for the performance of the Contractor's Work and duties under this Agreement. Owner shall not intentionally interfere with the Work of the Contractor or any of its Subcontractors.

§6.10.2 Contractor shall provide the Owner in writing critical dates when Owner supplied materials and equipment are to be on the job site when Contractor is to install such materials and equipment. The Owner shall provide such materials on the job site by such dates. The Owner is responsible for the condition, performance, and warranty of Owner supplied materials. The Contractor shall be responsible for properly installing such materials and equipment in accordance with the manufacturer's specifications. The Contractor shall be responsible for the condition, performance and warranty of the materials and equipment if the Contractor damages or improperly installs such materials and equipment.

§6.10.3 If the Contractor will require use of the Owners' utilities during construction. The Owner shall bear the cost of utilities. The Contractor shall exercise reasonable care to protect and use of such utility services; and shall bear full responsibilities to damages caused due to Contractor's acts or omissions.

§6.10.4 The Contractor will place construction Project and safety signs at the Project to provide identification for resident and occupant safety, deliveries and subcontractors. The signs will meet OSHA and MIOSHA requirements and be removed upon completion and Owner taking occupancy of the Project.

§6.11 Deliveries. Contractor shall protect and secure materials and equipment delivered to and stored at the Project site and Work that are completed from theft, vandalism, fire etc. Contractor shall carry insurance for loss due to Contractor's failure to protect and secure materials and equipment on the job site or due to Contractor's acts or omissions.

§6.12 Subcontractors. At times Contractor may employ trade specialists, laborers, vendors, and other forces (Subcontractors) to perform various aspects of the Work. The Contractor shall, at all times, be fully responsible for the Work, acts and omissions and conduct of its Subcontractors.

§6.12.1 By written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and

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Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound. Subcontracts shall include the following sentence: "Owner is an intended third-party beneficiary of this Subcontract." Sub-Subcontracts and Supply Contracts shall be subject to identical conditions, except: (i) suppliers that are not performing any Work on the Project Site are not subject to the insurance requirements described in Article 11; and (ii) Subcontractors and Sub-Subcontractors may satisfy the insurance requirements described in Article 5 by being named as an additional insured under the Contractor's insurance policies or, in the case of a Sub-Subcontractor, by being named as an additional insured under a Subcontractors' insurance policies.

§ 6.12.2 Upon request, the Contractor shall deliver a copy of any Subcontract, Sub-Subcontract or Supply Contract to the Owner.

~~**§ 6.5 Electronic Notice**~~

~~Written notice under this Agreement may be given by one party to the other by email as set forth below.~~

~~*(Insert requirements for delivering written notice by email such as name, title, and email address of the recipient, and whether and how the system will be required to generate a read receipt for the transmission.)*~~

~~« »~~

ARTICLE 7 OWNER

§ 7.1 Information and Services Required of the Owner

§ 7.1.1 If requested by the Contractor, the Owner shall furnish all ~~necessary~~ required surveys and a legal description of the site.

§ 7.1.2 Except for permits and fees under Section 8.7.1 that are the responsibility of the Contractor under the Contract Documents, the Owner shall obtain and pay for other necessary approvals, easements, assessments, and charges.

~~**§ 7.1.3** Prior to commencement of the Work, at the written request of the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence.~~**NOT USED**

§ 7.2 Owner's Right to Stop the Work

If the Contractor fails to correct Work which is not in accordance with the Contract Documents, ~~the Owner may direct the Contractor in writing to stop the Work until the correction is made.~~ or fails to carry out the Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order is corrected, or correct the deficiencies with the Owner's own forces; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity. This right shall be in addition to and not in restriction or derogation of any other rights of the Owner under this Agreement. The Owner's right to stop the Work shall not relieve the Contractor of any of the Contractor's responsibilities or obligations under or pursuant to the Contract Documents.

§ 7.3 Owner's Right to Carry Out the Work

If the Contractor fails, defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a three (3) ~~and fails within a seven~~ day period after receipt of written notice from the Owner to commence and continue correction of such failure, default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, including any claim against the Contractor's Performance Bond, correct such deficiencies. In such case, the Contract Sum shall be adjusted to deduct the cost of correction from payments due the Contractor. ~~correct such deficiencies. In such case, the Architect may withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the cost of correction, provided the actions of the Owner and amounts charged to the Contractor were approved by the Architect.~~

§ 7.4 Owner's Right to Perform Construction and to Award Separate Contracts

§ 7.4.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project.

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§ 7.4.2 The Contractor shall coordinate and cooperate with the Owner's own forces and separate contractors employed by the Owner.

§ 7.5 Owner's Approval

Notwithstanding anything to the contrary contained in this Agreement, Owner's review and/or approval of any documents or other matters required herein shall be for the purpose of providing the Contractor or Architect with information as to Owner's objectives and goals with respect to the Project and not for the purpose of determining the accuracy and completeness of the Work. In no way should any review and/or approval Owner alter the Contractor's responsibilities under this Agreement.

ARTICLE 8 CONTRACTOR

§ 8.1 Review of Contract Documents and Field Conditions by Contractor

§ 8.1.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed, and correlated ~~personal~~ its observations with requirements of the Contract Documents.

§ 8.1.2 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner. Before commencing activities, the Contractor shall (1) take field measurements and verify field conditions; (2) carefully compare this and other information known to the Contractor with the Contract Documents; and (3) promptly report errors, inconsistencies, or omissions discovered to the Architect and the Owner.

§ 8.2 Contractor's Construction Schedule

The Contractor, promptly, but not more than thirty (30) days, after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information and acceptance a Contractor's construction schedule ~~or Project Schedule for the Work~~. The Project Schedule is the Critical Path Method ("CPM") schedule for construction of the Work submitted as part of the Contractor's Contract Sum Proposal, prepared by the Contractor and accepted by the Owner. The Project Schedule can be modified only by Change Order. Following any such modification, the term "Project Schedule" shall mean the most recent Owner-approved version. The Preliminary Project Schedule is listed in the Project Manual.
~~for the Work.~~

§ 8.3 Supervision and Construction Procedures

§ 8.3.1 The Contractor shall employ and assign to the Project a competent and experienced superintendent to be on-site at all times to supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work. The Contractor shall inspect the Work of the trade contractors on the Project as it is being performed until final completion and acceptance of the Project by the Owner to ensure that the Work performed and the materials furnished are in accordance with the Contract Documents and that Work on the Project is progressing on schedule. In the event that the quality control testing should indicate that the Work, as installed, does not meet the requirements of this Project, including the Contract Documents, the Owner shall determine the extent of the Work that does not meet the requirements and the Contractor shall direct the trade contractors(s) to take appropriate corrective action, and advise the Owner of the corrective action.

§ 8.3.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner, through the Architect, the names of ~~s~~Subcontractors or suppliers for each portion of the Work. The Contractor shall not contract with any ~~s~~Subcontractor or supplier to whom the Owner or Architect have made a timely and reasonable objection.

§ 8.4 Labor and Materials

§ 8.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work.

§ 8.4.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

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§ 8.5 Warranty

§ 8.5.1 The Contractor warrants to the Owner and Architect that: (1) materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents; (2) the Work will be free from defects not inherent in the quality required or permitted; and (3) the Work will conform to the requirements of the Contract Documents. Any material or equipment warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 12.5.

§ 8.5.2 The Contractor shall provide a five (5) year limited warranty for all materials, equipment and work performed by the Contractor and/or its Subcontractors with the exception of structured cabling, which shall be warranted for fifteen (15) years. Within the terms of the limited warranty, the Contractor shall remedy any defects due to faulty materials, workmanship, or negligence of the Contractor which are made known to the Contractor in writing, within five (5) years of the completion of the job. All materials are guaranteed for a minimum of five (5) years, or longer as specified, and all materials are warranted by the manufacturer and will be replaced according to the terms of their warranty by the Contractor without charge.

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§ 8.5.3 Money being withheld for a warranty or disputed item shall not exceed twice the value of the warranty item (material and labor).

§ 8.5.4 Upon completion of any remedial work, the five (5) year warranty period in this Article 8 shall begin anew with respect to the materials, equipment and/or work requiring remedy.

§ 8.6 Taxes

The Contractor shall pay and include in the Contract Sum, all sales, consumer, use, franchise, commercial activities, and similar taxes that are legally required when the Contract is executed. The Contractor shall pay all state and federal taxes levied on its business, income or property and shall make all contributions for social security and other wage or payroll taxes. The Contractor shall be solely responsible for such payments and shall indemnify the Owner and hold it harmless from any assessment and payment of the same.

§ 8.7 Permits, Fees, Licenses and Notices

§ 8.7.1 The Contractor shall obtain and pay for the building permit and other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work. The Contractor, and all its Subcontractors of any tier, shall maintain at all time the required licenses and registrations required to perform the Work.

§ 8.7.2 The Contractor shall strictly comply with and give notices required by agencies having jurisdiction over the Work. If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs. The Contractor shall promptly notify the Architect and the Owner in writing of any known inconsistencies in the Contract Documents with such governmental laws, rules, and regulations.

§ 8.8 Submittals

The Contractor shall promptly review, approve in writing, and submit to the Architect shop drawings, product data, samples, and similar submittals required by the Contract Documents. Shop drawings, product data, samples, and similar submittals are not Contract Documents.

§ 8.9 Use of Site

The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits, the Contract Documents, and the Owner.

§ 8.10 Cutting and Patching

§ 8.10.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

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§ 8.10.2 Only tradespersons skilled and experienced in cutting, fitting, and patching shall perform such Work. An appropriate member of the construction team shall do all cutting, fitting, or patching on the Work that may be required to make its several parts come together properly and fit the Work to receive or be received by work of other contractors

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shown by, or reasonably implied by, the Contract Documents for the completed Project. An appropriate member of the construction team shall repair or otherwise make good all such cutting, fitting, or patching after the required Work has been completed as the Architect may direct.

§ 8.10.3 The Contractor shall not cut or otherwise alter any portion of any structure of which the Work is a part or to which the Work is attached without in each instance having first submitted to the Owner Shop Drawings accurately locating each such cut or alteration. The Architect's approval of such Shop Drawings must be obtained prior to making any such cut or alteration.

§ 8.11 Cleaning Up

§ 8.11.1 General Clean Up. The Contractor shall keep the premises and surrounding area free from accumulation of debris and trash related to the Work. At the completion of the Work, the Contractor shall remove its tools, construction equipment, machinery, and surplus material; and shall properly dispose of waste materials.

§ 8.11.2 Final Clean Up.

§ 8.11.2.1 Unless the Contract Documents require a higher standard, the Contractor shall leave all Work installed or modified under the Agreement and all existing materials and surfaces affected by the Work and each area of the Project Site clean to the satisfaction of the Owner. This shall include at a minimum: complete dusting, sweeping, vacuuming, mopping, polishing, and other activities as necessary to remove all dust, dirt and other construction residues, and removal of all tools and equipment, construction debris, rubbish, and surplus materials.

§ 8.11.2.2 Immediately before turning any portion of the Project over to the Owner, the Contractor shall have all glass cleaned by professional window washers. Care shall be taken not to scratch any glass. Acid or other cleaning material which will injure or mar the surface or adjacent Work will not be allowed. Any damage resulting from glass cleaning shall be corrected by the Contractor, including the furnishing of new glass of same character and quality or the replacement of other Work damaged or disturbed.

§ 8.12 Indemnification

To the fullest extent permitted by law, the Contractor shall indemnify, defend and hold harmless the Owner, ~~Architect, Architect's consultants, and agents and employees of any of them, from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder.~~ its Board of Education, its Board Members, in their official and individual capacities, its administrators, employees, agents, contractors, successors and assignees, from and against any and all claims, suits, debts, demands, actions, judgments, liens, costs, expenses, damages, losses, injuries and liabilities, expenses, including but not limited to actual attorneys' fees and actual expert witness fees, arising out of or in connection with Contractor's resulting from performance of the Work pursuant to this Agreement and/or from Contractor's violation of any of the terms of this Agreement, including, but not limited to: (i) the negligent acts or willful misconduct of the Contractor, its officers, directors, employees, successors, assignees, subcontractors, consultants and agents; (ii) any breach of the terms of this Agreement by the Contractor, its officers, directors, employees, successors, assignees, subcontractors, consultants and agents; (iii) any violation or breach of any applicable Federal, State or local law, rule, regulation, ordinance, policy and/or licensing and permitting requirements applicable to providing the services; or (iv) any breach of any representation or warranty by the Contractor, its officers, directors, employees, successors, assignees, subcontractors, consultants and agents under this Agreement. The Contractor shall notify the Owner by certified mail, return receipt requested, immediately upon actual knowledge of any claim, suit, action, or proceeding for which the Owner may be entitled to indemnification under this Agreement. This Section shall survive the expiration or earlier termination of this Agreement and shall not be limited by the Contractor's Insurance obligations contained in this Agreement.

In addition, to the fullest extent permitted by law, the Contractor shall indemnify, defend and hold harmless the Owner its Board of Education, its Board Members, in their official and individual capacities, its administrators, employees, agents, contractors, successors and assignees, from any claim, damage, loss, injury or expense, including but not limited to actual attorney fees, incurred by the Owner related to any Hazardous Material or potentially Hazardous Material, waste, toxic substance, pollution or contamination brought into the Project Site or caused by the Contractor or used, handled, transported, stored, removed, remediated, disturbed or dispersed of by Contractor.

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ARTICLE 9 ARCHITECT

§ 9.1 The Architect will provide administration of the Contract as described in the Contract Documents. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 9.2 The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the Work.

§ 9.3 The Architect will not have control over or charge of, and will not be responsible for, construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents.

§ 9.4 Based on the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor.

§ 9.5 The Architect ~~has authority to reject Work that does not conform to the Contract Documents.~~ shall make timely recommendations to the Owner regarding the rejection of Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect may require inspection or testing of the Work in accordance with the provisions of the Contract Document, whether or not such Work is fabricated, installed, or completed.

§ 9.6 The Architect will promptly review and approve or take appropriate action upon Contractor's submittals, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 9.7 On written request from either the Owner or Contractor, the Architect will promptly interpret and decide matters concerning performance under, and requirements of, the Contract Documents.

§ 9.8 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from the Contract Documents, and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance the ~~by both Owner and~~ Contractor ~~, will not show partiality to either~~ and will not be liable for results of interpretations or decisions rendered in good faith.

§ 9.9 The Architect's duties, responsibilities, and limits of authority as described in the Contract Documents shall not be changed without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

ARTICLE 10 CHANGES IN THE WORK

§ 10.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract, consisting of additions, deletions or other revisions, and the Contract Sum and Contract Time shall be adjusted by Change Order accordingly, in writing. If the Owner changes ~~and Contractor cannot agree to a change in~~ the Contract Sum, the Owner shall pay the Contractor its actual cost plus reasonable overhead and profit as mutually agreed to by both parties in writing. Changes in the Work shall not be performed by Contractor without the Owner's authorization to proceed.

§ 10.2 The Architect may authorize or order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. Such authorization or order shall be in writing and shall be binding on the Owner and Contractor. The Contractor shall proceed with such minor changes promptly.

~~**§ 10.3** If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be subject to equitable adjustment.~~

§ 10.3 Materially Different Conditions

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§ 10.3.1 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be subject to reasonable adjustment as mutually agreed to by both parties in writing.

§ 10.3.2 As a professional familiar and accustomed to Project complexity of the type of Work, the Contractor has inspected the Owner's premises and the Contract Documents prior to submitting its proposal and agreeing to the terms of this Agreement (including, but not limited to, terms regarding time and compensation). Upon discovery of conditions the Contractor believes materially differ from those in the Contract Documents, Contractor shall immediately notify the Architect and the Owner, in accordance with Article 10, if additional cost or time is required to remedy such conditions. Owner shall have the right to inspect the discovered hidden conditions, to determine if the Contractor should have reasonably anticipated such conditions before agreeing to a change order for additional work. Contractor will not be entitled to compensation for differing conditions that are removed which the Contractor failed to notify the Owner and offered the Owner opportunities to inspect/verify the condition.

§ 10.4 The Contractor shall not be entitled to any extension of time change to the Contract Sum unless it is included in an authorized change order signed by the Owner and Architect. The Contractor shall submit a written change order request within lesser of twenty-one (21) days after the Contractor discovers or the time the Contractor should have discovered, with the exercise of appropriate diligence, the cause giving rise to the potential change. The Contractor's failure to strictly comply with this Section 10.4 shall constitute a waiver of and shall forever bar any recover for additional time or compensation for the circumstances giving rise to the potential change.

§ 10.5 In no event shall the Contractor be entitled to receive, and the Contractor hereby waives the right to receive any payment or any extension of time for additional or changed work, whether partially or fully completed or simply proposed, unless such additional work is authorized by a written Change Order or Construction Change Directive signed by the Owner, nor shall the Contractor be obligated to proceed with any such Work. Only the Owner shall have the right to issue a written Change Order or Constructive Change Directive to the Contractor authorizing an addition, deletion or other revision in the scope of the Work and/or an adjustment in the Contract Sum or Contract Time.

ARTICLE 11 TIME

§ 11.1 Time limits stated in the Contract Documents are of the essence of the Contract.

§ 11.2 If the Contractor is delayed at any time in progress of the Work by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, or other causes beyond the Contractor's control, the Contract Time shall be subject to equitable adjustment as mutually agreed to by both parties in writing.

§ 11.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the responsible party.

§ 11.4 The Contractor shall provide notice in writing to the Owner of a potential claim for a delay related adjustment to the Contract Sum or Contract Time within five (5) days of start of any delay and shall request in writing all changes to the Contract Time and Contract Sum within twenty-one (21) days after cessation of the delay. Changes to the Contract Sum shall be limited to Owner caused delays that impact the Project's Critical Path and limited to the to the costs set forth in Sections 11.5 and 11.6 resulting from the delay. The Contractor's failure to strictly comply with this Section 11.4 shall constitute a waiver of and shall forever bar any recover for additional time or compensation for the delay.

§ 11.5 No Damage for Delay. Except only as provided in Section 11.4, in no event shall the Contractor be entitled to any compensation or recovery of any damages in connection with any delay. In no event shall the Contractor be entitled to recover special, incidental, or consequential damages including without limitation, loss of anticipated profits, revenue, or use of capital.

§ 11.6 In the event of Owner Delay, the Contractor may be entitled to an equitable adjustment in the Contract Sum. This adjustment shall be based solely upon and limited to additional direct out-of-pocket expenses to the extent they are incurred directly as a result of the Owner Delay. Without limiting the generality of the foregoing, such out-of-pocket expenses shall be calculated on an "actual cost" basis, and shall exclude home office expense and other overhead, profit and the value of lost opportunities. However, the Contractor shall use its best efforts to avoid or reduce delay damages caused by Owner Delay.

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§ 11.7 All float time in the Construction Schedule shall be shared by the Owner and Contractor or otherwise used for the benefit of the Project.

ARTICLE 12 PAYMENTS AND COMPLETION

§ 12.1 Contract Sum

The Contract Sum stated in this Agreement, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 12.2 Applications for Payment

§ 12.2.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for Work completed in accordance with the values stated in this Agreement. The Application shall be supported by data substantiating the Contractor's right to payment as the Owner or Architect may reasonably require, such as evidence of payments made to, and waivers of liens from, ~~s~~Subcontractors and suppliers. Payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment stored, and protected from damage, off the site at a location agreed upon in writing. Payment to Contractor for materials stored off site is discouraged. Contractor shall prepare the Application for Payment using AIA Standard Form G-702 and G-703 accompanied by required conditional and unconditional lien releases from the Contractor, Subcontractors, suppliers, and delivered to the Architect for review and approval.

§ 12.2.2 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or other encumbrances adverse to the Owner's interests.

§ 12.2.3 Contractor's first Application of Payment is considered incomplete unless in addition to the requirements described in Sections 12.2.1 through 12.2.2, all of the following completed items are also included with the Application of Payment: (1) Performance and Payment Bonds, if required; (2) Certificate of Insurance, as required; (3) Affidavits that the surety and insurance company or companies meets the requirements in Article 5; (4) Construction schedule for the Project; (5) Completed Schedule of Value for the Project.

§ 12.2.4 In addition to the requirements described in Section 12.2.1 through 12.2.2, all Applications for Payment shall also include:

.1 a Schedule of Values that updated all approved Change Order amounts added and deducted, if applicable, since the last Application for Payment;

.2 an updated Project construction schedule that shows actual progress of the Work through the period covered by the current Application for Payment, and clearly identifying any portion of the Work that is behind schedule (if any portion of Work that is behind schedule, the Contractor shall also include with the Application for Payment a schedule recovery plan to bring the Work back on schedule in the next thirty (30) days);

.3 a duly executed and acknowledged sworn statement in statutory form and acceptable to the Owner with all information provided, together with properly notarized sworn statements, current through the previous draw, from the Contractor and all of the Subcontractor; and

.4 except as otherwise provided, duly executed unconditional releases in the form required by the Owner establishing payment or satisfaction of all obligations as reflected on the sworn statements, provided, however, that the Contractor may furnish with each Application for Payment applicable waivers of lien or releases and properly notarized sworn statements covering the immediately preceding Application for Payment, as opposed to the current Application for Payment, (i.e., thirty (30) day lag), provided Final Payment shall not be forthcoming until final construction lien waivers or releases from all members of the Construction Team have been delivered.

§ 12.2.5 The Owner shall have the right to withhold sufficient amount from the Application for Payment for unacceptable, defective, deficient, or non-conforming Work ("Disputed Work") after notifying the Contractor. The Contractor shall promptly remedy the Disputed Work. Owner shall promptly render payment for such Disputed Work after the Contractor has cured and the Owner has accepted the remedied Disputed Work.

§ 12.3 Certificates for Payment

The Architect will, within seven (7) days after receipt of the Contractor's Application for Payment, either ~~(1)~~ issue to the Owner a Certificate for Payment ~~in the full amount of the Application for Payment,~~ with a copy to the Contractor

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or; (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole. If certification or notification is not made within such seven day period, the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time and the Contract Sum shall be equitably adjusted due to the delay.

§ 12.4 Progress Payments

§ 12.4.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment for undisputed sums in the manner provided in the Contract Documents.

§ 12.4.2 The Contractor shall promptly pay each sSubcontractor and supplier, upon receipt of payment from the Owner, an amount determined in accordance with the terms of the applicable subcontracts and purchase orders.

§ 12.4.3 Neither the Owner nor the Architect shall have responsibility for payments to a sSubcontractor or supplier.

§ 12.4.4 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the requirements of the Contract Documents.

§ 12.4.5 Except with the Owner's prior approval the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 12.4.6 Whenever the Owner reasonably determines, after notice to the Contractor, that there is a basis for concern that payments properly owing to any Subcontractor of any tier, supplier or laborer are not being made on a timely basis, the Owner may elect, but shall not be obligated, to make payments to the joint order of the Contractor and such Subcontractor, supplier or laborer with any such payments satisfying any payment obligation otherwise owing by the Owner to the Contractor. The Owner may also elect at any time to require that payments be made through a construction escrow, in which event the Contractor shall supply all customary forms and indemnities as may be required to satisfy the conditions to disbursement established by the applicable escrowee. All requirements relating to payments and retainages, and applicable submittals to be made by the Contractor, shall be subject to reasonable modification and approval of any lender of the Owner supplying funds to the Project.

§ 12.5 Substantial Completion

§ 12.5.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

§ 12.5.2 When the Contractor believes that the Work or designated portion thereof is substantially complete, it will notify the Architect and the Architect will make an inspection to determine whether the Work is substantially complete. When the Architect determines that the Work is substantially complete, the Architect shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, establish the responsibilities of the Owner and Contractor, and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 12.6 Final Completion and Final Payment

§ 12.6.1 Upon receipt of a final Application for Payment, the Architect will inspect the Work. When the Architect finds the Work acceptable and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment in accordance with the terms outlined in the Project Manual.

§ 12.6.2 Final payment shall not become due until the Contractor submits to the Architect releases and waivers of liens, and data establishing payment or satisfaction of obligations, such as receipts, claims, security interests, or encumbrances arising out of the Contract.

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§ 12.6.3 Acceptance of final payment by the Contractor, a ~~s~~Subcontractor or supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 12.6.4 Amounts withheld from the final payment to cover any incomplete work are not considered retainage and shall not be paid to the Contractor until the Work is actually completed and accepted by the Owner. Such withholdings shall not be less than 150% of the estimated cost to the complete the Work.

§ 12.6.5 The Owner shall have the right to deduct from the Final Payment due the Contractor all costs, including additional fees paid to Owner's consultants, which the Owner incurred as result of and attributed to Contractor's failure to fully complete and/or closeout the Project within sixty (60) days following Substantial Completion.

§ 12.6.6 Unless otherwise agreed to by the Owner, in writing, the Owner shall not be responsible for costs incurred by the Contractor beyond sixty (60) days following Substantial Completion for the Contract Sum that is based on the Cost of the Work plus Contractor's Fee.

ARTICLE 13 PROTECTION OF PERSONS AND PROPERTY

§ 13.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs, including all those required by law in connection with performance of the Contract. The Contractor shall take reasonable precautions to prevent damage, injury, or loss to employees on the Work and other persons who may be affected thereby, the Work and materials and equipment to be incorporated therein, and other property at the site or adjacent thereto. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, or by anyone for whose acts the Contractor may be liable.

§13.2 The Contractor shall take all necessary precautions to guard against and eliminate all possible fire hazards and to prevent fire damage to any construction work, building materials, equipment, temporary field offices, storage sheds, and all other property. The Contractor shall provide necessary personnel and fire-fighting equipment to effectively control fires resulting from welding, flame cutting, or other operations involving the use of flame, sparks, or sparking devices. During such operations, all highly combustible or flammable materials shall be removed from the immediate working area. If removal is impossible the same shall be protected with fire blankets or suitable non-combustible shields. The Contractor shall maintain free access to the building areas for fire-fighting equipment and shall at no time block off main roadways or fire aisles without providing adequate auxiliary roadways and means of entrance for fire-fighting equipment, including heavy fire department trucks, where applicable. The Contractor shall at all times cooperate with the Owner and keep the municipal fire department informed of the means of entrance and changes to roadways or fire aisles as needed to provide fire department access to or around to Project site. The Contractor shall maintain during construction an appropriate number of fire extinguishers to meet Factory Mutual (FM) requirements. Fire extinguishers shall be in good working order, conveniently located, clearly visible, and readily accessible for proper protection of the Work.

ARTICLE 14 CORRECTION OF WORK

§ 14.1 The Contractor shall promptly correct Work rejected by the Architect as failing to conform to the requirements of the Contract Documents. The Contractor shall bear the cost of correcting such rejected Work, including the costs of uncovering, replacement, and additional testing.

§ 14.2 In addition to the Contractor's other obligations including warranties under the Contract, the Contractor shall, for a period of ~~one~~ five (5) years after Substantial Completion, correct work not conforming to the requirements of the Contract Documents.

§ 14.3 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 7.3.

ARTICLE 15 MISCELLANEOUS PROVISIONS

§ 15.1 Assignment of Contract

§15.1.1 Neither party to the Contract shall assign the Contract as a whole without written consent of the other, except that the Owner may, without consent of the Contractor, assign the Contract to Owner's parents, subsidiaries, successor, affiliates, or lenders providing construction financing for the Project, if the assigned assumes the Owner's rights and obligations under the Contract Document. The Contractor shall execute all consents reasonably required to facilitate such assignment.

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§ 15.1.2 The Contractor shall not assign the whole or any part of the Agreement, or any monies due or to become due, without the express written consent of the Owner. If the Contractor, with the Owner's consent, assigns all or any part of the Agreement or any monies due or to become due, the instrument of assignment shall contain a clause satisfactory to the Owner and stating that it is agreed that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to the prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for in the Agreement. ~~.~~

§ 15.2 Tests and Inspections

§ 15.2.1 At the appropriate times, the Contractor shall arrange and bear cost of tests, inspections, and approvals of portions of the Work required by the Contract Documents or by laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities.

§ 15.2.2 If the Architect requires additional testing, the Contractor shall perform those tests.

§ 15.2.3 The Owner shall bear cost of tests, inspections, or approvals that do not become requirements until after the Contract is executed. ~~The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.~~

§ 15.3 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules.

ARTICLE 16 TERMINATION OF THE CONTRACT

§ 16.1 Suspension by the Owner and Termination by the Contractor

~~If the Work is stopped under Section 12.3 for a period of 14 days through no fault of the Contractor, the Contractor may, upon seven additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed including reasonable overhead and profit, and costs incurred by reason of such termination.~~ The Owner may suspend the Work at any time for any reason. If the Work is suspended for more than twenty one (21) consecutive days, the Contractor shall be entitled to an equitable adjustment in the Contract Sum, subject to mutual agreement of the parties. If the Architect fails to certify payment as provided in Section 12.3 for a period of thirty (30) days through no fault of the Contractor, or if the Owner fails to make payment as provided in Section 12.4.1 for a period of thirty (30) days, the Contractor may, upon seven thirty (30) additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed including reasonable overhead and profit on the portion of the Work completed to the date of termination.

§ 16.2 Termination by the Owner for Cause

§ 16.2.1 The Owner may terminate the Contract if the Contractor

- **.1** ~~repeatedly~~ refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to ~~s~~Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the ~~s~~Subcontractors;
- **.3** ~~repeatedly~~ disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- **.4** is otherwise guilty of substantial breach of a provision of the Contract Documents.

§ 16.2.2 When any of the above reasons exist, the Owner~~, after consultation with the Architect,~~ may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may

- **.1** take possession of the site and of all materials thereon owned by the Contractor, and
- **.2** finish the Work by whatever reasonable method the Owner may deem expedient.

§ 16.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 16.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished ~~.~~and determination of the sum due pursuant to Section 16.2.4.

§ 16.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. This obligation for payment shall survive termination of ~~the Contract~~this Agreement.

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§ 16.2.5 If the Owner erroneously or improperly terminates the Contractor for cause, then the Owner's action shall be deemed to be a termination for convenience, subject to the provisions of Section 16.3.

§ 16.3 Termination by the Owner for Convenience

The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. The Contractor shall be entitled to receive payment for Work properly executed prior to termination, ~~and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed~~.

§16.4 In the event of any termination, the Contractor's and Subcontractor's obligations related to insurance, indemnity, and confidentiality shall survive.

ARTICLE 17 OTHER TERMS AND CONDITIONS

(Insert any other terms or conditions below.)

§ 17.1 The Contractor shall inspect the Work as it is being performed until final completion and acceptance of the Project by the Owner to assure that the Work performed and the materials furnished are in accordance with the Contract Documents and that Work on the Project is progressing on schedule. In the event that the quality control testing should indicate that the Work, as installed, does not meet the requirements of this Project, the Architect shall determine the extent of the Work that does not meet the requirements and the Contractor shall direct the trade contractors(s) to take appropriate corrective action, and advise the Owner of the corrective action.

§ 17.2 The Contractor shall provide daily full-time, on-site field supervision during the entire construction phase. The Contractor agrees to assign the following listed Project team members, as listed in their respective capacities to the Project:

Staff Name Assignment Contact Information – Mobile Phone & e-Mail

Additionally, any Subcontractors or suppliers whose subcontract value is $10,000 or more, Contractor shall promptly notify the Owner if services of any one of the listed team members become unavailable due to circumstances beyond the Contractor's control – e.g., extended illness or disability, death, or termination of employment, etc. No substitution of any of the above listed project team members shall be made without the prior written consent of the Owner; and before any such substitution the Contractor shall submit to the owner a detailed justification supported by the qualification of any proposed replacement. Owner shall have the right to interview and select alternate team member(s) employed by the Contractor to replace the unavailable team member. Contractor shall agree to provide the services of the alternate team member(s) selected by Owner. Contractor is not entitled to additional compensation for any such substitution(s) of the project team members. The Owner reserves the right to require the replacement of any or all of the above listed team members for cause; and the Contractor shall provide suitable replacement or replacements upon two (2) weeks' notice, subject to interview and acceptance by the Owner.

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§ 17.3 As part of Contract Sum, the Contractor shall provide call-back services for a period of sixty (60) months.

§ 17.4 Notwithstanding anything regarding hazardous materials, the Contractor acknowledges and fully understands that the scope of this Work includes the proper removal and proper disposal of all hazardous materials, including but not limited to any construction debris containing asbestos, PCBs, etc., as required by applicable federal, state, and local laws, rules, regulations and directives by governmental agencies having jurisdiction over the Project and Project site.

§ 17.5 If any provision of this Agreement shall be held to be illegal, invalid or otherwise unenforceable by law, the remainder of this Agreement shall not be affected thereby and each provision, term, covenant or condition of this Agreement shall be enforced to the fullest extent permitted.

§ 17.6 The Contractor shall comply with the Owner's Policies and Procedures, which will be made available to the Contractor upon request, while on the Project site.

§ 17.7 Dispute Resolution

§ 17.7.1

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For any claim subject to, but not resolved by, pursuant to this Article 17, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[« »] Arbitration pursuant to Section 21.6 of this Agreement

[« **X** »] Litigation in a court in accordance with Sections 5.2 and 5.3, unless otherwise mutually agreed to by the parties.

[« »] Other (Specify)

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, claims will be resolved in a court of competent jurisdiction.

§ 17.7.2 In the event the parties resort to a court, and to the extent permitted by law, the parties hereby:

.1 Irrevocably consent and submit to the jurisdiction of any Federal, state, county or municipal court sitting in the State of Michigan, County of Oakland, in respect to any action or proceeding brought therein concerning any matters arising out of or in any way relating to this Agreement;

.2 Expressly waive any rights pursuant to the laws of any other jurisdiction by virtue of which exclusive jurisdiction of the courts of any other jurisdiction might be claimed;

.3 Irrevocably waive all objections as to venue and any and all rights it may have to seek a change of venue with respect to any such action or proceeding;

.4 Agree that any final judgment rendered in any such action or proceeding shall be conclusive and may be entered in any other jurisdiction by suit on the judgment or in any other manner provided by law and expressly consent to the affirmation of the validity of any such judgment by the courts of any other jurisdiction so as to permit execution thereon.

§ 17.8 Notice

§ 17.8.1 All notices or other communications hereunder to either party shall be (1) in writing, and, if mailed, shall be deemed to have been given on the earlier of actual receipt by the intended recipient or on the third business day after the date when deposited in the United States mail by registered or certified mail, postage pre-paid, or by personal delivery, Federal Express or other recognized and reputable overnight courier, addressed as hereinafter provided, and (2) addressed as follows:

§ 17.8.2 If to the Owner:
The Owner's Designated Representative:
(Name, address, email address, and other information)

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« »
« »
«»
« »

§ 17.8.3 If to the Contractor:
The Contractor's representative:
(Name, address, email address, and other information)
« »
« »
« »
« »

§ 17.8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten (10) days' prior notice to the other party.

§ 17.9 The Contractor shall notify the Owner in the event of a potential or actual: (a) material change in ownership of the Contractor; (b) intent to dissolve; or (c) intent to otherwise cease active participation in the Project's local

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marketplace (collectively a "Material Change in Circumstances"). A Material Change in Circumstances shall include any other change that could reasonably give rise to concern on behalf of the Owner regarding the Contractor's ability or willingness to fulfill any of its obligations under this Agreement. In the event of a Material Change in Circumstances, the Contractor shall provide any reasonable assurance or guarantee requested by Owner. Owner shall have the right to terminate this agreement for cause in the event of a Material Change in Circumstances.

§ 17.10 The Owner, being a public body, shall render required decisions within a reasonable time after being requested to do so by the Contractor. The Contractor, assisted by the Architect, shall prepare and submit all recommendations for which approval is required by Owner as soon as reasonably possible unless another schedule is agreed to by the Owner, in writing. The Contractor shall not cause unreasonable delays in the orderly progress of Work.

§ 17.11 GOVERNMENT AGENCY'S IMMUNITY FROM TORT LIABILITY. Notwithstanding any provisions within the Contract Documents, no provisions shall be deemed a waiver of any immunity granted the Owner, being a governmental unit, by statute, including, without limitation. (MCL 691.1407)

« »

This Agreement entered into as of the day and year first written above.
(If required by law, insert cancellation period, disclosures or other warning statements above the signatures.)

« »

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
« »« »	« »« »
(Printed name and title)	*(Printed name and title)*

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SECTION 01 0000 – GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Permits and Fees.
2. Work Restrictions.
3. Contract Modification Procedures.
4. Payment Procedures.
5. Project Management and Coordination.
6. Project Progress Documentation.
7. References.
8. Temporary Facilities and Controls.
9. Execution Requirements.
10. Progress Cleaning.

1.3 PERMITS AND FEES

A. Obtain all permits and licenses required. Contractor shall pay all permit fees.

B. If required by the Bureau of Construction Codes, the Contractor shall be responsible for preparing and submitting any Drawings required for such permits, including retaining the services of a professional engineer licensed in the State of Michigan.

C. If applicable, obtain all inspections and tests required. Upon completion of the work, obtain and send certificates of inspections and approvals to the Technology Designer/Engineer.

D. Include time in your bid response to walk the inspector thru the buildings during inspections.

1.4 WORK RESTRICTIONS

A. Use of Premises: Limit the use of the premises to work in areas indicated. Do not disturb portions of the site beyond areas in which the Work is indicated. Allow for Owner occupancy and use by the public.

B. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1. The Contractor and each Subcontractor will be expected to have visited the site and appraise the existing situation and circumstances of operation.
2. Consult with the Owner as to the availability of space for storage of materials and places of access to the work, etc. Materials and equipment must be placed to avoid interferences with the Owner's operations and shall be moved when so required.
3. Comply with the Owner's requirements with regard to entrance, movement within and exit of all trucks, equipment, and personnel.
4. The Owner reserves the right to perform construction work similar in nature to the work included under this Contract, in the same area concurrently with the Contractor, with his own forces, or with other Contractors, without conflict of any nature.

C. Full Owner Occupancy: The Owner will occupy the site and building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner operations.

D. Owner's Right to Place Equipment: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building, prior to Substantial Completion, provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

E. Owner-Furnished Equipment: The Owner will provide equipment as indicated. The Work includes providing support systems to receive Owner's equipment, and mechanical and electrical connections.

1. The Owner will arrange and pay for delivery of Owner-furnished items in accordance with the Contractor's Construction Schedule, and will inspect deliveries for damage.
2. If Owner-furnished items are damaged, defective or missing, the Owner will arrange for replacement. The Owner will also arrange for manufacturer's field services.
3. The Contractor is responsible for designating the delivery dates of Owner-furnished items in the Contractor's Construction Schedule and for receiving, unloading and handling Owner-furnished items at the site. The Contractor is responsible for protecting Owner-furnished items from damage, including damage from exposure to the elements, and to repair or replace items damaged as a result of his operations.

F. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

G. Utility Tie-Ins: All utility connections, disconnections, tie-ins, shut-downs, and similar work to existing services which would interfere with Owner's operations, must be performed on premium or overtime (Owner's non-standard work hours) basis with all costs included in the proposal lump sum price. All required connections, disconnections, tie-ins and shut-downs of system shall be scheduled in advance, prearranged and approved by the Owner's Representative.

H. No welding, flame cutting or other operations involving the use of flame, arcs or sparking devices will be allowed, unless prior approval is obtained from the Owner's Representative and all precautions are taken, including temporary fire resistant barriers and stand-by fire extinguishers.

I. Damage to Other Work: The Contractor shall repair, replace, or touch-up all finished surfaces in the building which may be damaged as a result of his work or operations.

J. Utilities or other services encountered or otherwise found shall be protected from any damage, unless or until they are abandoned. If the utilities or services are not abandoned, immediately repair any damage from work and operations of this Contract. Immediately repair any damage from the Work or operations and restore the utilities and services to an equal or better condition than that which existing prior to the damage or disruption.

K. Enforce strict discipline and good order among the Contractor's employees and subcontractor's.

1. Foul or abusive language or demeanor will not be tolerated.
2. Contractor's employees and subcontractor's shall dress in a neat workmanlike manner.
3. Smoking or vaping, or use of marijuana products of any kind is prohibited anywhere on school property.
4. Conversations with students by the Contractor's employees or subcontractors are prohibited.
5. Possession, sale or consumption of alcoholic beverages on Owner's property is strictly prohibited.
6. The manufacturing, distribution, dispensing, possession or use of unlawful drugs on Owner's property is strictly prohibited and may result in criminal prosecution.

L. The Owner's facilities are considered a "weapon free school zone" as defined in Section 237a of the Michigan penal code, Act No. 328 of the Public Acts of 1931, being section 750.237a of the Michigan Compiled Laws and are subject to the following:

1. If you own a firearm and obtain a concealed weapons permit, you are required by Michigan law to know that there are "Pistol Free" zones in Michigan. It is illegal to carry a pistol on school property, into public or private day care centers, sports arenas, churches, hospitals, casinos, a dormitory, or classroom of a college or university, an entertainment facility that seats 2,500 people or more, and a dining room, lounge, or bar area of a premises licensed under the Liquor Control Commission (MCL 28.425.01).

M. Use of Owner's Cafeteria: Contractor will not be allowed the use of the Owner's cafeteria.

N. Follow all procedures, as directed by the Owner, to observe social distancing restrictions and COVID-19 building access procedures.

1.5 CONTRACT MODIFICATION PROCEDURES

A. Engineer/Technology Designer's Supplemental Instructions: After award of Contract, the Engineer/Technology Designer has the authority to order minor changes in the Work, not involving adjustments in the contract sum or extension of the contract time and not inconsistent with the intent of the contract Documents.

B. Construction Change Directive (CCD): A written order prepared by the Engineer/Technology Designer and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract sum or contract time or both.

1. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the construct Sum and Contract Time being adjusted accordingly.

C. Bulletins: After award of Contract, the Contractor as required shall quote changes in the work described in Bulletins or otherwise. Bulletins are a request by the Owner for pricing for work not included in the original contract. Bulletins are <u>not</u> authorization to proceed with the quoted work.

D. Except as otherwise specifically mentioned, the general character of the work covered by these Bulletins shall be the same as originally specified for the project and all incidental items required in connection with the work hereinafter described shall be included even though not specifically mentioned. Where an item is mentioned with no additional specifications given, reference is to be made to the original specifications. All applicable parts of the original specifications shall apply.

E. Submit detailed itemized quotations for each item of work described, stating fully the amounts for additions and deductions.

F. Quotations should be received by the Technology Designer/Engineer within one (1) week of issuance of the Bulletin.

G. Bulletins accepted by the Owner will be issued as a change order to the original contract. An executed change order is authorization for the Contractor to proceed with and bill for the quoted work as defined on the bulletin.

1.6 PAYMENT PROCEDURES

A. All billing for services and equipment MUST occur on or after July 1, 2026, to comply with the E-rate 2026-2027 years.

B. Schedule of Values: Submit the Schedule of Values as a preliminary Application for Payment to the Technology Designer/Engineer at least 7 days before submittal of the initial Application for Payment.

1. Format and Content: Use AIA Documents G702 and G703.

a. Provide a breakdown of the Contract Sum building by building in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items. Coordinate breakdown with the District, the District's Technology Consultant and the District's E-rate Consultant. Include % of E-Rate eligibility for each line item.
b. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
c. Where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
d. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.

1) At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.

C. Each Application for Payment shall be consistent with previous applications and payments as certified by the Technology Designer/Engineer and paid for by the Owner.

1. The Application for Payment at time of Substantial Completion and the final Application for Payment involve additional requirements.

D. Payment Application Times: Should E-rate funding be denied prior to July 1, 2026, the following procedure will prevail. The date for each progress payment submission is the 10th day of each month. The period of construction Work covered by each Application for Payment is the period ending 10 days prior to the date for each progress payment and starting the day following the end of the preceding period.

E. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Contractor. Incomplete applications will be returned without action.

1. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

F. Transmittal: Submit 3 executed copies of each Application for Payment to the Technology Designer/Engineer. One copy shall be complete, including waivers of lien and similar attachments, when required.

1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Technology Designer/Engineer.

G. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics lien from every entity who may lawfully be entitled to file a mechanics lien arising out of the Contract, and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested, before deduction for retainage, on each item.
2. Where an application shows completion of an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.

H. Michigan Sworn Statement of Contractor: With each Application for Payment, submit a Sworn Statement listing all subcontractors, supplier, individuals and companies who have provided improvements, materials or labor toward the project including an accounting of all monies due to those parties.

1. For each party listed, show the name of the individual or company, the contracted price, amount previously paid, amount currently owed with this payment application and the balance to complete.

I. Application for Payment at Substantial Completion: Actions and submittals that shall proceed or coincide with this application include:

1. Warranties (guarantees) and maintenance agreements.
2. Test/adjust/balance reports.
3. Use, operation and maintenance instructions.
4. Final cleaning.
5. Application for reduction of retainage, and consent of surety.
6. Punch list of incomplete Work, recognized as exceptions to Certificate of Substantial Completion.

J. Final Payment Application: Actions and submittals that shall precede or coincide with this application include:

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Transmittal of required Project record documents to Technology Designer/Engineer and Owner.
4. Proof that taxes, fees and similar obligations have been paid.
5. Removal of surplus materials, rubbish and similar elements.
6. Delivery of spare parts.

1.7 PROJECT MANAGEMENT AND COORDINATION

A. Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection and operation.

B. Project Kick-off Meeting:

1. Technology Designer/Engineer will schedule a virtual project kick-off meeting after execution of the Agreement and prior to commencement of construction to review responsibilities and personnel assignments.
2. Attendees: The Owner, the Technology Designer/Engineer, the Contractor and its Project Manager, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference.
3. Agenda: Discuss items of significance that could affect progress including such topics as:

a. Tentative construction schedule
b. Critical Work sequencing
c. Designation of responsible personnel
d. Procedures for processing field decisions and Change Orders
e. Procedures for processing Applications for Payment

f. Distribution of Contract Documents
g. Preparation of record documents
h. Use of the premises
i. Office, Work and storage areas
j. Equipment deliveries and priorities
k. Safety procedures
l. First aid
m. Security
n. Housekeeping
o. Working hours

C. Progress Meeting:

1. Progress meetings with the Contractor will be held online on a weekly basis by the Technology Designer/Engineer and Owner. The Minutes of these meetings will be recorded by the Technology Designer/Engineer and copies sent to all interested parties. The dates of progress will be coordinated with preparation of payment request.
2. Agenda: Review and correct or approve minutes of the previous progress meeting. Include topics for discussion as appropriate to the current status of the Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction that is behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
b. Review including such items as:

1) Interface requirements
2) Time
3) Sequences
4) Equipment deliveries
5) Access
6) Site utilization
7) Hours of Work
8) Hazards and risks
9) Housekeeping
10) Quality and Work standards
11) Change orders
12) Documentation of information for payment requests

1.8 PROJECT PROGRESS DOCUMENTATION

A. Project Schedule: Submit a comprehensive, fully developed, construction/installation schedule.

1. Submit schedule within two (2) weeks after award of Contract. Base schedule on the Times of Completion specified for the Project.
2. Update project schedule monthly after project progress meetings, to reflect actual installation progress and activities.
3. Indicate each significant construction activity separately.
4. Time Frame: Extend schedule from date established for commencement of the Work to date of final completion.
5. Activities: Treat each building or separate area as a separate activity for each principal element of the Work. Comply with the following:

a. Procurement Activities: Include procurement activities for long lead items.
b. Start-Up and Testing Time: Include time for start-up and testing.

c. Substantial Completion: Indicate completion in advance of date of substantial completion; allow time for Technology Designer/Engineer inspection and punchlist.

6. Constraints: Include constraints and work restrictions.

a. Phasing: Arrange list of activities on schedule by phase.
b. Work by Owner: Indicate a separate activity for each portion of Work performed by Owner.
c. Work Restrictions: Show effect on the schedule of limitations of continued occupancies, uninterruptible services and use of premises restrictions.
d. Work Stages: Indicate important stages of installation for each major portion of the Work.

7. Milestones: Include milestones such as Notice to Proceed, Substantial Completion and Final Completion.

1.9 REFERENCES

A. Specifications & Drawings To be Cooperative:

1. These Specifications and accompanying Drawings are intended to describe and provide for finished work. They are intended to be cooperative and what is called for by either shall be as binding as if called for by both. The Drawings accompanying the Specifications are intended to show the general design and arrangement of the installation and in some cases are more or less diagrammatic. They are not intended to serve as shop drawings nor are they to be scaled for dimensions or exact locations of equipment.
2. It is the intent of the Drawings and Specifications to provide for a complete and satisfactory installation. The Contractor shall furnish Labor and/or materials neither shown nor specified but obviously necessary for the completion of the proper functioning of the systems.
3. Drawings pertaining to this specification shall be considered as a part of said specification and shall be a part of the bid documents.
4. The following sections specifically list the acceptable equipment types and items for this project. Where quantities are not noted, they may be obtained from the Drawings. In the event of a discrepancy between the Specifications and the Drawings, the greater quantity or better quality shall be furnished.

B. Specification Format and Content Explanation:

1. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 49 Division format and MASTER FORMAT 2012 numbering system.
2. Words, which have well known technical or construction industry meanings are used in the Contract Documents in accordance with such, recognized meanings.
3. Abbreviated Language: In the interest of brevity, the Contract Documents frequently omit modifying words such as “all” and “any” and articles such as “the” and “an” but the fact that a modifier or an article is absent from a statement and appears in another is not intended to affect the interpretation of either statement.
4. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

C. Definitions:

1. Contract Documents: Contract documents consist of the Agreement between Owner and Contractor, Conditions of the Contract, Drawings, Specifications, Addenda issued prior to execution of the Contract, and modifications issued after execution of the Contract. A modification is (1) a written amendment to the contract signed by both parties, (2) a change Order, (3) a construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect

(Architect's supplemental Instructions). Contract Documents also includes bidding requirements or portions of Addenda relating to bidding requirements.

a. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the work by the contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

2. Indicated: Refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used, it is to help locate the reference; no limitation on location is intended except as specifically noted.
3. Directed: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Architect", "requested by the Architect", and similar phrases. However, no implied meaning shall be interpreted to extend the Architect's responsibility into the Contractor's area of construction supervision.
4. Approve: The term "approved", where used in conjunction with the Architect's action on the contractor's applications and requests, is limited to the duties and responsibilities of the Architect as stated in General and Supplementary Conditions. Such approval shall not release the Contractor from responsibility to fulfill Contract requirements unless otherwise provided in the Contract Documents.
5. Regulation: The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work, whether lawfully imposed by authorities having jurisdiction or not.
6. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
7. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."
8. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."
9. Installer: An "Installer" is the Contractor engaged by the Contractor, either as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
10. Project Site: Is the space available to the Contractor for performance of construction activities, either exclusively or in conjunction with others performing other construction activities as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land upon which the Project is to be built.
11. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

D. Standards of Industry: Reference to standards, codes, and recommendations shall be the latest edition of such publications adopted and published at date of bids. Work shall be installed according to the following industry standards when applicable:

1. UL - Underwriter's Laboratories, Inc.
2. ASA - American Standard Association
3. ASHRAE - American Society of Heating, Refrigeration and Air Conditioning Engineers
4. ASME - American Society of Mechanical Engineers
5. ASTM - American Society for Testing and Materials
6. Any local state or national plumbing and building codes having jurisdiction.

1.10 TEMPORARY FACILITIES AND CONTROLS

A. Temporary Toilets:

1. The Owner will allow the use of designated toilet facilities for use by all workers employed on the project. Keep the facilities clean and in sanitary condition at all times. In educational facilities, use of student toilet facilities is prohibited.

B. Temporary Parking: Park in designated spaces only.

1. Do not park vehicles on sidewalks or lawn areas surrounding the building unless written approval is received from the Owner.
2. Loading and unloading shall be done only at designated areas. Coordinate with Owner.

a. No vehicles shall be left unattended for more than 30 minutes and no vehicle will be permitted to be left in the loading dock overnight.

C. Contractor Employee Identification: All persons working on-site are required to have and wear an identification badge at all times. Badges will be provided by the Owner at no charge and must be returned to the Owner. Additional badges to replace lost badges will be charged at the Owner's standard rate/charge.

1.11 EXECUTION REQUIREMENT

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

B. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

C. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

D. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

E. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

F. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Engineer/Technology Designer.

G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

1.12 PROGRESS CLEANING

A. Waste Material Removal and Cleaning: Remove and properly dispose of, on a daily basis all waste materials and debris resulting from the Work. The Owner's dumpsters and trash receptacles shall not be used. The Project and adjacent grounds shall be kept free of accumulations of rubbish.

1. Construction debris shall not be stored overnight, nor shall it be left in common corridors. Keep debris confined to work areas only until such time as it is being removed.
2. No burning of waste materials will be permitted on the premises.
3. Provide general "broom cleaning" of the site at the completion of the project.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Do not wash waste materials down sewers or into waterways
3. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 0000

SECTION 27 0015 - TECHNOLOGY GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Bidding Documents and the Contract, including the Division 01 Specification Section, apply to work of this Section.

1.2 SUMMARY

A. This Section includes general administrative and procedural requirements for technology installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in the Division 01 section.

1. Work Restrictions
2. Job Conditions
3. Quality Assurance
4. Delivery, Storage and Handling
5. Guarantee Service and Training
6. Project Record Documents

B. This Section includes basic requirements for materials and installations for technology work, including but not limited to:

1. Cutting, patching and painting
2. Anchors and fasteners
3. Access doors
4. Sealing of openings
5. Sleeves
6. Expansion fittings
7. Grounding procedures
8. Coordination with other trades
9. Installation of user accounts

1.3 WORK RESTRICTIONS

A. Design Requirements: Furnish all labor, materials, equipment, technical supervision, and incidental services required to complete, test and leave ready for operation the technology systems as specified and as indicated on Drawings.

B. Performance Requirements: Perform all work in a first class and workmanlike manner, in accordance with the latest accepted standards and practices for the Trades involved.

1. All equipment of the same or similar systems shall be by the same manufacturer.
2. All equipment shall be new, of modern design, and current standard production of the manufacturer.

C. Substitutions: Base Bid must be in accordance with materials or products specified. Any exceptions to this must be approved in writing by the Technology Designer ten (10) days or more prior to bidding.

1.4 JOB CONDITIONS

A. Verify conditions at the job site prior to installation.

B. It is the responsibility of the installing contractor to provide any and all types of specialty equipment needed to provide a complete installation of the equipment and systems specified (i.e. lift, scaffolding, extension ladders, boom trucks).

C. Keep the job adequately staffed at all times. Unless illness, loss of personnel or other circumstances beyond the control of the contractor, maintain the same individual in charge throughout.

D. Cooperate with all appropriate parties in order to achieve well-coordinated progress with the overall construction completion schedule and satisfactory final results.

E. Watch for conflicts with work of other contractors on the job and execute, without claim for extra payment, moderate moves or changes as are necessary to accommodate other equipment or to preserve symmetry and aesthetically pleasing appearance.

F. Immediately report to the Engineer/Technology Designer any design or installation irregularities, so that appropriate action may be taken.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements:

1. All materials shall be new and the system shall be registered under the most current applicable rulings of the Federal Communications Commission (FCC). All components and installations shall bear an Underwriters' Laboratories (UL) listing.
2. Ordinances and Codes: Perform all work in accordance with applicable Federal, State and local ordinances and regulations and in accordance with the Rules, Regulations and Accepted Practices of the following Agencies:

a.	ANSI	American National Standards Institute
b.	ASTM	American Society for Testing and Materials
c.	BICSI	Building Industry Consulting Service International
d.	CSA	Canadian Standards Association
e.	EIA	Electronics Industries Association
f.	ETL	Intertek Testing Services (ETL Testing Laboratories)
g.	FCC	Federal Communications Commission
h.	ICEA	Insulated Cable Engineers Association
i.	IEEE	Institute of Electrical and Electronics Engineers
j.	ISO	International Organization for Standardization
k.	NEC	National Electrical Code
l.	NEMA	National Electrical Manufacturer's Association
m.	NFPA	National Fire Protection Association.
n.	TIA	Telecommunications Industry Association
o.	UL	Underwriters Laboratories, Inc.
p.	VESA	Video Electronics Standards Association

3. Notify the Engineer/Technology Designer before submitting this proposal should any changes in Drawings or Specifications be required to conform to the above codes, rules or regulations. After entering into Contract, make all changes required to conform to above ordinances, rules and regulations without additional expense to the Owner.
4. The code or standard establishing the more stringent requirement shall be followed where areas of conflict occur between codes and standards or between codes and standards and specifications.
5. Barrier-Free Regulations: All materials and installations shall comply with the requirements of the State of Michigan Handicapped Barrier-Free Regulations and with the Americans with Disabilities Act (ADA).
6. Comply with federal, state and local labor regulations and applicable union regulations.

B. Equipment Manufacturer Qualifications: The equipment shall be built and tested by a manufacturer who has regularly engaged in the production of said equipment for a minimum of five (5) years to assure one source of supply and responsibility.

C. Equipment Supplier Qualifications: The supplier of the equipment shall maintain permanent service facilities geographically located within a reasonable distance of the installation in order to provide the support and service specified in paragraph “GUARANTEE, SERVICE AND TRAINING”. The supplier of the equipment shall be able to design, program and support the equipment and have experience on the design and installation of projects of this size or larger and certify they have no less than five (5) years of continuous experience in this area. The facilities shall include a permanent source of factory-trained service technicians on 24-hour call experienced in servicing this type of equipment and shall provide warranty and routine maintenance service to afford the Owner maximum coverage. They shall also provide a central source of support to warranty immediate answers to Owner's problems resulting from misunderstanding of the operation of the equipment.

D. Equipment Installer Qualifications: The installation of the equipment shall be performed by fully qualified personnel, having had experience on the installation of this type and able to certify that they have had no less than three (3) years of continuous experience in this area and have made installation similar to this and of this size or larger.

E. Project Management Qualifications: The Contractor Project Manager shall be PMP certified or shall have a minimum of three (3) years of project management experience. Contractor shall provide a resume for all staff assigned to these positions.

F. Sequencing and Scheduling: Sequence and schedule work so as to avoid interference with the work of other Trades and the Owner’s operating environment. Be responsible for removing and relocating any work, which in the opinion of the Owner's Representatives causes interference.

G. Parts listed shall be complete, accurate part/model numbers and equipment furnished shall conform to manufacturer's specifications.

H. All materials shall be new and shall conform to applicable provisions of Underwriters Laboratories and the American Standards Association.

1.6 DELIVERY, STORAGE AND HANDLING

A. Store technology equipment, at the vendor's location, as recommended in manufacturer's written instructions and in manufacturer's sealed protective packages until time of installation.

B. If spare parts are specified, store spare parts at the vendor’s location, as recommended in manufacturer’s written instructions and in manufacturer’s sealed protective packages. Deliver spare parts as part of the project close-out procedure.

C. Protect technology equipment from damage and theft.

1.7 GUARANTEE, SERVICE AND TRAINING

A. General:

1. Warranty: All products shall be warranted to be free from defects in material and workmanship upon installation.
2. The warranty shall begin on the date of acceptance. The date of acceptance shall be defined as the date the Certificate of Substantial Completion is signed by the Technology Designer/Engineer and the Owner.
3. The Contractor shall register all equipment in the name of the Owner and activate all warranties upon Owner acceptance as required by the equipment manufacturer.

4. Provide to the Owner direct access to all equipment manufacturers' technical support structures for hardware and software support. All equipment shall have direct manufacturer support for the duration of the warranty period.
5. All services shall be provided on-site at the Owner's facilities.
6. As part of the project closeout documentation, provide proof of warranty showing the Owner as the warranty holder. Documentation shall list warranty terms and Owner contact information including shipping address and phone contact information.

B. Structured Cabling Systems:

1. The network cabling and related components, upon completion, will be warranted by the manufacturer. The warranty for this wiring system shall be provided as follows:

   a. A minimum fifteen (15) year Warranty shall ensure against product defects, that all approved cabling components exceed the specifications of TIA 568-C.2, TIA 568-C.3 and ISO/IEC IS 11801. The warranty shall apply to all passive network cabling components.
   b. A minimum fifteen (15) year Product Warranty shall cover the replacement or repair of defective product(s) including travel and labor for the replacement or repair of such defective product(s) for a minimum of fifteen (15) year period.
   c. A minimum (15) year Application Assurance shall cover the failure of the wiring system to support the application which it was designed to support, as well as additional application(s) introduced in the future by recognized standards or user forums that use the TIA/EIA 568-C or ISO/IEC IS 11801 component and link/channel specifications for cabling, for a twenty (20) year period.

1.8 PROJECT RECORD DOCUMENTS - GENERAL

A. Upon project close-out, provide the following:

1. Hard and electronic copies of the system configuration.
2. Spare parts, if specified in the technology sections.
3. Operating manuals and original installation media for all hardware, software and components installed under this contract.
4. Warranty, support and licensing documentation organized in a 3-ring binder including a table of contents. A document from the manufacturer that specifies that the warranty begins at the time of substantial completion as specified for all equipment included in this bid.
5. Refer to technology sections for additional requirements.

1.9 PRODUCTS - GENERAL

A. During the installation, make provisions for all equipment included in the Base Bid and any alternates, whether taken or not, so that items which are to be provided as alternates may be added to the system without rewiring or additional construction.

B. All miscellaneous equipment required for a complete, professional installation shall be included in the Base Bid. No allowances for any additional equipment, cabling, or miscellaneous will be considered unless specifically excluded from the base bid.

C. Time shall be allocated in the job for the purposes of training Owner's personnel in the proper use and maintenance of the provided equipment.

D. No exposed cabling shall be permitted in the wiring of any functions of the provided system. All cable shall be housed in appropriate raceways suitable and designed for such purposes.

E. All work materials shall be removed at the end of the workday and the work area left in the same condition as found.

F. For educational facilities, while classes are in session, work shall be performed after normal school hours or during periods in which the building is not occupied by students (i.e. construction period, holiday breaks, half days, etc.). Adherence to a schedule of working hours, which is agreeable with the Owner, will be required.

1.10 CUTTING, PATCHING AND PAINTING

A. Direct miscellaneous cutting and patching of the existing building construction for the installation of the Technology Work.

B. The cutting of holes through the building construction shall only be done by the use of abrasive saws and rotary coring machines. The use of hammer and drill points will not be permitted. The openings shall not be cut larger than necessary for the installation of the technology work. Openings shall then be grouted in.

C. The drilling or punching of structural members, such as holes through beams or columns, shall not be done without the specific permission of the Technology Designer/Engineer.

D. Cutting of holes through floors and walls shall be done only at such locations as may be directed by the Technology Designer/Engineer.

E. Where equipment is removed or a wall is otherwise left in an unfinished or damaged state, Contractor shall patch and make ready for paint.

F. Cooperate with the other Contractors so that all cutting and repairing in any given area will be done simultaneously.

1.11 ANCHORS AND FASTENERS

A. The Contractor shall provide and install anchors, fasteners and supports in accordance with manufacturer's instructions and NECA "Standard of Installation".

B. Anchors and fasteners:

1. Concrete Structural Elements: Use expansion anchors.
2. Steel Structural Elements: Use beam clamps.
3. Concrete Surfaces: Use expansion anchors.
4. Hollow Masonry, Plaster and Gypsum Board Partitions: Use hollow wall fasteners.
5. Solid Masonry Walls: Use expansion anchors.
6. Sheet Metal: Use sheet metal screws.
7. Wood Elements: Use wood screws.

C. The Contractor shall not fasten supports to pipes, ducts, mechanical equipment or conduit.

D. The Contractor shall obtain permission from the Owner or Technology Designer/Engineer before drilling or cutting structural members.

E. Roof or roof deck shall not be penetrated with any type of fastener.

1.12 ACCESS DOORS

A. Furnish access doors as required to make accessible all cabling and other equipment installed by Technology trades or as required by Code.

1. Access door size shall be minimum 12" x 12" in walls, 24" x 24" in ceilings.
2. Equip access doors with screwdriver operated cam lock.

3. Access doors in fire rated walls or ceilings shall be 1-1/2 hour rated, “B” label, 250 degF maximum temperature rise in 30 minutes, self-closing and self-latching and shall carry Underwriters’ Laboratories, Inc. (UL) or Warnock-Hersey Label.

B. In non-fire rated drywall, veneer plaster, masonry or ceramic tile walls, furnish “Type M, 3202 Series” access doors as manufactured by Milcor Ltd. Partnership or approved equal.

C. In non-fire rated gypsum board or veneer plaster walls and ceilings, furnish “Type DW, 3203 Series” by Milcor Ltd. Partnership or approved equal.

D. In fire-rated drywall, veneer plaster, masonry or ceramic tile walls, furnish “3208 Series” by Milcor Ltd. Partnership or approved equal.

E. In non-fire rated drywall, veneer plaster or plaster ceilings, furnish “Type M, 3202 Series” by Milcor Ltd. Partnership or approved equal.

F. In non-fire rated plaster walls or ceilings, furnish “Type K, 3200 Series” by Milcor Ltd. Partnership or approved equal.

G. In non-fire rated plaster or acoustical tile ceilings, furnish “Type AP, 3206 Series” and “Type AT 3205 Series” by Milcor Ltd. Partnership or approved equal.

1.13 SEALING OF OPENINGS

A. Seal openings around technology materials where floors, fire rated walls (both sides of wall) and smoke barriers are penetrated. (Fiberglass is not acceptable.) Fire and/or smoke barriers shall be UL Listed fire and smoke stop fittings and shall have fire rating equal to or greater than the penetrated barrier.

1.14 SLEEVES

A. Provide conduit sleeves where conduits and/or low-voltage cables pass through concrete floors, walls, beams and ceilings.

B. Sleeves shall be galvanized rigid steel conduit. Do not use aluminum conduit. Where specific sizes are not indicated on the Drawings, sleeves shall be sized to provide one-half (1/2) inch clearance around the outside surface of the item for which they were installed. They shall be cut flush with wall surfaces, and shall extend one inch, or as directed through floor. Sleeves shall be packed with approved non-combustible packing material and sealed with sealant to prevent passage of air, liquid or fumes from one area to another. The filler and sealant materials used shall be rated at least equal in fire resistance to the construction material being penetrated. Floor sleeves shall be sealed between floor and sleeve with concrete grout.

1.15 EXPANSION FITTINGS

A. Provide expansion fittings in all conduits that cross building expansion joints, both in concrete slabs and where exposed.

1.16 GROUNDING PROCEDURES

A. Communication bonding and grounding shall be in accordance with the NEC® and NFPA. Horizontal cables shall be grounded in compliance with ANSI/NFPA 70 and local requirements and practices. Horizontal equipment includes cross connect frames, patch panels and racks, active telecommunication equipment and test apparatus and equipment. When required by local code, provide a Telecommunications Bonding Backbone utilizing a #6-AWG or larger bonding conductor that provides direct bonding between equipment rooms and telecommunications closets. This is part of the grounding and bonding infrastructure (part of the telecommunications pathways and spaces in the building structure), and is independent of equipment or cable.

B. In order to minimize problems resulting from improper grounding, and to achieve maximum signal-to-noise ratios, the following grounding procedures shall be adhered to:

1. Under no circumstances shall the racks contact the conduit raceway system, the steel structure of the building, or ventilation ducts.
2. Under no conditions shall the AC neutral conductor, at any location, be used for a system ground.

C. There shall be no deviations from the above unless specifically required by the manufacturer of the equipment or when necessary to minimize crosstalk and to maximize signal-to-noise ratios.

D. If a different installation practice is desired by the Installing Contractor in regards to the signal grounding, the Installing Contractor may submit alternate grounding methods to the Consultant for approval. Installing contractor shall bear all responsibility for any deviations from the above stated grounding procedure, even if allowed by the Consultant, Owner, or Technology Designer/Engineer.

1.17 COORDINATION WITH OTHER TRADES

A. Install Work so as to avoid interferences with the Work of other trades. Be responsible for removing and relocating any work, which, in the opinion of the Owner's Representative, causes interferences.

B. Should construction conditions prevent the installation of technology equipment at locations shown on the drawings, minor deviations may be permitted and shall be as directed by the Technology Designer/Engineer and shall be made without additional cost to Owner.

C. The Technology Trades will be responsible for all damage to other Work caused by their Work or through the neglect of their workers.

1. All patching and repairing of any such damaged Work shall be performed by the trades that installed the Work, but the cost shall be paid by the Technology Trades.

D. The District has hired a Construction Manager (CM) to manage all construction trades. Coordinate your construction with the District's CM. Attend CM-lead meetings as requested.

1.18 INSTALLATION USER ACCOUNTS

A. The Contractor shall provide evidence that all installation and temporary passwords and accounts have been disabled and removed at the conclusion of the Project.

END OF SECTION 27 0015

SECTION 27 1000 – STRUCTURED CABLING SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including the Division 01 specification section, apply to work of this Section.

B. Section 27 0015 “Technology General Requirements”.

1.2 SUMMARY

A. This Specification, in conjunction with the Drawings, establishes the requirements necessary to achieve the intended performance and function of the Structured Cabling Systems (SCS).

B. The SCS consists of information processing, and/or information delivery and distribution equipment integrated together to form a cohesive integrated data system.

C. Provide as part of the bid proposal a complete bill of materials, including catalog cut sheets and equipment configuration for the data system.

D. The SCS shall be comprised of new and existing equipment that is of modern design, and current standard production of the manufacturer.

E. Verify dimensions and conditions at the job site prior to installation, and perform installation in accordance with these Specifications, Manufacturers recommendations and the latest edition or revision of all applicable codes and standards.

F. Furnish and install a SCS system incorporating the hardware, equipment, Ethernet LAN, and appropriate testing equipment to perform testing as hereinafter described.

G. Provide any additional items, not specifically mentioned herein, necessary to meet system requirements as specified, without claim for additional payment.

1.3 SYSTEM DESCRIPTION

A. This contract consists of providing Category 6 to network drop locations and IDF closets where indicated on the Drawings.

B. Provide labor, material, equipment, terminations, and accessories necessary for a complete new and operational communications copper horizontal cabling system as indicated on the Drawings and specified herein. The contractor shall furnish the equipment, accessories and necessary material as described herein.

C. Provide and install a separate pathway for the new Category 6 cabling infrastructure.

D. Provide wide base cable support that meets UL, NEC, and TIA/EIA requirements for the structured cabling system.

E. The support system shall attach to the building structural elements, do not fasten directly to the roof deck.

F. Cabling infrastructure shall be supported by cable supports that meet BICSI, EIA, TIA requirements and must be provided by the cabling contractors unless otherwise noted. (NO cable shall be allowed to be supported at or on ceiling grid, ceiling supports, mechanical or electrical piping, HVAC ductwork, etc.).

G. The supports shall be made of fire retardant and low smoke emission products, which meet UL 2034 requirements for air plenum spaces.

H. Minimum clearances from sources of EMI and RFI must be adhered to as specified in TIA/EIA-568B, TIA/EIA-569 and the latest version of the BICSI TDMM.

1.4 QUALITY ASSURANCE

A. Communications cabling system components and equipment shall be listed by Underwriters Laboratories, Inc. for Computer use, and the components shall bear the UL label.

B. The system shall be installed in accordance with requirements set by ANSI/NFPA-70 National Electric Code.

C. All equipment shall comply with the latest ANSI/TIA 607-B grounding and bonding standards.

D. All equipment and installation practices shall comply with latest BICSI (TDMM) standards.

E. All equipment shall comply with the latest ANSI/TIA/EIA-568, 569, 60, 607, and 862 standards, as applicable.

F. Cables shall be installed in accordance with ANSI/EIA/TIA and BISCI standards.

G. Provide labeling per ANSI/EIA/TIA-606 requirement and in accordance with the Owner and the Technology Consultant.

H. All cabling shall be tested in accordance with the ANSI/TIA/EIA-568-B2 standards with the required testing equipment.

1.5 WARRANTY

A. Refer to Specification Section 27 0015, Article 1.7 “GUARANTEE, SERVICE AND TRAINING” for warranty requirements.

1.6 SPECIAL EQUIPMENT INSTALLER QUALIFICATIONS

A. This contractor must meet one of the two (2) following special criteria:

1. Demonstrate that at least 30 percent of installation personnel are BICSI Registered Telecommunications Installers. Of that number, at least 15 percent shall be registered at the Technician Level, at least 40 percent shall be registered at the Installer Level 2, Installer Level 2, Copper or Installer Level 2, Optical Fiber, and the balance shall be registered at the Installer Level 1.

OR

2. Demonstrate that all work will be performed by fully qualified personnel having had experience on the installation of this type of system and able to certify that the primary on-site field foreman has no less than fifteen (15) years of continuous experience in this area and have made installations similar to this and of this size or larger. Additionally, 30 percent of installation personnel shall have an average of no less than ten (10) years of continuous experience in this area and have made installations similar to this and of this size or larger.

B. This contractor must include references of similar jobs. Final determination of equipment installer qualifications shall be the decision of the owner and may include inspections of recent work.

1.7 SPARE PARTS

A. None.

PART 2 - PRODUCTS

2.1 GENERAL

A. Description of System:

1. The SCS shall include providing complete operational and tested data wiring to support the network communications needs. The SCS will consist of providing new equipment as they pertain to the following principle features:

    a. Category 6 Horizontal cabling
    b. Category 6 patch cables
    c. Media outlets and connectors
    d. Cable termination equipment
    e. Testing
    f. Documentation

2. Design, manufacture, test, and install telecommunications cabling networks per manufacturer's requirements and in accordance with NFPA-70 (2011 edition of the *National Electrical Code*®), IEEE C2 2007 (NESC 2007), state codes, local codes, requirements of authorities having jurisdiction, and particularly the following standards:

    a. ANSI/TIA/EIA Standards

        1) TIA-568-C.0 –Generic Telecommunications Cabling for Customer Premises
        2) ANSI/TIA/EIA-568-C.1 -- Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements
        3) ANSI/TIA/EIA-568-C.2 -- Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components
        4) ANSI/TIA/EIA-568-C.3 -- Optical Fiber Cabling Components Standard
        5) TIA-569-B -- Commercial Building Standard for Telecommunications Pathways and Spaces
        6) TIA/EIA-606(A) -- The Administration Standard for the telecommunications Infrastructure of Commercial Buildings
        7) J-STD-607(A) -- Commercial Building Grounding and Bonding Requirements for Telecommunications
        8) TIA-526-14A –OFSTP-14 Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant
        9) TIA TSB-140 Additional Guidelines for Field Testing Length, Loss and Polarity of Optical Fiber Cabling Systems

3. Install cabling in accordance with the most recent edition of BICSI® publications:

    a. BICSI -- Telecommunications Distribution Methods Manual
    b. BICSI – Installation Transport Systems Information Manual
    c. BICSI - Electronic Safety and Security Design Reference Manual

B. Refer to Section 27 0015 for additional general requirements.

2.2 CATEGORY 6 CABLING

A. Description of System:

1. The Contractor is responsible for providing a complete and operational structured cabling system. Provide the following principle items:

   a. Provide new Category 6 unshielded twisted pair cabling.
   b. Provide new 24 and 48 port Category 6 patch panels.
   c. Tone, test, label and certify all new data drops.
   d. Provide new data outlets.

B. Products:

1. Horizontal Category 6 Cable:

   a. Solid copper, 22 AWG to 24 AWG, 100 ohm balanced twisted-pair, plenum rated Category 6 cables with four individually twisted-pairs with a crossfiller spline, which exceeds the mechanical and transmission performance specifications in TIA-568-C up to 250 MHz and sweep tested to at least 550 MHz. Listed Type CMP. Category 6 cables installed between floors shall be riser rated. Color shall be blue for standard network cabling and green for security cameras. Minimum spec cable is unacceptable and will be rejected.
   b. Approved Manufacturers:

      1) Berk-Tek – Lanmark 1000
      2) Belden/CDT – 3600 series
      3) Mohawk – Advance Net
      4) General – Genspeed 6000
      5) Panduit – PanGen 6 Enhanced
      6) Superior/Essex – DataGain Cat 6+
      7) Hitachi – Premium Series
      8) Commscope - Ultramedia 7504

2. Category 6 Patch Cables:

   a. Category 6 compliant per TIA 568-C.
   b. Compliant per TIA-568-C and TIA/EIA-606-A for cable management and administration.
   c. Each patch cable shall be bootless.
   d. Patch cables shall be color coded as follows:

      1) Telecommunications Closet Patch Cables:

         a) Data Ports: Blue.
         b) Security Cameras: Green

   e. Patch cables within the equipment closets shall be a minimum of 6-inches (6”) in length and have a maximum of two feet (2’) access coil length to avoid excess cable in the rack. The contractor shall install the cable to provide neat and organized patches to equipment. The contractor is required to review site conditions to ensure the proper cable lengths are installed.
   f. Approved Manufacturers:

      1) Berk-Tek – Lanmark 1000
      2) Belden/CDT – 3600 series
      3) Mohawk – Advance Net
      4) General – Genspeed 6000
      5) Panduit – PanGen 6 Enhanced
      6) Superior/Essex – DataGain Cat 6+

7) Hitachi – Premium Series
8) Commscope - Ultramedia 7504

3. Media Outlets and Connectors

a. Unshielded Twisted Pair media outlet terminations shall conform to the following:

1) Eight (8) position, eight (8) conductor modular plug, certified Category 6, T568B plug pin assignment. Modular Category 6 plug will be a five (5) piece connector with an integral plug housing, load bar, divider, strain relief boot and collar. Category 6 modular plugs will be specifically designed for use in conjunction with 22-24 AWG solid conductor unshielded twisted pair cabling. All Horizontal data cable will be terminated with a Category 6 modular plug to mate directly to the equipment.

OR

2) Eight (8) position, eight (8) conductor, 110 IDS, modular snap-in jacks, certified Category 6, T568 jack pin assignment.
3) Faceplates shall be stainless steel of a size to accommodate the raceway and gang boxes identified on drawings with adequate punch-outs for appropriate snap-in jacks.
4) Approved Manufacturers:

a) Hubbell
b) Uniprise
c) Leviton
d) ICC
e) Superior Modular
f) AMP
g) Ortronics
h) Panduit
i) Engineer approved equal

4. Telecommunication Room Termination Hardware:

a. Horizontal Category 6 cables shall be terminated in the telecommunication room on new rack mounted, 24-port or 48-port pre-populated patch panels. Refer to Drawings for exact quantities and locations.

1) Patch panels shall have a rear mounted strain relief bar to organize cables and maintain Category 6 bend radius.
2) Category 6 compliant per TIA 568-C.
3) Compliant per TIA-568-C and TIA/EIA-606-A for cable management and administration.
4) Approved Manufacturers:

a) Hubbell
b) Uniprise
c) Leviton
d) ICC
e) Superior Modular
f) AMP
g) Ortronics
h) Panduit
i) Engineer approved equal

PART 3 - EXECUTION

3.1 GENERAL

A. Recognizing District and community events occur during the day or evenings, network outages shall be minimized and coordinated with the Owner's operations.

B. All cables must be routed and managed for a neat and aesthetically pleasing appearance. All work must be installed in a neat and workman like manner.

C. Install patch cables in a professional manner. Utilize existing wire management where applicable. Where wire management is not available, provide wire management, route patches neatly in such a way to protect the patch cables from damage. Utilize Velcro tie wraps as needed. Plastic tie wraps are not acceptable and will be rejected.

D. Communication bonding and grounding shall be in accordance with the NEC® and NFPA. Horizontal cables shall be grounded in compliance with ANSI/NFPA 70 and local requirements and practices. Horizontal equipment includes cross connect frames, patch panels and racks, active telecommunication equipment and test apparatus and equipment.

E. The Contractor shall not place any distribution cabling alongside power lines, or share the same conduit, channel or sleeve with electrical apparatus unless the conduit, channel or sleeve is divided and manufactured specifically for the purpose of cohabitation. Maintain separation as follows:

1. 5' for large motors and transformers
2. 1' for conduit and cables used for electrical power distribution
3. 6" for fluorescent lights

F. The Contractor shall provide any necessary screws, anchors, clamps, distribution rings, miscellaneous grounding and support hardware, etc., necessary to facilitate the installation of the system.

G. It shall be the responsibility of the contractor to furnish any special installation equipment or tools necessary to properly complete the system.

H. It may be necessary to remove ceiling tiles to accommodate new work under this Contract. Notify Owner of any damaged tiles prior to removal. Tiles damaged during construction shall be replaced by this Contractor.

I. Refer to Specification Section 27 0015 for additional general requirements.

3.2 PRE-INSTALLATION SITE SURVEY

A. Prior to start of systems installation, meet at the project site with the owner's representative and Technology Designer/Engineer to coordinate efforts. Review areas of potential interference and resolve conflicts before proceeding with the work.

B. Examine areas and conditions under which the system is to be installed. Do not proceed with the work until satisfactory conditions have been achieved.

C. The New Middle School consists of primarily lay-in ceilings with hard ceilings in spaces as shown on the Drawings and open ceiling spaces in spaces such as ELA spaces, Mainstreet, electrical, IT, and storage rooms. It is the contractor's responsibility to visit the sites and include all access doors, conduit and any other miscellaneous equipment necessary for a neat, complete and professional installation.

3.3 INSTALLATION – DATA WIRING

A. Provide, install, test and tag Category 6 data drops to each location as indicated on the drawings.

B. Installation practices shall follow BICSI standards and guidelines. TIA/EIA-568-C standards will be strictly followed and practiced.

C. All cabling in equipment cabinets/racks shall be managed utilizing new wire organizers provided by the Contractor. All cabling and patch cables in closets shall be secured using velcro straps.

D. Category 6 cables shall be continuous from telecommunications room to work area outlet and free from splices, reverses, grounds or other connections. Provide a minimum 10-foot service loop within telecommunications closet. Service loop shall be neatly coiled and secured above accessible ceiling, for each terminated cable, to accommodate future changes. Refer to drawings for service loop footages, where not indicated on the Drawings, provide a minimum of 10-foot service loop.

E. Terminate Category 6 cable according to T568B jack pin assignments.

1. Remove only the amount of cable jacket necessary for termination. Maintain wire twist for all pairs of Category 6 cable to within 0.5 inches maximum from termination point.

F. Do not run cable longer than maximum 90 meter EIA/TIA recommended length.

G. All cables installed in ceiling spaces shall be plenum-rated.

H. Horizontal data cable pairs shall run from each work area outlet to the telecommunications room and terminate on Category 6 patch panels as appropriate.

I. All cables shall be installed using “J” hooks, conduits, cable tray or an approved raceway system. Where cable tray is not available, horizontal cable will be supported every five feet with “J” hooks sufficient in size to handle all bundled cables while minimizing crushing. If cable slack exceeds twelve (12) inches between supports, additional supports will be installed to take up slack and relieve cable stress.

J. The use of “bridle rings” is strictly prohibited.

K. Carefully lay all cable with appropriate radius of curvature and protect at bends and corners. Observe minimum bend radius and tension limitations as specified by EIA/TIA for Category 6 cable.

L. Loosely bundle cables with plastic tie wraps, suitable for Plenum environments, every twenty feet.

M. Patch panels shall be arranged to allow for natural wiring progression in functional fields, minimize crossing of wires and allow for the easy access to each component.

N. The contractor shall assure that at the completion of cable installation, cables are free from twists, kinks, sharp bends, cuts, gouges or any other physical damage that might cause alterations to the electrical or optical characteristics of the cables.

O. Installation of new communications cabling through existing cable bundles is strictly prohibited to minimize cable burning.

3.4 LABELING

A. All cable designations and color-coding shall be in full compliance with EIA/TIA 606-A.

B. Clearly label all horizontal copper cables at both ends with permanently applied mechanically printed labels. Hand written labels will not be acceptable. Use standardized colors and alphanumeric codes. Technology Designer/Engineer will approve labeling system and method.

C. In work areas, place cable ID labels around each cable in outlet box, and on front of faceplate.

D. In the telecommunications room or at wireless access points, clocks, or security cameras, place ID labels around each cable. Labels shall be located within six inches of the termination.

E. Front label each patch panel port with a mechanically produced identification label utilizing the Owner's existing labeling scheme.

F. Label each faceplate and cable mated directly to equipment with a mechanically produced identification label utilizing the Owner's existing label scheme.

3.5 CATEGORY 6 UTP CABLE TESTING

A. The Contractor shall, at all times, permit and facilitate work inspection by the Owner's Representative and by public authorities having jurisdiction. The Owner's Representative shall have the authority to stop the work, if required, to insure proper execution.

B. Each Category 6 UTP cable pair shall be tested end to end from the data outlet termination to the closet patch panel.

C. Test shall be performed with connectors installed.

D. Cable performance shall meet the standards outlined in EIA/TIA-568-C for Category 6 cabling.

E. Tone, verify and certify cable and jack/connectors as free from shorted pairs, open pairs, reversed pairs, crossed pairs and grounded pairs. One hundred percent of all pairs must be in good working condition.

F. Check cable length and labeling at both ends.

G. Cables and connectors comprising of Category 6 must be certified compliant with the performance requirements listed in TIA-568-C.

1. As a minimum, test documentation will include:

a. Cable Identification Number
b. Worst Case Near End Cross Talk (NEXT)
c. Attenuation
d. PSNEXT
e. Return Loss
f. PSELFEXT
g. Signal-to-Noise Ratio
h. Ambient Noise
i. Loop Resistance
j. Equal Level Far-End Crosstalk (EL-FEXT)
k. Return Loss
l. Propagation Delay
m. Propagation Delay Skew
n. Cable Length
o. Test Date

2. Each data circuit, including all connectors shall be tested to verify all bandwidth performance and crosstalk specifications as outlined for Category 6 cable. Any cables not in one hundred percent compliance with the minimum performance criteria relating to these requirements will be replaced with no additional cost to Owner.

H. Cable testing will be conducted by a programmable micro-computer based tester capable of testing all specific standard requirements and generating completed printed test results.

1. Test equipment shall be a Fluke, or approved equivalent. Equipment will be designed, and of such grade, so as to provide reliable certification and testing.

I. A detailed copy of all test reports shall be provided to the Owner in CD format. Additionally, the Contractor shall provide hardcopy documentation indicating cable length and the pass test results for each Category 6 cable installed.

J. Any outlet, cable or component that does not meet the required operational tests or fails to meet installation standards as specified shall be repaired or replaced and re-tested by the Contractor as directed by the Owner and at no expense to the Owner.

3.6 PROJECT RECORD DOCUMENTS

A. Fully detailed documentation and record drawings of installation layout and performance shall be submitted for review within thirty (30) days of completion of work and shall include as a minimum:

1. Marked drawings showing distance and routing of all inside cable with gauge, type and numbering scheme.
2. Location of outlets with their identification number prepared on the most recent installation drawing.
3. Drawings showing distribution frame layouts, cross connect locations, cable routing from rooms.
4. Drawings showing layout of panels and equipment in cabinets.
5. Drawings shall accurately record actual locations of each item of fixed equipment, and show interconnecting wiring. Drawings will indicate location of equipment and tagged circuits. A functional block diagram will also be required.
6. On electronic drawings, provide data cabling on a separate layer from the architectural layer so the Owner can turn the data layer on and off.

B. Documentation Requirements:

1. Drawings, whenever submitted, shall be submitted with three (3) hard copies to the Owner.
2. Cable and outlet identification, locations, performance and test results will be entered into Excel or approved PC based spreadsheet. The Contractor spreadsheet template and format will be approved by the Owner.
3. Final record drawings shall be submitted as three (3) sets of scaled 20# bond drawings and two (2) USB keys containing both PDF and AutoCAD LT 2004 formats. Drawings shall be professionally done with architectural floor plan on one layer and all technology equipment and cabling on a second layer. Hand drawings and notations will not be accepted.

C. Cable Record Book:

1. The Contractor shall prepare and deliver complete and accurate cable records entered into Excel or approved PC based spreadsheet. Minimum information to be included for each cable in the Cable Record Book is:

a. Location (room number)
b. Jack Number
c. Serving Closet

d. Patch Panel Number
e. Patch Panel Port
f. Cable Type and Use (Cat 6, voice)

D. Refer to Specification Section 27 0015 for additional general project record document requirements.

E. All drawings and the information contained therein become the sole property of the Owner.

END OF SECTION 27 1000

SECTION 27 1323 – INDOOR FIBER OPTIC BACKBONE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including the Division 01 specification section, apply to work of this Section.

B. Section 27 0015 “Technology General Requirements”.

1.2 SUMMARY

A. Section includes, but is not limited to the following:

1. Indoor Singlemode fiber
2. Fiber connectors, fittings, enclosures, etc.

1.3 DESCRIPTION OF WORK

A. Provide a new 12 strand, OS2 singlemode, plenum rated, armored, fiber optic backbone cable from the Main Equipment room (MDF) to each telecommunication room(s) (IDF) as described herein and as shown on the drawings.

B. Upon completion of the new fiber optic backbone cabling installation, the Owner shall perform the cut-over to the new fiber optic backbone. Work directly with the Owner to answer and questions or to resolve any concerns.

C. Provide labor, material, equipment, terminations, and accessories necessary for a complete and operational fiber optic backbone cabling system.

D. The fiber optic backbone cabling system shall be capable of 1 Gig and 10 Gig bps transmissions via OS2 singlemode fiber optic cable and shall comply with EIA/TIA 492 requirements and IEC 60793.

E. The singlemode fiber optic cable shall be terminated by using "LC" type connectors, field polished, utilizing anaerobic adhesive. Mechanical style connectors are not acceptable.

F. Fiber shall be installed in innerduct.

1.4 QUALITY ASSURANCE

A. All backbone cabling system components and equipment shall be listed by Underwriters Laboratories, Inc. for telecommunication use, and the components shall bear the UL label.

B. The system shall be installed in accordance with requirements set by ANSI/NFPA-70 National Electric Code.

C. All equipment shall meet the latest ANSI/TIA 607-B grounding and bonding standards.

D. All equipment shall meet the latest ANSI/TIA/EIA-568, 569, 606, and 607 standards.

E. All OS2 singleimode fiber shall comply with the latest American National Standard Institute, ANSI/TIA/EIA 492AAAB standards.

F. All fiber optic cable shall be installed in accordance with ANSI/EIA/TIA and BICSI standards.

G. Provide labeling per ANSI/EIA/TIA-606 requirement and in accordance with the Owner and the Technology Consultant.

PART 2 - PRODUCTS

2.1 SINGLEMODE, INDOOR PLENUM RATED, INTERLOCKING ARMORED, GEL FREE, FIBER OPTIC CABLE

A. General:

1. Plenum Applications - NFPA 262 (for plenum, riser and general building applications)
2. The cable shall meet all requirements stated in this specification. The cable shall be an accepted product of the United States Department of Agriculture Rural Utilities Service (RUS) 7 CFR 1755.900 (PE-90) and meet the requirements of ANSI/ICEA Standard for Fiber Optic Outside Plant Communications Cable, ANSI/ICEA S-87-640-2006.
3. The cable shall be new, unused, and of current design and manufacture.

B. Fiber Characteristics:

1. Fibers in the cable must be usable fibers and meet required specifications.
2. Optical fibers shall be sufficiently free of surface imperfections and inclusions to meet the optical, mechanical, and environmental requirements of this specification.
3. Each optical fiber shall consist of a doped silica core surrounded by a concentric silica cladding.

C. The 12-strand single-mode interlocking armored fiber utilized in the cable specified herein shall conform to the following specifications:

1. Typical Core Diameter: 8.2 µm
2. Cladding Diameter: 125.0 +/- 1.0 µm
3. Core-to-Cladding Offset: < 1.0 µm
4. Coating Diameter: 250 +/- 15 µm
5. Attenuation: .04dB/km @ 1310 nm, 0.3 dB/km@ 1550 nm.

D. The coating shall be a dual layered, UV cured acrylate applied by the fiber manufacturer.

E. The coating shall be mechanically or chemically strippable without damaging the fiber.

F. Specifications for Indoor Cables:

1. Optical fibers shall be placed inside a loose buffer tube.
2. Each buffer tube shall contain up to 12 fibers.
3. The fibers shall not adhere to the inside of the buffer tube.
4. Each fiber shall be distinguishable from others by means of color. These colors shall meet EIA/TIA 598 “Color Coding for Fiber Optic Cables”.
5. Buffer tubes containing fibers shall also be color-coded with distinct and recognizable colors. These colors shall meet EIA/TIA-598-B,"Color Coding of Fiber Optic Cables."
6. For cables containing more than 12 buffer tubes, standard colors are used for tubes 1 through 12 and stripes are used to denote tubes 13 through 24. The color sequence applies to tubes containing fibers only, and shall begin with the first tube. If fillers are required, they shall be placed in the inner layer of the cable. The tube color sequence shall start from the inside layer and progress outward.
7. In buffer tubes containing multiple fibers, the colors shall be stable during temperature cycling and not subject to fading or smearing onto each other. Colors shall not cause fibers to stick together.
8. The buffer tubes shall be resistant to external forces and shall meet the buffer tube cold bend and shrinkback requirements of 7 CFR 1755.900.
9. Buffer tubes shall be of a dual-layer construction with the inner layer made of polycarbonate and the outer layer made of polyester.

10. Fillers may be included in the cable core to lend symmetry to the cable cross-section where needed. Fillers shall be placed so that they do not interrupt the consecutive positioning of the buffer tubes. In dual layer cables, any fillers shall be placed in the inner layer. Fillers shall be nominally 2.5 mm or 3.0 mm in outer diameter.
11. The central member shall consist of a dielectric, glass reinforced plastic (GRP) rod (optional steel central member). The purpose of the central member is to provide tensile strength and prevent buckling. The central member shall be overcoated with a thermoplastic when required to achieve dimensional sizing to accommodate buffer tubes/fillers.
12. Each buffer tube shall contain a water-swellable yarn or water blocking element for water-blocking protection. The water-swellable yarn or water blocking element shall be non-nutritive to fungus, electrically non-conductive, and homogeneous. It shall also be free from dirt or foreign matter. This yarn or element will preclude the need for other water-blocking material; the buffer-tube shall be gel-free.
13. Buffer tubes shall be stranded around the dielectric central member using the reverse oscillation, or "S-Z", stranding process. Water swellable yarn(s) shall be applied longitudinally along the central member during stranding.
14. Two polyester yarn binders shall be applied contrahelically with sufficient tension to secure each buffer tube layer to the dielectric central member without crushing the buffer tubes. The binders shall be non-hygroscopic, non-wicking, and dielectric with low shrinkage.
15. Binders shall be applied with sufficient tension to secure the buffer tubes to the central member without crushing the buffer tubes. The binders shall be non-hygroscopic, non-wicking (or rendered so by the flooding compound), and dielectric with low shrinkage.
16. The cable shall contain at least one ripcord under the sheath for easy sheath removal.
17. Tensile strength shall be provided by high tensile strength aramid yarns and/or fiberglass.
18. The high tensile strength aramid yarns/fiberglass shall be helically stranded evenly around the cable core.
19. The FOC cable shall have an inner sheath of medium density polyethylene. The armor shall be a corrugated steel tape, plastic-coated on both sides for corrosion resistance. The outer jacket shall be applied over the corrugated steel tape armor. The outer jacket shall be a medium density polyethylene. The polyethylene shall contain carbon black to provide ultraviolet light protection and shall not promote the growth of fungus.
20. The jacket or sheath shall be free of holes, splits, and blisters.
21. The cable jacket shall contain no metal elements and shall be of a consistent thickness.
22. The jacket or sheath shall be marked with the manufacturer's name, the words "Optical Cable", year of manufacture, and sequential meter marks. The markings shall be repeated every four feet.
23. The maximum pulling tension shall be 2700 N (600 lbs) during installation (short term) and 890 N (200 lbs.) long term installed.
24. The shipping, storage, and operating temperature range of the cable shall be -40'C to +70'C. The installation temperature range of the cable shall be -30°C to +70°C.

G. Quality Assurance Provisions

1. All optical fibers shall be proof tested by the fiber manufacturer at a minimum load of 50 kpsi.
2. All optical fibers shall be 100% attenuation tested. The attenuation of each fiber shall be provided with each cable reel.

H. Manufacturers:

1. Corning- 012E81-33131-A1
2. Comscope-P-012-DZ-8W-FSUYL
3. Approved equivalent

2.2 INDOOR FIBER OPTIC HARDWARE

A. Specifications (LC - Connectors):

1. Attenuation: Typical.04dB/km @ 1310 nm, 0.3dB, @ 1550nm
2. Connector Durability: <0.2dB increase / 1000 matings

3. Operating Temperatures: -40 degrees C to + 60 degrees C
4. Storage Temperature: -40 degrees C to + 80 degrees C
5. Materials:

   a. Tip: Ceramic Ferrule
   b. Housing: Composite
   c. Fiber Size: 8.3/125 micron single-mode fiber

B. The maximum loss of any splice shall be 0.03 dB.

C. Splice procedure shall be suitable for the cable used and as recommended by the cable manufacturer.

D. All splices shall be contained in splice trays designed specifically for the splice enclosure.

E. Provide dust caps for all connectors and adapters. Leave dust caps on site after connections are made.

MDF-B107A:

Manufacturer	Model	Quantity
Corning/ Comscope	CCH-02U EPX-2U-ENC	1 1
Corning/ Comscope	CCH-CS12-A9-P00RE PNL-CS-12LCW-PT	3 3
LC-LC	3 Meter Patch Cords	6

F. IDF-C116:

Manufacturer	Model	Quantity
Fiber	As Specified	1
Corning/ Comscope	CCH-01U EPX-1U-ENC	1
Corning/ Comscope	CCH-CS12-A9-P00RE PNL-CS-12LCW-PT	1 1
LC-LC	3 Meter Patch Cords	2

IDF-C216:

Manufacturer	Model	Quantity
Fiber	As Specified	1
Corning/ Comscope	CCH-01U EPX-1U-ENC	1
Corning/ Comscope	CCH-CS12-A9-P00RE PNL-CS-12LCW-PT	1 1
LC-LC	3 Meter Patch Cords	2

IDF-E209:

Manufacturer	Model	Quantity
Fiber	As Specified	1
Corning/ Comscope	CCH-01U EPX-1U-ENC	1
Corning/ Comscope	CCH-CS12-A9-P00RE PNL-CS-12LCW-PT	1 1
LC-LC	3 Meter Patch Cords	2

PART 3 - EXECUTION

3.1 INSTALLATION

A. Premise singlemode fiber optic cable - install separate pathways, fiber optic cable, enclosures and connectors as specified here and as shown on the drawings.

B. Installation practices shall follow BICSI standards and guidelines.

C. All cabling in equipment cabinets/racks shall be managed utilizing wire organizers provided by the Contractor. All cabling and patch cables in closets shall be secured using velcro straps.

D. All cables installed in ceiling spaces shall be plenum-rated.

E. All cables shall be installed using “J” hooks, conduits, cable tray or an approved raceway system. Where cable tray is not available, horizontal cable will be supported every five feet with “J” hooks sufficient in size to handle all bundled cables while minimizing crushing. If cable slack exceeds twelve (12) inches between supports, additional supports will be installed to take up slack and relieve cable stress.

F. The use of “bridle rings” is strictly prohibited.

G. Carefully lay all cable with appropriate radius of curvature and protect at bends and corners. Observe minimum bend radius and tension limitations as specified by EIA/TIA for fiber optic cabling

H. Loosely bundle cables with plastic tie wraps, suitable for Plenum environments, every twenty feet.

I. Fiber trays and fiber patch panels shall be arranged to allow for natural wiring progression in functional fields, minimize crossing of wires and allow for the easy access to each component.

J. The contractor shall assure that at the completion of cable installation, cables are free from twists, kinks, sharp bends, cuts, gouges or any other physical damage that might cause alterations to the electrical or optical characteristics of the cables.

K. Installation of fiber optic cabling through existing cable bundles is strictly prohibited to minimize cable burning.

L. All installation work shall be done in a neat, high quality manner and in conformity with local and federal building codes.

M. Cables shall be placed with sufficient bending radius so as not to kink, shear, or damage outer jacket.

N. Provide service loops as follows:

1. 25 foot in each MDF and IDF
2. Service loop shall be secured in cable tray.
3. Proper J-Hook support as needed.

3.2 LABELING AND MARKING

A. Contractor shall install labels as follows:

1. One label at each end of each cable.
2. One label at the end of each cable, where it enters the fiber optic enclosure, plus one label on the front inside cover/door of the enclosure.
3. Labels to include “to” and “from” (ie: 12 St SMF from MDF to IDF-1 and 12 St SMF from IDF-1 to MDF) etc.

4. All markings shall be carefully done so as to present a neat, professional appearance.

3.3 FIBER OPTIC TESTING

A. Testing and documentation shall be done on all fibers with connectors. The contractor shall provide the calibration date of the unit used to perform the measurements to the district prior to beginning the test. That date must be within 12 months of test (or less if recommended by the manufacturer). Fiber loss shall be checked from connector to connector on all single mode fibers.

B. All Fiber Optic Cable shall be tested using an Optical Time Domain Reflectometer (OTDR). Documentation for each test shall be provided to Owner. The signature trace of each cable must include the attenuation per kilometer and total length of each strand. Acceptance tests for all fiber strands shall include attenuation, attenuation uniformity, and continuity, testing shall be performed at 1310nm and 1550nm wavelengths. Corrective action shall be taken by this contractor in the design of the system to insure all loss budgets are maintained. See loss budget below.

C. The OTDR test results will determine the following:

1. The overall length of each segment.
2. Proper termination.
3. Continuity in the fiber.
4. Total segment attenuation.
5. Irregularities in the fiber.
6. Loss for each strand at 1310 nm and 1550 nm.
7. Reflectance.

D. On the reel testing required prior to installation. Each fiber strand will be checked with an OTDR at 1310 nm to identify point diLContinuities. Hard copy results are to be provided.

E. Fusion Splice Testing - Optical fiber splice shall not exceed a maximum optical attenuation of 0.3dB when tested in accordance with ANSI/EIA/TIA 355-59.

F. Connector Testing - Optical connectors shall not exceed a maximum optical attenuation of 0.75dB per mated connection when tested in accordance with ANSI/EIA/TIA 455-59.

G. Reflectance Testing - Optical fiber connection between buildings shall not have a reflectance greater than -60dB per strand for video.

H. Any cable or component that does not meet the required operational tests or fails to meet installation standards as specified shall be repaired or replaced and re-tested by the Contractor as directed by the Owner and at no expense to the Owner.

3.4 CROSSOVERS/POLARITY CONNECTIONS

A. The backbone and horizontal premises cabling must be installed so as to pair an odd numbered optical fiber with the next consecutive even numbered optical fiber (e.g., optical fiber 1 with 2, 3, with 4) to form two fiber transmission paths. Each premises cabling segment must be installed in a pair wise crossover orientation such that:

1. Odd numbered optical fiber strands are Position A at one end and Position B at the other end.
2. Even numbered optical fiber strands are Position B at one end and Position A at the other end.

B. For the duplex LC, the crossover must be achieved by using consecutive optical fiber numbering (e.g., 1, 2, 3, 4…) on both ends of an optical fiber link, but the duplex optical fiber adapters must be installed in opposite manners on each end (e.g., A-B, A-B on one end and B-A, B-A on the other).

C. For other duplex optical fiber styles, polarity may be achieved by the same method or by using reverse pair positioning. Reverse pair positioning is achieved by installing optical fiber (strands) in consecutive numbering sequence (e.g., 1, 2, 3, 4…) on one end of an optical fiber link, and installing optical fiber (strands) using reverse pair numbering (e.g., 2, 1, 4, 3…) on the other end of the optical fiber link.

3.5 PROJECT RECORD DOCUMENTS

A. Fully detailed documentation and record drawings of installation layout and performance shall be submitted for review within thirty (30) days of completion of work and shall include as a minimum:

1. Marked drawings showing distance and routing of all inside cable with gauge, type and numbering scheme.
2. Location of outlets with their identification number prepared on the most recent installation drawing.
3. Drawings showing distribution frame layouts, cross connect locations, cable routing from rooms.
4. Drawings showing layout of panels and equipment in cabinets.
5. Drawings shall accurately record actual locations of each item of fixed equipment, and show interconnecting wiring. Drawings will indicate location of equipment and tagged circuits. A functional block diagram will also be required.
6. On electronic drawings, provide data cabling on a separate layer from the architectural layer so the Owner can turn the data layer on and off.

B. Documentation Requirements:

1. Drawings, whenever submitted, shall be submitted with three (3) hard copies to the Owner.
2. Cable and outlet identification, locations, performance and test results will be entered into Excel or approved PC based spreadsheet. The Contractor spreadsheet template and format will be approved by the Owner.
3. Final record drawings shall be submitted as three (3) sets of scaled 20# bond drawings and two (2) USB keys containing both PDF and AutoCAD LT 2004 formats. Drawings shall be professionally done with architectural floor plan on one layer and all technology equipment and cabling on a second layer. Hand drawings and notations will not be accepted.

C. Cable Record Book:

1. The Contractor shall prepare and deliver complete and accurate cable records entered into Excel or approved PC based spreadsheet. Minimum information to be included for each cable in the Cable Record Book is:

    a. Location (room number)
    b. Jack Number
    c. Serving Closet

    d. Patch Panel Number
    e. Patch Panel Port
    f. Cable Type and Use (Cat 6, voice, fiber)

D. Refer to Specification Section 27 0015 for additional general project record document requirements.

E. All drawings and the information contained therein become the sole property of the Owner.

END OF SECTION 27 1323

SECTION 27 1517 – STRUCTURED CABLING SYSTEMS (AUGMENTED CATEGORY 6 CABLE)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including the Division 01 specification section, apply to work of this Section.

B. Section 27 0015 “Technology General Requirements”.

1.2 SUMMARY

A. This Specification, in conjunction with the Drawings, establishes the requirements necessary to achieve the intended performance and function of the Structured Cabling Systems (SCS).

B. The SCS consists of information processing, and/or information delivery and distribution equipment integrated together to form a cohesive integrated data system.

C. Provide as part of the bid proposal a complete bill of materials, including catalog cut sheets and equipment configuration for the data system.

D. The SCS shall be comprised of new and existing equipment that is of modern design, and current standard production of the manufacturer.

E. Verify dimensions and conditions at the job site prior to installation, and perform installation in accordance with these Specifications, Manufacturers recommendations and the latest edition or revision of all applicable codes and standards.

F. Furnish and install a SCS system incorporating the hardware, equipment, Ethernet LAN, and appropriate testing equipment to perform testing as hereinafter described.

G. Provide any additional items, not specifically mentioned herein, necessary to meet system requirements as specified, without claim for additional payment.

1.3 SYSTEM DESCRIPTION

A. This contract consists of providing augmented Category 6 (6A) cabling to wireless access point locations where indicated on the Drawings.

B. Provide labor, material, equipment, terminations, and accessories necessary for a complete new and operational communications copper horizontal cabling system as indicated on the Drawings and specified herein. The contractor shall furnish the equipment, accessories and necessary material as described herein.

C. Provide and install a separate pathway for the new Augmented Category 6 cabling infrastructure. This Contractor shall not utilize pathways for the other Category 6 cabling.

D. Provide wide base cable support that meets UL, NEC, and TIA/EIA requirements for the structured cabling system.

E. The support system shall attach to the building structural elements, do not fasten directly to the roof deck.

F. Cabling infrastructure shall be supported by cable supports that meet BICSI, EIA, TIA requirements and must be provided by the cabling contractors unless otherwise noted. (NO cable shall be allowed to be supported at or on ceiling grid, ceiling supports, mechanical or electrical piping, HVAC ductwork, etc.).

G. The supports shall be made of fire retardant and low smoke emission products, which meet UL 2034 requirements for air plenum spaces.

H. Minimum clearances from sources of EMI and RFI must be adhered to as specified in TIA/EIA-568B, TIA/EIA-569 and the latest version of the BICSI TDMM.

I. The data horizontal cabling system shall be capable of 10 Gig transmissions via 4 PR UTP copper Augmented Category 6 horizontal cables and shall comply with TIA/EIA 568B, 2-10 requirements.

1.4 QUALITY ASSURANCE

A. Communications cabling system components and equipment shall be listed by Underwriters Laboratories, Inc. for Computer use, and the components shall bear the UL label.

B. The system shall be installed in accordance with requirements set by ANSI/NFPA-70 National Electric Code.

C. All equipment shall comply with the latest ANSI/TIA 607-B grounding and bonding standards.

D. All equipment and installation practices shall comply with latest BICSI (TDMM) standards.

E. All equipment shall comply with the latest ANSI/TIA/EIA-568, 569, 60, 607, and 862 standards, as applicable.

F. Cables shall be installed in accordance with ANSI/EIA/TIA and BISCI standards.

G. Provide labeling per ANSI/EIA/TIA-606 requirement and in accordance with the Owner and the Technology Consultant.

H. All cabling shall be tested in accordance with the ANSI/TIA/EIA-568-B2 standards with the required testing equipment.

1.5 WARRANTY

A. Refer to Specification Section 27 0015, Article 1.7 “GUARANTEE, SERVICE AND TRAINING” for warranty requirements.

1.6 SPECIAL EQUIPMENT INSTALLER QUALIFICATIONS

A. This contractor must meet one of the two (2) following special criteria:

1. Demonstrate that at least 30 percent of installation personnel are BICSI Registered Telecommunications Installers. Of that number, at least 15 percent shall be registered at the Technician Level, at least 40 percent shall be registered at the Installer Level 2, Installer Level 2, Copper or Installer Level 2, Optical Fiber, and the balance shall be registered at the Installer Level 1.

OR

2. Demonstrate that all work will be performed by fully qualified personnel having had experience on the installation of this type of system and able to certify that the primary on-site field foreman has no less than fifteen (15) years of continuous experience in this area and have made installations similar to this and of this size or larger. Additionally, 30 percent of installation personnel shall have an average of no less than ten (10) years of continuous experience in this area and have made installations similar to this and of this size or larger.

B. This contractor must include references of similar jobs. Final determination of equipment installer qualifications shall be the decision of the owner and may include inspections of recent work.

1.7 SPARE PARTS

A. None.

PART 2 - PRODUCTS

2.1 GENERAL

A. Description of System:

1. The SCS shall include providing complete operational and tested data wiring to support the network communications needs. The SCS will consist of providing new equipment as they pertain to the following principle features:

   a. Category 6 Horizontal cabling
   b. Category 6 patch cables
   c. Media outlets and connectors
   d. Cable termination equipment
   e. Testing
   f. Documentation

2. Design, manufacture, test, and install telecommunications cabling networks per manufacturer's requirements and in accordance with NFPA-70 (2011 edition of the *National Electrical Code*®), IEEE C2 2007 (NESC 2007), state codes, local codes, requirements of authorities having jurisdiction, and particularly the following standards:

   a. ANSI/TIA/EIA Standards

      1) TIA-568-C.0 –Generic Telecommunications Cabling for Customer Premises
      2) ANSI/TIA/EIA-568-C.1 -- Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements
      3) ANSI/TIA/EIA-568-C.2 -- Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted Pair Cabling Components
      4) ANSI/TIA/EIA-568-C.3 -- Optical Fiber Cabling Components Standard
      5) TIA-569-B -- Commercial Building Standard for Telecommunications Pathways and Spaces
      6) TIA/EIA-606(A) -- The Administration Standard for the telecommunications Infrastructure of Commercial Buildings
      7) J-STD-607(A) -- Commercial Building Grounding and Bonding Requirements for Telecommunications
      8) TIA-526-14A –OFSTP-14 Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant
      9) TIA TSB-140 Additional Guidelines for Field Testing Length, Loss and Polarity of Optical Fiber Cabling Systems

3. Install cabling in accordance with the most recent edition of BICSI® publications:

   a. BICSI -- Telecommunications Distribution Methods Manual
   b. BICSI – Installation Transport Systems Information Manual
   c. BICSI - Electronic Safety and Security Design Reference Manual

B. Refer to Section 27 0015 for additional general requirements.

2.2 AUGMENTED CATEGORY 6 (6A) CABLING

A. Description of System:

1. The Contractor is responsible for providing a complete and operational structured cabling system. Provide the following principle items:

   a. Provide new augmented Category 6 unshielded twisted pair cabling.
   b. Provide new 24 and 48 port unpopulated augmented Category 6 patch panels.
   c. Tone, test, label and certify all new data drops.

B. The computer/data cable shall be four unshielded twisted pair (UTP), 23 AWG, solid bare copper.

C. The augmented Category 6 cable jacket shall be yellow in color.

D. Patch cables shall be bootless. Patch cables within the equipment closets shall be a minimum of 6-inches (6") in length and have a maximum of two feet (2') access coil length to avoid excess cable in the rack. The contractor shall install the cable to provide neat and organized patches to equipment. The contractor is required to review site conditions to ensure the proper cable lengths are installed.

E. The insulated conductors shall be twisted in pairs and shall be insulated with FEP material, and all 4 insulated pairs shall be set into an insulated plastic jacket.

F. UL listed CMP-LP with transmission characteristics that meet or exceed those of FCC-68/ TIA /EIT, 568A-5 and TIA /EIT TSB-95 performance and NEMA low loss, extended frequency, jacket shall be sequentially marked at 2 foot intervals and must be plenum rated. UL listed 1459 and 1863.

G. Pair twisting shall be maintained to meet the cable performance, but maximum cable, untwisting allows is one half (1/2) inch.

H. Cable shall meet ANSI/TIA/EIA-658-B2-AD10 transmission performance specifications for 4 pair UTP augmented category 6 cabling.

I. Design bandwidth - 500 MHZ, cable bandwidth - 500+ MHZ, standard data rate 10 Gig.

J. Approved Manufacturers:

1. General 10MTP
2. Hubbell NextSpeed Ascent 10GbE
3. Commscope/Uniprise Ultra 10
4. Berk-Tek 10G2
5. Belden 10GX13
6. Mohawk M5864X
7. Superior/Essex 10Gain XP
8. Hitachi Supra 10G
9. Engineer approved equivalent

K. Media Outlets and Connectors:

1. Unshielded Twisted Pair media outlet terminations shall conform to the following:

   a. Eight (8) position, eight (8) conductor modular plug, certified augmented Category 6, T568B plug pin assignment. Modular augmented Category 6 plug will be a five (5) piece connector with an integral plug housing, load bar, divider, strain relief boot and collar. Augmented Category 6 modular plugs will be specifically designed for use in conjunction with 22-24 AWG solid conductor unshielded twisted pair cabling. All Horizontal data cable will be

terminated with an augmented Category 6 modular plug to mate directly to the wireless access point.

2. Telecommunication Room Termination Hardware:

   a. Horizontal Category 6 cables shall be terminated in the telecommunication room on new rack mounted, 24-port or 48-port pre-populated patch panels. Refer to Drawings for exact quantities and locations.

      1) Patch panels shall have a rear mounted strain relief bar to organize cables and maintain augmented Category 6 bend radius.
      2) Augmented Category 6 compliant per TIA 568-C.
      3) Compliant per TIA-568-B and TIA/EIA-606-A for cable management and administration.
      4) Approved Manufacturers:

         a) Hubbell
         b) Uniprise
         c) Leviton
         d) ICC
         e) Superior Modular
         f) AMP
         g) Ortronics
         h) Panduit
         i) Engineer approved equal

3. Augmented Category 6 Patch Cables:

   a. Augmented Category 6 compliant per TIA 568-C.
   b. Compliant per TIA-568-C and TIA/EIA-606-A for cable management and administration.
   c. Each patch cable shall be bootless.
   d. Patch cables shall be color coded as follows:

      1) Telecommunications Closet Patch Cables:

         a) Wireless Access Points: Yellow.

PART 3 - EXECUTION

3.1 GENERAL

A. Recognizing District and community events occur during the day or evenings, network outages shall be minimized and coordinated with the Owner's operations.

B. All cables must be routed and managed for a neat and aesthetically pleasing appearance. All work must be installed in a neat and workman like manner.

C. Install patch cables in a professional manner. Utilize existing wire management where applicable. Where wire management is not available, provide wire management, route patches neatly in such a way to protect the patch cables from damage. Utilize Velcro tie wraps as needed. Plastic tie wraps are not acceptable and will be rejected.

D. Communication bonding and grounding shall be in accordance with the NEC® and NFPA. Horizontal cables shall be grounded in compliance with ANSI/NFPA 70 and local requirements and practices. Horizontal equipment includes cross connect frames, patch panels and racks, active telecommunication equipment and test apparatus and equipment.

E. The Contractor shall not place any distribution cabling alongside power lines, or share the same conduit, channel or sleeve with electrical apparatus unless the conduit, channel or sleeve is divided and manufactured specifically for the purpose of cohabitation. Maintain separation as follows:

1. 5’ for large motors and transformers
2. 1’ for conduit and cables used for electrical power distribution
3. 6” for fluorescent lights

F. The Contractor shall provide any necessary screws, anchors, clamps, distribution rings, miscellaneous grounding and support hardware, etc., necessary to facilitate the installation of the system.

G. It shall be the responsibility of the contractor to furnish any special installation equipment or tools necessary to properly complete the system.

H. It may be necessary to remove ceiling tiles to accommodate new work under this Contract. Notify Owner of any damaged tiles prior to removal. Tiles damaged during construction shall be replaced by this Contractor.

I. Refer to Specification Section 27 0015 for additional general requirements.

3.2 PRE-INSTALLATION SITE SURVEY

A. Prior to start of systems installation, meet at the project site with the owner's representative and Technology Designer/Engineer to coordinate efforts. Review areas of potential interference and resolve conflicts before proceeding with the work.

B. Examine areas and conditions under which the system is to be installed. Do not proceed with the work until satisfactory conditions have been achieved.

C. The New Elementary School consist of primarily lay-in ceilings with hard ceilings in spaces such as the Lobby and open ceiling spaces in spaces such as electrical IT, and storage rooms. It is the contractor’s responsibility to visit the sites and include all access doors, conduit and any other miscellaneous equipment necessary for a neat, complete and professional installation.

3.3 INSTALLATION – DATA WIRING

A. Provide, install, test and tag augmented Category 6 data drops to each wireless access point location shown on the Drawings.

B. Installation practices shall follow BICSI standards and guidelines. TIA/EIA-568-C standards will be strictly followed and practiced.

C. All cabling in equipment cabinets/racks shall be managed utilizing new wire organizers provided by the Contractor. All cabling and patch cables in closets shall be secured using velcro straps.

D. Augmented Category 6 cables shall be continuous from telecommunications room to work area outlet and free from splices, reverses, grounds or other connections. Provide a minimum 10-foot service loop within telecommunications closet. Service loop shall be neatly coiled and secured above accessible ceiling, for each terminated cable, to accommodate future changes. Provide a minimum of 10-foot service loop.

E. Terminate augmented Category 6 cable according to T568B jack pin assignments.

1. Remove only the amount of cable jacket necessary for termination. Maintain wire twist for all pairs of augmented Category 6 cable to within 0.5 inches maximum from termination point.

F. Do not run cable longer than maximum 90 meter EIA/TIA recommended length.

G. All cables installed in ceiling spaces shall be plenum-rated.

H. Horizontal data cable pairs shall run from each work area outlet to the telecommunications room and terminate on Category 6 patch panels as appropriate.

I. All cables shall be installed using “J” hooks, conduits, cable tray or an approved raceway system. Where cable tray is not available, horizontal cable will be supported every five feet with “J” hooks sufficient in size to handle all bundled cables while minimizing crushing. If cable slack exceeds twelve (12) inches between supports, additional supports will be installed to take up slack and relieve cable stress.

J. The use of “bridle rings” is strictly prohibited.

K. Carefully lay all cable with appropriate radius of curvature and protect at bends and corners. Observe minimum bend radius and tension limitations as specified by EIA/TIA for augmented Category 6 cable.

L. Loosely bundle cables with plastic tie wraps, suitable for Plenum environments, every twenty feet.

M. Patch panels shall be arranged to allow for natural wiring progression in functional fields, minimize crossing of wires and allow for the easy access to each component.

N. The contractor shall assure that at the completion of cable installation, cables are free from twists, kinks, sharp bends, cuts, gouges or any other physical damage that might cause alterations to the electrical or optical characteristics of the cables.

O. Installation of new communications cabling through existing cable bundles is strictly prohibited to minimize cable burning.

3.4 LABELING

A. All cable designations and color-coding shall be in full compliance with EIA/TIA 606-A.

B. Clearly label all horizontal copper and fiber cables at both ends with permanently applied mechanically printed labels. Hand written labels will not be acceptable. Use standardized colors and alphanumeric codes. Technology Designer/Engineer will approve labeling system and method.

C. In work areas, place cable ID labels around each cable in outlet box, and on front of faceplate.

D. In the telecommunications room or at wireless access points, clocks, or security cameras, place ID labels around each cable. Labels shall be located within six inches of the termination.

E. Front label each patch panel port with a mechanically produced identification label utilizing the Owner's existing labeling scheme.

F. Label each cable mated directly to equipment with a mechanically produced identification label utilizing the Owner’s existing label scheme.

3.5 AUGMENTED CATEGORY 6 UTP CABLE TESTING

A. The Contractor shall, at all times, permit and facilitate work inspection by the Owner’s Representative and by public authorities having jurisdiction. The Owner’s Representative shall have the authority to stop the work, if required, to insure proper execution.

B. Each augmented Category 6 UTP cable pair shall be tested end to end from the data outlet termination to the closet patch panel.

C. Test shall be performed with connectors installed.

D. Cable performance shall meet the standards outlined in EIA/TIA-568-C for augmented Category 6 cabling.

E. Tone, verify and certify cable and jack/connectors as free from shorted pairs, open pairs, reversed pairs, crossed pairs and grounded pairs. One hundred percent of all pairs must be in good working condition.

F. Check cable length and labeling at both ends.Cables and connectors comprising of Category 6 must be certified compliant with the performance requirements listed in TIA-568-C.

1. As a minimum, test documentation will include:

a. Cable Identification Number
b. Worst Case Near End Cross Talk (NEXT)
c. Attenuation
d. PSNEXT
e. Return Loss
f. PSELFEXT
g. Signal-to-Noise Ratio
h. Ambient Noise
i. Loop Resistance
j. Equal Level Far-End Crosstalk (EL-FEXT)
k. Return Loss
l. Propagation Delay
m. Propagation Delay Skew
n. Cable Length
o. Test Date

2. Each data circuit, including all connectors shall be tested to verify all bandwidth performance and crosstalk specifications as outlined for augmented Category 6 cable. Any cables not in one hundred percent compliance with the minimum performance criteria relating to these requirements will be replaced with no additional cost to Owner.

G. Cable testing will be conducted by a programmable micro-computer based tester capable of testing all specific standard requirements and generating completed printed test results.

1. Test equipment shall be a Fluke, or approved equivalent. Equipment will be designed, and of such grade, so as to provide reliable certification and testing.

H. A detailed copy of all test reports shall be provided to the Owner on a USB key. Additionally, the Contractor shall provide three (3) hardcopies of the documentation indicating cable length and the pass test results for each augmented Category 6 cable installed.

I. Any outlet, cable or component that does not meet the required operational tests or fails to meet installation standards as specified shall be repaired or replaced and re-tested by the Contractor as directed by the Owner and at no expense to the Owner.

3.6 PROJECT RECORD DOCUMENTS

A. Fully detailed documentation and record drawings of installation layout and performance shall be submitted for review within thirty (30) days of completion of work and shall include as a minimum:

1. Marked drawings showing distance and routing of all inside cable with gauge, type and numbering scheme.
2. Location of outlets with their identification number prepared on the most recent installation drawing.
3. Drawings showing distribution frame layouts, cross connect locations, cable routing from rooms.
4. Drawings showing layout of panels and equipment in cabinets.

5. Drawings shall accurately record actual locations of each item of fixed equipment, and show interconnecting wiring. Drawings will indicate location of equipment and tagged circuits. A functional block diagram will also be required.
6. On electronic drawings, provide data cabling on a separate layer from the architectural layer so the Owner can turn the data layer on and off.

B. Documentation Requirements:

1. Drawings, whenever submitted, shall be submitted with three (3) hard copies to the Owner.
2. Cable and outlet identification, locations, performance and test results will be entered into Excel or approved PC based spreadsheet. The Contractor spreadsheet template and format will be approved by the Owner.
3. Final record drawings shall be submitted as three (3) sets of scaled 20# bond drawings and two (2) USB keys containing both PDF and AutoCAD LT 2004 formats. Drawings shall be professionally done with architectural floor plan on one layer and all technology equipment and cabling on a second layer. Hand drawings and notations will not be accepted.

C. Cable Record Book:

1. The Contractor shall prepare and deliver complete and accurate cable records entered into Excel or approved PC based spreadsheet. Minimum information to be included for each cable in the Cable Record Book is:

    a. Location (room number)
    b. Jack Number
    c. Serving Closet
    d. Patch Panel Number
    e. Patch Panel Port
    f. Cable Type and Use (Cat 6a, wireless)

D. Refer to Specification Section 27 0015 for additional general project record document requirements.

E. All drawings and the information contained therein become the sole property of the Owner.

END OF SECTION 27 1517

Project Schedule

Task	Completion Dates
Anticipated Award	December 15, 2026
Contracts/Equipment Orders	December 22, 2026
Installations at the New Doherty Elementary School	In coordination with construction
Substantial Completion	February 25, 2028
Closeout Documentation	April 16, 2028

AUCH is managing this project during the day. Generally, hours of construction are from 6:00 AM to 4:00 PM Monday through Friday. Exact times shall be coordinated with AUCH.

Contractor is expected to be flexible with their schedules to accommodate other Owner conflicts such as building construction projects, cleaning schedules, summer programs, open houses and parent/teacher conferences.