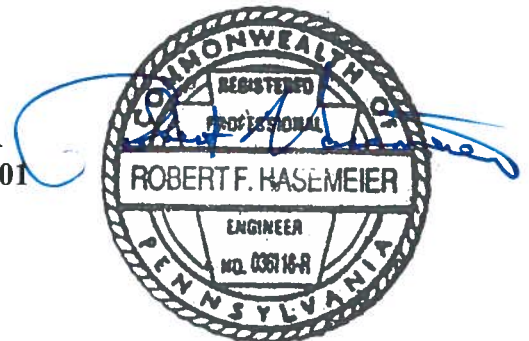


**CONTRACT DOCUMENTS
AND
SPECIFICATIONS
FOR
CARLISLE AREA SCHOOL DISTRICT
FIBER OPTIC CABLE INSTALL
CONTRACT NO. 1**



PREPARED BY:

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**Robert Hasemeier, P.E.
PA PE #36116
July 22, 2015**

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for

CARLISLE AREA SCHOOL DISTRICT FIBER OPTIC CABLE INSTALLATION

CONTRACT NO. 1

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SECTION 00020

NOTICE TO BIDDERS

PUBLIC NOTICE IS HEREBY GIVEN that sealed bids will be received by the **Carlisle Area School District** for the **Carlisle Area School District Fiber Optic Cable Install Project** in Carlisle, Cumberland County, Pennsylvania.

SUMMARY OF PROJECT: Without limiting the work required, the Project consists of construction of a private fiber optic network consisting of approximately 32,000 LF of fiber below and above ground, mostly in the public right of way.

Bid Forms, Contracts and Specifications are on file and available for viewing electronically at <http://www.carliseschools.org/WANFORM>. Applicants will be required to register through this website prior to accessing the documents.

Said bids will be received, opened and read aloud in public at the Carlisle Area School District Office at 623 W. Penn Street, Carlisle, Cumberland County, Pennsylvania 17013 on September 1, 2015 at 12:00 noon prevailing time.

Copies of the Bid Forms, Contracts and Specifications may be obtained from said Carlisle Area School District by prospective Bidders upon request, and payment of the sum of **\$100** for each set. All checks must be made payable to: Barton & Loguidice, D.P.C.

PAYMENT MUST BE RECEIVED PRIOR TO OBTAINING SAID DOCUMENTS, EITHER BY MAIL OR IN PERSON.

NO BIDS ARE TO BE DROPPED OFF AT THE ENGINEER'S OFFICE.

The **Carlisle Area School District** reserves the right to consider the bids for sixty (60) days after the receipt thereof, and further reserves the right to reject any or all bids, either in whole or in part and also to waive any informality if any and make such awards or take action as may be in the best interest of the **Carlisle Area School District**.

Bids must be on the bid form prepared by Barton & Loguidice, D.P.C., in the manner designated therein and required by the specifications, must be enclosed in sealed envelopes bearing the name and address of the Bidder on the outside and also bearing on the outside reference to the **Carlisle Area School District Fiber Optic Cable Install Project**. Said bids shall be addressed to Bryon Klingel at Carlisle Area School District, 623 W. Penn Street, Carlisle, PA 17013.

Each bid shall be accompanied by a certified check, cashier's check, or bid bond duly executed by the Bidder as principal and having a surety thereon a surety company approved by the District in an amount not less than ten percent (10%) of the amount bid. Any such bid bond

SECTION 00020

NOTICE TO BIDDERS

shall be without endorsement of conditions. Bid shall also be accompanied by a certificate letter from a surety company stating that it will provide the Bidder with the completion bond.

The award of the Contract shall be made subject to necessary moneys due to the work being provided by the Contractor in a lawful manner. The Contract to be executed by the successful Bidder will provide that it shall not become effective until the necessary moneys to do the work have been provided by the Contractor in a lawful manner. The award shall further be subjected to the securing of necessary State, Federal and Local permits governing the work.

The Contractor is also further notified that he must comply with the Bid Specifications and submit a Disclosure Statement listing stockholders with his bid.

As Authorized By: Carlisle Area School District

Dated: July 27, 2015

END OF SECTION

SECTION 00050

QUANTITIES FOR CANVASS OF BIDS

Base Bid

<u>Item No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Unit</u>
1	CASD Fiber Optic Cable Route: Purchase and Install Fiber Optic Cable (Section 01650) for the following routes, including auxiliary equipment and accessories: Crestview, Hamilton, Bellaire, Wilson, Carlisle, Lamberton, LeTort, and the Old PennDOT Building.	NEC	LS

Deduct Bid Items

<u>Item No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Unit</u>
1	Crestview Elementary Route, including auxiliary equipment and accessories	NEC	LS
2	Hamilton Elementary Route, including auxiliary equipment and accessories	NEC	LS
3	Bellaire Elementary Route, including auxiliary equipment and accessories	NEC	LS
4	Former PennDOT Building Route, including auxiliary equipment and accessories	NEC	LS

END OF SECTION

SECTION 00100

INFORMATION FOR BIDDERS

00100.01 LOCATION OF THE WORK

The work under Contract No. 1 for the Carlisle Area School District Fiber Optic Cable Install project is located primarily within Carlisle Borough with some work extending into an adjoining municipality.

00100.02 DESCRIPTION OF THE WORK

The items of work under Contract No. 1 include, but are not necessarily limited to the following:

- Trenching and installation of approximately 29,700 LF of fiber optic cable.
- Aerial installation of approximately 2,200 LF of fiber optic cable
- Directional drill and installation of two inch (2") HDPE carrier pipe.
- Install and connect fiber terminal equipment.

00100.03 COMMENCEMENT AND COMPLETION OF THE WORK

Upon execution of the Contract including delivery of the Performance Bond, Labor & Materials Payment Bond and insurance policies and certificates by the Contractor to the Owner and the approval thereof by the Owner's attorney, the Contractor will be notified to proceed with the work. Such notification will be in the form of a letter to proceed from the Engineer.

The Contractor shall give the Engineer at least five (5) days written notice of the date that work is planned to begin at the site. Work shall begin no later than December 1, 2015.

Work items of the Contract shall be substantially completed by July 1, 2016 after the date the Contractor is notified to proceed with the work unless such period is extended by the Owner as provided herein.

00100.04 COLLATERAL WORK AND CONDITIONS OF WORK

Each Bidder shall inform himself fully of the conditions relating to the construction of the Project and the employment of labor thereon. Failure to do so will not relieve a successful Bidder, as Contractor, of his obligation to furnish all material and labor necessary to carry out the provisions of his Contract. Insofar as possible, the Contractor, in carrying out the work, shall employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor. (See also Section 01012.01.)

SECTION 00100

INFORMATION FOR BIDDERS

00100.04 COLLATERAL WORK AND CONDITIONS OF WORK - Continued

Each Contractor will be required to coordinate his work with the work of other Contracts. Each Contractor will be required to adjust his schedule accordingly.

00100.05 RECEIPT & OPENING OF BIDS

Carlisle Area School District (CASD) (herein called the Owner) invites Bids on the attached forms. Bids will be received by the Owner until the time and the place stated in the attached Invitation For Bids. Bids must be sealed in envelopes addressed to Bryon Klingel at Carlisle Area School District, 623 W. Penn Street, Carlisle, PA 17013. The outside of the envelope shall bear the name and address of the Bidder and shall be labeled to clearly show the Contract designation for which the Bid is submitted. Bidders shall provide one original and one copy of the Bid.

00100.06 INFORMALITIES, WAIVERS AND WITHDRAWALS

The Owner may consider informal any Bid not prepared and submitted in accordance with the provision hereof and may waive any informalities in or reject any conditional or qualified Bids. Bids which do not contain a price for every numbered item contained in the Bid form will not be accepted.

Any Bid may be withdrawn prior to the scheduled deadline for receipt of Bids or authorized postponement thereof, but no Bid may be withdrawn within forty-five (45) days after the actual date of the opening thereof. Any Bid received after the time and date specified will not be considered, and will be returned unopened.

00100.07 BID PREPARATION

Unless otherwise noted thereon, all blanks on the Bid forms must be appropriately completed with ink and with both words and figures, and the Bid must be properly executed. Do not remove the Bid forms from this binder.

All Contract Documents, except the Contract Drawings, the Performance Bond, Labor & Materials Payment Bond, Certificate of Insurance and any Addenda, are contained in this binder. All Contract Documents, except the Contract Drawings, Performance Bond and Labor & Materials Payment Bond, and Certificate of Insurance must be submitted with the Bid. The Contract Documents are defined in the Agreement.

SECTION 00100

INFORMATION FOR BIDDERS

00100.07 BID PREPARATION - Continued

Any Bidder may modify his Bid by telegraphic or facsimile communications at any time prior to the scheduled closing time for receipt of Bids, provided such telegraphic or facsimile communication is received by the Owner prior to the closing time, and provided further, the Owner is satisfied that a written confirmation of the telegraphic or facsimile modification over the signature of the Bidder was mailed prior to the closing time. The telegraphic or facsimile communication should not reveal the Bid price but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed Bid is opened. If written confirmation is not received within three (3) days from the closing time, no consideration will be given to the telegraphic or facsimile modification.

00100.08 ADDENDA AND INTERPRETATIONS

No verbal interpretation of the intent of any of the Contract Documents will be made before receipt of Bids. Requests for interpretations prior to receipt of Bids must be presented in writing to the Engineer, Barton & Loguidice, D.P.C., Consulting Engineers, 3901 Hartzdale Drive, Suite 101, Camp Hill, PA 17011-7843, and to be given consideration must be received by the Engineer at least seven (7) calendar days prior to the date set for the opening of Bids.

Any interpretation and any additional information or instructions will if issued, be in the form of a written Addendum or Addenda sent by USPS Mail to all holders of Contract Documents at the addresses furnished therefor, at least five (5) working days prior to the date of the opening of Bids. Facsimile ("fax") and/or e-mail communication may be issued in advance of any written Addendum or Addenda without diminishing any part of this Section.

Failure of any Bidder to receive any such Addendum or interpretation shall not relieve such Bidder from any obligation under this Bid as submitted. All Addenda so issued shall become a part of the Contract Documents and shall be acknowledged by the Bidder on the Bid Forms.

00100.09 QUALIFICATIONS OF BIDDERS

The Owner reserves the right to make such investigations as he may deem necessary or advisable to determine any Bidder's ability to do the work, and the Bidder shall furnish to the Owner, on request, all data and information pertinent thereto. The Owner reserves the right to reject any Bid if such investigation fails to satisfy the Owner that the Bidder is fully qualified to do the work.

SECTION 00100

INFORMATION FOR BIDDERS

00100.09 QUALIFICATIONS OF BIDDERS - Continued

Conditional Bids will be considered informal and may be rejected

Immediately following the Canvass of Bids, the Low Bidder if so requested, shall furnish the Owner a sworn and notarized financial statement, and a statement of his qualifications and experience.

00100.10 OBLIGATIONS OF BIDDERS

At the time of the opening of Bids, each Bidder will be presumed to have inspected the Site, to have informed himself fully of the conditions relating to the work and labor required for the work, and to have read and acquainted himself with all the Contract Documents. Failure to do so will not relieve the Bidder who is awarded the Contract of his obligation to complete the work for the price or prices bid, or of any other obligation under the Contract. The failure or omission of any Bidder to receive or examine any Contract Documents shall in no way relieve him from any obligation in respect to his Bid.

00100.11 BID SECURITY & CONSENT OF SURETY

Each bid shall be accompanied by a Certified Check, Cashier's Check or Bid Bond duly executed by the bidder as principal, and having as surety thereon a Surety Company approved by the Owner, in an amount not less than ten percent (10%) of the amount bid. Any such bid shall be without endorsement or conditions. Bid shall be accompanied with a certificate letter from a surety company stating that it will provide the bidder with the requisite completion performance and payment bonds, i.e., a Consent of Surety.

Such bid guarantee will be returned to all bidders, except to the three apparent lowest responsible bidders, within ten days after the formal opening of bids, Sundays and holidays excepted.

The bid guarantee will be returned to the remaining unsuccessful bidders within three days, Sundays and holidays excepted, after the Owner and the accepted bidder have executed the Contract and the Owner has approved the Bidder's Performance Bond, or if no Contract has been accepted within 60 days after the date of opening of bids, any bidder upon demand made after the expiration of said 60 day period, shall be entitled to the return of his bid guarantee, so long as he has not been notified by the Owner of the acceptance of his bid.

SECTION 00100

INFORMATION FOR BIDDERS

00100.11 BID SECURITY & CONSENT OF SURETY - Continued

Any such guarantee shall be forfeited and become the property of the Owner if the bidder whose bid is accepted shall fail: to give a satisfactory performance bond and labor and material payment bond, or a combination performance and labor and material payment bond, and/or fails to execute a Contract within then (10) days after notice from the Owner to do so.

00100.12 LIQUIDATED DAMAGES FOR FAILURE TO EXECUTE CONTRACT

Should the successful Bidder refuse or fail to execute the Contract and Bond within fourteen (14) working days after receipt of notice of the acceptance of his Bid, the security deposited with his Bid shall be forfeited to the Owner as liquidated damages for such refusal or failure.

00100.13 DISCREPANCY IN BIDS

In the event a discrepancy exists in any Bid between the prices written in words and the prices written in figures, the prices written in words shall govern. If a discrepancy exists in any bid between unit prices and the extended totals therein, the unit prices shall govern. In either of the above cases, the extended totals, and the total of all extensions, shall be corrected, if necessary, and the Bid may not be considered informal.

00100.14 LOWEST BIDDER

Bids will be compared on the basis of the totals for the Contract, corrected as necessary in conformance with Article 00100.13, given at the bottom of the schedule of quantities, prices and extensions. Such total in each Bid shall be the sum of all lump sum prices, plus the sum of all the extensions produced by multiplying the unit price in each case by the corresponding listed quantity.

00100.15 SUBCONTRACTOR DECLARATION

Form from SECTION 00385 must be submitted with all bids.

00100.16 CERTIFICATE OF BIDDER SHOWING ABILITY TO PERFORM CONTRACT

Form from SECTION 00390 must be completed and submitted with all bids.

SECTION 00100

INFORMATION FOR BIDDERS

00100.17 STATEMENT OF CORPORATE OWNERSHIP

Bidder must provide completed Statement of Ownership Form from SECTION 00395

00100.18 AWARD OF CONTRACT

The award of the Contract will be made, subject to any necessary monies to do the work being provided by the Owner either by Resolution, Ordinance, or in other lawful manner. The Contract shall be executed by the successful bidder will provide that it shall not become effective until the necessary monies to do the work have been provided by the Owner, either in Resolution, Ordinance or another lawful manner.

No Contract shall be awarded to any Contractor, Subcontractor, or to any firm, corporation or partnership in which such Contractor or Subcontractor has an interest, who is debarred from public works. Bidder may be disqualified and his proposal or proposals rejected subject to conditions specified under PADOT specifications Pub. 408, SECTION 102.13 "Disqualification of Bidders and Rejection of Proposals,"

The Owner reserves the right to reject any and all Bids.

00100.19 QUALIFICATIONS OF SUBCONTRACTORS

Directional drilling sub-contractor shall be able to demonstrate experience of the foreman for a minimum of 50,000 LF of directional drilling within the last five (5) years.

00100.20 PENNSYLVANIA STEEL PRODUCTS PROCUREMENT ACT, 1987

Mandates that steel products used or supplied in the performance of public works contracts must be made domestically in the United States unless the head of a public agency determines that steel products are not produced domestically at a sufficient quantity to meet the requirements of a public works project.

END OF SECTION

SECTION 00150

LABOR AND EMPLOYMENT

00150.01 LABOR LAWS

The Contractor and any Subcontractors shall comply with all the requirements of the Labor Laws of the State of Pennsylvania applicable to Contracts on behalf of this Owner for construction, alteration or repair of any building or public work.

The Contractor hereby agrees to comply in all respect with the Pennsylvania Prevailing Wage Act as amended. A copy of the prevailing wage rates pertaining to the work and issued by the Pennsylvania Department of Labor entitles, "Prevailing Wage Rate Determination" is on file in the Engineer's office and is included herein. Pursuant to Pennsylvania Prevailing Wage Rates Act, no public works Contract may be awarded to any Contractor or Subcontractor or to any firm, corporation or partnership in which they have an interest, on the disbarred bidders list as identified under ARTICLE 00100.18, until expiration date given. Workmen shall be paid not less than such prevailing wage rate.

Before final payment is made by or on behalf of the Owner of any sum or sums due to the work, the Contractor or Subcontractor shall file with the Owner, written statements in a form satisfactory to the Commission of Labor certifying to the amounts then due and owing from such Contractor or Subcontractor filing such statement to any and all workmen for wages due on account of the work, setting forth therein the names of the persons whose wages are unpaid and the amount due to each respectively which statement shall be certified by the oath of the Contractor or Subcontractor.

The prevailing wage rate shall be determined by the Commissioner of Labor or his duly authorized representative.

Contractors or Subcontractors performing public work of a public body subject to the provisions of this act shall post the prevailing wage rates for each craft and classification involved as determined by the Commissioners of Labor, including the effective date of any changes thereof, in prominent and easily accessible places at the site of work or at such place or places as are used by them to pay workmen their wages.

In the event it is found that any workmen, employed by the Contractor or any Subcontractor, on this project, has been paid a rate of wages less than the prevailing wage required, the Department of Labor along with the Owner may terminate the Contractor's or Subcontractor's right to proceed with the work or such part of the work as to which there has been a failure to pay required wages and to prosecute the work to completion or otherwise, the Contractor and his surety(s) shall be liable to the Department of Labor along with the Owner for any excess costs occasioned thereby.

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00150.02 EIGHT HOUR WORKDAY: PREVAILING WAGE RATE

All mechanics, workers, laborers, employed or engaged in the work hereunder shall work no more than eight (8) hours in any one day. In case of necessity for the protection of property or human life, mechanics, workmen and laborers may be employed for longer periods than eight hours per calendar day, if paid extra compensation on the basis of eight hours constituting a days work, in accordance with all State and Federal laws.

00150.03 PAYMENT OF EMPLOYEES

The Contractor and each of his Subcontractors shall pay each of his employees engaged in work on the project under this Contract in full (less deductions made mandatory by law) in legal tender and not less often than once each month.

00150.04 SAFETY AND HEALTH REGULATIONS

The Contractor shall comply with the Department of Labor, Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (P.L.91-596) and under Section 107 of the Contract Work Hours and Safety Standards for Construction (P.L.91-54).

00150.05 AFFIRMATIVE ACTION AGAINST DISCRIMINATION

1. BIDDER REFERRED TO LAW: The Bidder is specifically referred to the Commonwealth of Pennsylvania State Code, Section 155.18, as amended and the Regulations adopted pursuant thereto, relating to affirmative action in relation to discrimination.

2. SPECIFIC LANGUAGE REQUIRED: In accordance with the following and is made a part of this Contract:

During the performance of this Contract, the Contractor agrees as follows:

- a. The Contractor or Subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status of sex, affectional or sexual orientation, familial status, liability for service in the Armed Forces of the United States, or nationality. The Contractor will take affirmative action to ensure that such applicants are recruited and

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00150.05 AFFIRMATIVE ACTION AGAINST DISCRIMINATION - Continued

employed, and that employees are treated during employment without regard to their age, race, creed, color, national origin, ancestry, marital status, sex, affectional or sexual orientation, familial status, liability for service in the Armed Forces of the United States, or nationality. 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 to be provided by the Public Agency Compliance Officer setting forth provision of this non-discrimination clause.

- b. The Contractor or Subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, sex, affectional or sexual orientation, familial status, liability for service in the Armed Forces of the United States, or nationality.
- c. The Contractor or Subcontractor, where applicable, will send to each labor union or representative of workers with which it has a collective bargaining agreement or other Contract or understanding, a notice to be provided by the agency contracting officer advising the labor union or worker's representative of the Contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d. The Contractor or Subcontractor, where applicable, agrees to comply with any Regulations promulgated by the Treasurer pursuant to the Commonwealth of Pennsylvania State Code, Section 155.18, as amended and supplemented from time to time.
- e. When scheduling workers in each construction trade, the Contractor or Subcontractor agrees to attempt in good faith to employ minority and female workers in each construction trade consistent with the applicable employment goal prescribed by the Commonwealth of Pennsylvania State Code, Section 155.18; provided however, that the Affirmative Action Office may, in its discretion, exempt a Contractor or

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00150.05 AFFIRMATIVE ACTION AGAINST DISCRIMINATION – Continued

Subcontractor from compliance with the good faith procedures prescribed by the following provisions A, B and C, as long as the Affirmative Action Office is satisfied that the Contractor is scheduling workers provided by a union which provide evidence, in accordance with standards prescribed by the Affirmative Action Office, that its percentage of active “card carrying” members who are minority and/or female workers is equal to or greater than the applicable employment goal prescribed by the Commonwealth of Pennsylvania State Code, Section 155.18 promulgated by the Treasurer pursuant to the Commonwealth of Pennsylvania State Code, Section 155.18, as amended and supplemented from time to time. The Contractor or Subcontractor agrees that a good faith effort shall include compliance with the following procedures:

- (A) If the Contractor or Subcontractor has a referral agreement or agreement with a union for a construction trade, the Contractor or Subcontractor shall, within three days of the contract award, seek assurances from the union that it will cooperate with the Contractor or Subcontractor as it fulfills its affirmative action obligations under this Contract and in accordance with the rules promulgated by the Treasurer pursuant to the Commonwealth of Pennsylvania State Code, Section 155.18, as supplemented and amended from time to time. If the Contractor or Subcontractor is unable to obtain said assurances from the construction trade union at least five days prior to the commencement of construction work, the Contractor or Subcontractor agrees directly to attempt to hire minority and female workers consistent with the applicable employment goal. If the Contractor’s or Subcontractor’s prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates the possibility that the trade union will not refer sufficient minority and female workers consistent with the applicable employment goal, the Contractor or Subcontractor agrees to be prepared to hire minority and female workers directly consistent with the applicable employment goal, by complying with the following hiring procedures prescribed under (B) below; and the Contractor or Subcontractor further agrees to immediately take said action if it determines or is so notified by the Affirmative Action Office that the union is not referring minority and female workers consistent with the applicable employment goal.
- (B) If the scheduling of a workforce consistent with the employment goal has not or cannot be achieved for each construction trade by adhering to the procedures of (A) above, or if the Contractor does not have a referral agreement or arrangement

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00150.05 AFFIRMATIVE ACTION AGAINST DISCRIMINATION - Continued

with a union for construction trade, the Contractor or Subcontractor agrees to take the following actions consistent with the applicable county employment goals:

1. To notify the Public Agency Compliance Officer, Affirmative Action Office and at least one approved minority referral organization of its manpower needs, and request the referral of minority and female workers:
2. To notify any minority and female workers who have been listed with it as awaiting available vacancies:
3. Prior to commencement of work, to request the local construction trade union, if the Contractor or Subcontractor has a referral agreement or arrangement with a union for the construction trade, to refer minority and female workers to fill job openings.
4. To leave standing requests for additional referral to minority and female workers with the local construction trade union, if the Contractor or Subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral source in the area until such time as the workforce is consistent with the employment goal.
5. If it is necessary to lay off some of the workers in a given trade on the construction site, to assure, consistent with the applicable State and Federal statutes and court decisions, that sufficient minority employees remain on the site consistent with the employment goal; and to employ any minority and female workers so laid off by the Contractor or any other construction site in the area on which its workforce composition is not consistent with an employment goal established pursuant to rules implementing the Commonwealth of Pennsylvania State Code, Section 155.18.
6. To adhere to the following procedure when minority and female workers apply or are referred to the Contractors or Subcontractors.
 - i. If said individuals have never previously received any document or certification signifying a level of qualification lower than that required, the

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LABOR AND EMPLOYMENT

00150.05 AFFIRMATIVE ACTION AGAINST DISCRIMINATION – Continued

Contractor or Subcontractor shall determine the qualifications of such individuals and if the Contractor's or Subcontractor's workforce in each construction trade is not consistent with the applicable employment goal, it shall employ such persons which satisfy appropriate qualification standards; provided however, that a Contractor or Subcontractor shall determine that the individual at least possesses the skills and experience recognized by any worker's skills and experience classification determination which may have been made by a Public Agency Compliance Officer, union, apprentice program or referral agency, provided the referral agency is acceptable to the Affirmative Action Office and provided further that as necessary, the Contractor or Subcontractor shall hire minority and female workers who qualify as trainees pursuant to these regulations. All of the requirements of this paragraph however are limited by the provisions of (C) below.

- ii. If the Contractor's or Subcontractor's workforce is consistent with the applicable employment goal the name of said female or minority group individual shall be maintained on a waiting list for the first consideration, in the event the Contractor's or Subcontractor's workforce is no longer consistent with the applicable employment goal.
 - iii. If, for any reason, said Contractor or Subcontractor determines that a minority individual or a female is not qualified or if the individual qualifies as an advanced trainee or apprentice, the Contractor or Subcontractor shall inform said individual in writing with the reasons for the determinations, maintain a copy in its files, and send a copy to the Public Agency Compliance Office and the Affirmative Action Office.
7. To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the Contract, on forms made available by the Affirmative Action Office and shall be submitted promptly to that Office upon request.
- (C) The Contractor or Subcontractor agrees that nothing contained in (B) above shall preclude the Contractor or Subcontractor from complying with the hiring hall or apprenticeship provisions in any applicable collective bargaining agreement or hiring hall arrangement, and, where required by custom or agreement, it shall

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LABOR AND EMPLOYMENT

00150.05 AFFIRMATIVE ACTION AGAINST DISCRIMINATION - Continued

send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement; provided, however, that where the practices of a union or apprenticeship program will result in the exclusion of minorities and female or the failure to refer minorities and females consistent with the county employment goal, the Contractor or Subcontractor shall consider for employment persons referred pursuant to said provisions (B) without regard to such agreement or arrangement; provided further, however, that the Contractor or Subcontractor shall not be required to employ female and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees and trainees as a percentage of the total workforce for the construction trade, which percentage significantly exceeds the apprentice to journey worker ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the Contractor or Subcontractor agrees that, in implementing the procedures of the preceding provisions (B), it shall, where applicable, employ minority and female workers residing within the geographical jurisdiction of the union.

- (D) The Contractor agrees to complete Initial Project Manning Reports on forms distributed by the Public agency awarding the Contract or in the form prescribed by the Affirmative Action Office and submit a copy of said form, at the time of award of the construction Contract, to the Affirmative Action Office as well as the Public Agency Compliance Officer; and to submit a copy of the Monthly Project Manning Report once a month (by the seventh work day of each month) thereafter for the duration of this Contract to the Affirmative Action Office and to the Public Agency Compliance Officer. The Contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the-job and off-the-job programs for outreach and training of minority and female trainees employed on the construction projects.
- (E) The Contractor and its Subcontractors shall furnish such reports or other documents to the Affirmative Action Office as may be requested by the office from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the affirmative action office for conducting a compliance investigation pursuant to the Commonwealth of Pennsylvania State Code, Section 155.18.

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LABOR AND EMPLOYMENT

00150.05 AFFIRMATIVE ACTION AGAINST DISCRIMINATION - Continued

- (F) Affirmative action requirements. Contractors must submit Affirmative Action forms for Contracts as required in Section 00660.

00150.06 CONTRACT PROCEDURES

The Contractor must sign a Contract containing the mandatory language in SECTION 00150.05.2 above entitled "Specific Language Required". The Construction goals and related Contract obligations and procedures, as described in the regulations, do not apply to any construction Contractor or Subcontractor which submits appropriate evidence that it is operating under a federally approved or sanctioned affirmative action plan.

00150.07 EQUAL OPPORTUNITY FOR INDIVIDUALS WITH DISABILITIES

The Contractor and the Owner do hereby agree that the provisions of Title II of the Americans with Disabilities Act of 1990 (the "Act") (42 U.S.C. S12.101 et seq.), which prohibits discrimination on the basis of disability by public entities, in all services, programs and activities provided or made available by public entities, and the rules and regulations promulgated pursuant thereto, are made part of this Contract. In providing any aid, benefit or service on behalf of the Owner pursuant to this Contract, the Contractor agrees that the performance shall be in strict compliance with the Act.

In the event that Contractor, its agents, servants, employees, or Subcontractors violate or are alleged to have violated the Act during the performance of this Contract, the Contractor shall defend the Owner in any action or administrative proceeding commenced pursuant to this Act. The Contractor shall indemnify, protect, and save harmless the Owner, its agents, servant and employees from and against all suits, claims, losses, demands, or damages of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The Contractor shall, at its own expense, appear, defend, and pay any and all charges for legal services and any and all costs or other expenses arising from such action or administrative proceeding or incurred in connection therewith.

In any and all complaints brought pursuant to the Owner's grievance procedure, the Contractor agrees to abide by any decision of the Owner, which is rendered pursuant to, said grievance procedure. If any action of administrative proceeding results in an award of damages

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LABOR AND EMPLOYMENT

00150.07 EQUAL OPPORTUNITY FOR INDIVIDUALS WITH DISABILITIES -
Continued

against the Owner, or if the Owner incurs any expense to cure a violation of the Act which has been brought pursuant to its grievance procedure, the Contractor shall satisfy and discharge the same at its own expense.

The Owner shall, as soon as practical after a claim has been made against it, give written notice thereof to the Contractor along with the full particulars of the claim. If any action of administrative proceeding is brought against the Owner or any of its agents, servants and employees, the Owner shall expeditiously forward or have forwarded to the Contractor every demand, complaint, notice, summons, pleading, or other process received by the Owner or its representative.

It is expressly agreed and understood that any approval by the Owner of the services provided by the Contractor pursuant to this Contract will not relieve the Contractor of the obligation to comply with the Act and to defend, indemnify, protect, and save harmless the Owner pursuant to this paragraph. It is further agreed and understood that the Owner assumes no obligation to indemnify or save harmless the Contractor, its agents, servants, employees and Subcontractors for any claim which may arise out of their performance of this Contract.

Furthermore, the Contractor expressly understands and agrees that the provisions of this indemnification clause shall in no way limit the Contractor's obligations assumed in this Contract, nor shall they be construed to relieve the Contractors from any liability, nor preclude the Owner from taking any other actions available to it under any other provisions of this Contract or otherwise at law.

00150.08 WAGE RATES

Contractor shall comply with the Pennsylvania Prevailing Wage Act and prevailing wage rates attached.

00150.09 EMPLOYMENT VERIFICATION

Bidders are required to comply with the Public Works Employment Verification Act in accordance with PA Code Title 4, Chapter 66, for all Public Works Contracts in excess of \$25,000.

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LABOR AND EMPLOYMENT

00150.09 EMPLOYMENT VERIFICATION - Continued

Public Works Contractors and every Subcontractor performing work under a Public Works Contract shall utilize the Employment Verification Form (EVP) system to verify the employment eligibility of each new employee hired after January 1, 2013.

Public Works Contractors and every Subcontractor performing work under a Public Works Contract shall submit the Employment Verification Form provided at the end of this Section, to the contracting public body to ensure compliance with the act.

In addition to the Employment Verification Form, Public Works Contractors and every Subcontractor shall maintain documentation of continued compliance with the act by utilizing the EVP for new employees hired throughout the duration of the Public Work Contract.

As a precondition of the award of Contract for Public Work, a Public Works Contractor shall submit a completed Employment Verification Form to the public body that is bidding and awarding the Public Work Contract. With respect to a Contract that has been awarded but has not been fully executed as of January 1, 2013, a Public Works Contractor is required to submit a completed Employment Verification Form to the contracting public body prior to Contract execution. During a Public Works Contract, a new employee hired by a Public Works Contractor, regardless of whether he will be working onsite or offsite of a Public Work Project or otherwise, shall be verified within five (5) business days of his start date.

END OF SECTION



COMMONWEALTH OF PENNSYLVANIA

PUBLIC WORKS EMPLOYMENT VERIFICATION FORM

Date _____

Business or Organization Name (Employer) _____

Address _____

City _____ State _____ Zip Code _____

Contractor

Contracting Public Body _____

Contract/Project No _____

Project Description _____

Project Location _____

As a contractor/subcontractor for the above referenced public works contract, I hereby affirm that as of the above date, our company is in compliance with the Public Works Employment Verification Act ('the Act') through utilization of the federal E-Verify Program (EVP) operated by the United States Department of Homeland Security. To the best of my/our knowledge, all employees hired post January 1, 2013 are authorized to work in the United States.

It is also agreed to that all public works contractors/subcontractors will utilize the federal EVP to verify the employment eligibility of each new hire within five (5) business days of the employee start date throughout the duration of the public works contract. Documentation confirming the use of the federal EVP upon each new hire shall be maintained in the event of an investigation or audit.

I, _____, authorized representative of the company above, attest that the information contained in this verification form is true and correct and understand that the submission of false or misleading information in connection with the above verification shall be subject to sanctions provided by law.

Authorized Representative Signature

PREVAILING WAGES PROJECT RATES

Project Name: Carlisle Area School District Fiber Optic Installation

Awarding Agency: Carlisle Area School District

Contract Award Date: 10/1/2015

Serial Number: 15-03862

Project Classification: Building

Determination Date: 6/9/2015

Assigned Field Office: Harrisburg

Field Office Phone Number: 717-787-4763

Toll Free Phone Number: 800-932-0665

Cumberland County

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	6/28/2010		\$30.63	\$20.13	\$50.76
Asbestos & Insulation Workers	6/27/2011		\$31.67	\$21.09	\$52.76
Asbestos & Insulation Workers	7/2/2012		\$32.17	\$21.59	\$53.76
Asbestos & Insulation Workers	7/1/2013		\$32.17	\$22.59	\$54.76
Asbestos & Insulation Workers	6/30/2014		\$31.90	\$23.86	\$55.76
Boilermaker (Commercial, Institutional, and Minor Repair Work)	1/1/2010		\$23.59	\$15.15	\$38.74
Boilermaker (Commercial, Institutional, and Minor Repair Work)	3/1/2011		\$24.22	\$16.02	\$40.24
Boilermaker (Commercial, Institutional, and Minor Repair Work)	5/1/2012		\$24.84	\$16.90	\$41.74
Boilermaker (Commercial, Institutional, and Minor Repair Work)	4/1/2013		\$25.53	\$17.51	\$43.04
Boilermaker (Commercial, Institutional, and Minor Repair Work)	3/1/2014		\$25.79	\$17.95	\$43.74
Boilermaker (Commercial, Institutional, and Minor Repair Work)	3/1/2015		\$26.52	\$18.22	\$44.74
Boilermakers	1/1/2011		\$37.35	\$28.12	\$65.47
Boilermakers	1/1/2012		\$37.62	\$29.85	\$67.47
Boilermakers	1/1/2013		\$38.69	\$31.13	\$69.82
Boilermakers	4/1/2013		\$38.54	\$31.43	\$69.97
Boilermakers	1/1/2014		\$39.06	\$32.81	\$71.87
Boilermakers	1/1/2015		\$40.31	\$33.31	\$73.62

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Bricklayers, Stone Masons, Pointers, Caulkers, Cleaners	5/1/2013		\$30.75	\$14.49	\$45.24
Bricklayers, Stone Masons, Pointers, Caulkers, Cleaners	5/1/2014		\$31.08	\$14.96	\$46.04
Bricklayers, Stone Masons, Pointers, Caulkers, Cleaners	5/3/2015		\$31.71	\$15.18	\$46.89
Bricklayers, Stone Masons, Pointers, Caulkers, Cleaners	5/1/2016		\$32.26	\$15.53	\$47.79
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2009		\$24.56	\$11.52	\$36.08
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2010		\$25.71	\$12.02	\$37.73
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2011		\$26.86	\$12.52	\$39.38
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2012		\$26.88	\$13.25	\$40.13
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2013		\$27.18	\$13.80	\$40.98
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	6/1/2014		\$27.78	\$14.25	\$42.03
Cement Finishers	5/1/2010		\$24.00	\$17.45	\$41.45
Cement Finishers	5/1/2011		\$25.00	\$18.45	\$43.45
Cement Finishers	5/1/2012		\$25.20	\$20.10	\$45.30
Cement Finishers	5/1/2013		\$26.05	\$20.10	\$46.15
Cement Finishers	5/1/2014		\$25.65	\$21.40	\$47.05
Cement Finishers	5/1/2015		\$26.00	\$21.90	\$47.90
Dockbuilder, Pile Drivers	1/1/2010		\$29.95	\$12.25	\$42.20
Dockbuilder, Pile Drivers	1/1/2011		\$30.35	\$13.10	\$43.45
Dockbuilder, Pile Drivers	1/1/2012		\$30.85	\$13.70	\$44.55
Dockbuilder, Pile Drivers	1/1/2013		\$31.45	\$14.20	\$45.65
Drywall Finisher	5/1/2013		\$23.30	\$11.04	\$34.34
Drywall Finisher	5/1/2014		\$23.30	\$11.14	\$34.44
Drywall Finisher	5/1/2015		\$23.30	\$11.49	\$34.79
Drywall Finisher	5/1/2016		\$23.30	\$11.89	\$35.19
Drywall Finisher	5/1/2017		\$23.30	\$12.39	\$35.69
Electric Lineman	6/3/2013		\$40.78	\$18.31	\$59.09

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Electric Lineman	6/2/2014		\$42.68	\$19.35	\$62.03
Electric Lineman	6/1/2015		\$44.63	\$19.88	\$64.51
Electric Lineman	5/30/2016		\$46.16	\$20.29	\$66.45
Electricians	6/1/2013		\$28.00	\$20.18	\$48.18
Electricians	6/1/2014		\$28.75	\$20.70	\$49.45
Electricians	6/1/2015		\$29.50	\$21.34	\$50.84
Elevator Constructor	1/1/2012		\$41.84	\$26.06	\$67.90
Elevator Constructor	1/1/2015		\$42.20	\$28.69	\$70.89
Elevator Tender (Use Elevator Apprentice or Constructor)	1/1/2008		\$0.00	\$0.00	\$0.00
Glazier	5/1/2009		\$25.05	\$7.53	\$32.58
Glazier	5/1/2010		\$23.64	\$9.44	\$33.08
Glazier	5/1/2011		\$24.64	\$9.44	\$34.08
Glazier	5/1/2012		\$26.14	\$9.44	\$35.58
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2009		\$27.07	\$21.85	\$48.92
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2010		\$27.77	\$23.09	\$50.86
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2011		\$29.02	\$24.09	\$53.11
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2012		\$29.52	\$25.11	\$54.63
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2013		\$31.05	\$25.11	\$56.16
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2014		\$32.58	\$25.11	\$57.69
Laborers (Class 01 - See notes)	5/1/2009		\$18.76	\$8.28	\$27.04
Laborers (Class 01 - See notes)	5/1/2010		\$19.66	\$8.68	\$28.34
Laborers (Class 01 - See notes)	5/1/2011		\$19.66	\$9.18	\$28.84
Laborers (Class 01 - See notes)	5/1/2012		\$19.66	\$9.98	\$29.64
Laborers (Class 01 - See notes)	5/1/2013		\$19.91	\$10.43	\$30.34
Laborers (Class 01 - See notes)	5/1/2014		\$20.06	\$11.23	\$31.29
Laborers (Class 01 - See notes)	5/1/2015		\$20.21	\$12.03	\$32.24
Laborers (Class 01 - See notes)	5/1/2016		\$20.31	\$12.83	\$33.14
Laborers (Class 02 - See notes)	5/1/2009		\$20.76	\$8.28	\$29.04
Laborers (Class 02 - See notes)	5/1/2010		\$21.66	\$8.68	\$30.34
Laborers (Class 02 - See notes)	5/1/2011		\$21.66	\$9.18	\$30.84

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 02 - See notes)	5/1/2012		\$21.66	\$9.98	\$31.64
Laborers (Class 02 - See notes)	5/1/2013		\$21.91	\$10.43	\$32.34
Laborers (Class 02 - See notes)	5/1/2014		\$22.06	\$11.23	\$33.29
Laborers (Class 02 - See notes)	5/1/2015		\$22.21	\$12.03	\$34.24
Laborers (Class 02 - See notes)	5/1/2016		\$22.31	\$12.83	\$35.14
Laborers (Class 03 - See notes)	5/1/2014		\$23.41	\$11.41	\$34.82
Laborers (Class 03 - See notes)	5/1/2015		\$23.56	\$12.21	\$35.77
Laborers (Class 03 - See notes)	5/1/2016		\$23.76	\$13.01	\$36.77
Laborers (Class 04 - See notes)	5/1/2014		\$24.91	\$11.41	\$36.32
Laborers (Class 04 - See notes)	5/1/2015		\$25.06	\$12.21	\$37.27
Laborers (Class 04 - See notes)	5/1/2016		\$25.26	\$13.01	\$38.27
Laborers (Class 05 - See notes)	5/1/2014		\$25.41	\$11.41	\$36.82
Laborers (Class 05 - See notes)	5/1/2015		\$25.56	\$12.21	\$37.77
Laborers (Class 05 - See notes)	5/1/2016		\$25.76	\$13.01	\$38.77
Laborers (Class 06 - See notes)	5/1/2011		\$21.66	\$9.18	\$30.84
Laborers (Class 06 - See notes)	5/1/2012		\$21.66	\$9.98	\$31.64
Laborers (Class 06 - See notes)	5/1/2013		\$21.91	\$10.43	\$32.34
Laborers (Class 06 - See notes)	5/1/2014		\$22.06	\$11.23	\$33.29
Laborers (Class 06 - See notes)	5/1/2015		\$22.21	\$12.03	\$34.24
Laborers (Class 06 - See notes)	5/1/2016		\$22.31	\$12.83	\$35.14
Millwright	5/1/2010		\$28.91	\$13.99	\$42.90
Millwright	5/1/2011		\$30.27	\$14.63	\$44.90
Millwright	5/1/2012		\$31.14	\$15.26	\$46.40
Millwright	5/1/2013		\$32.16	\$15.74	\$47.90
Millwright	5/1/2014		\$33.17	\$16.23	\$49.40
Millwright	5/1/2015		\$33.27	\$16.98	\$50.25
Millwright	5/1/2016		\$33.59	\$17.51	\$51.10
Millwright	5/1/2017		\$33.79	\$18.16	\$51.95
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2009		\$29.42	\$16.89	\$46.31
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2010		\$30.76	\$17.85	\$48.61

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2011		\$32.06	\$18.85	\$50.91
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2012		\$32.06	\$20.25	\$52.31
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2013		\$32.06	\$21.65	\$53.71
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2014		\$32.70	\$22.41	\$55.11
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2009		\$31.67	\$17.55	\$49.22
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2010		\$33.01	\$18.51	\$51.52
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2011		\$34.31	\$19.51	\$53.82
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2012		\$34.31	\$20.91	\$55.22
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2013		\$34.31	\$22.31	\$56.62
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2014		\$34.95	\$23.07	\$58.02
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2009		\$29.13	\$16.81	\$45.94
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2010		\$30.47	\$17.77	\$48.24
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2011		\$31.77	\$18.77	\$50.54
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2012		\$31.77	\$20.17	\$51.94
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2013		\$31.77	\$21.57	\$53.34
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2014		\$32.41	\$22.33	\$54.74
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2009		\$31.38	\$17.48	\$48.86
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2010		\$32.72	\$18.44	\$51.16
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2011		\$34.02	\$19.44	\$53.46
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2012		\$34.02	\$20.84	\$54.86
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2013		\$34.02	\$22.24	\$56.26
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2014		\$34.66	\$23.00	\$57.66
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2009		\$26.22	\$15.94	\$42.16
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2010		\$27.55	\$16.91	\$44.46
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2011		\$28.85	\$17.91	\$46.76
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2012		\$28.85	\$19.31	\$48.16

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2013		\$28.85	\$20.71	\$49.56
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2014		\$29.49	\$21.47	\$50.96
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2009		\$25.08	\$15.61	\$40.69
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2010		\$26.42	\$16.57	\$42.99
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2011		\$27.72	\$17.57	\$45.29
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2012		\$27.72	\$18.97	\$46.69
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2013		\$27.72	\$20.37	\$48.09
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2014		\$28.35	\$21.14	\$49.49
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2009		\$24.64	\$15.47	\$40.11
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2010		\$25.97	\$16.44	\$42.41
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2011		\$27.27	\$17.44	\$44.71
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2012		\$27.27	\$18.84	\$46.11
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2013		\$27.27	\$20.24	\$47.51
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2014		\$27.90	\$21.01	\$48.91
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2009		\$23.76	\$15.21	\$38.97
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2010		\$25.09	\$16.18	\$41.27
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2011		\$26.39	\$17.18	\$43.57
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2012		\$26.39	\$18.58	\$44.97
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2013		\$26.39	\$19.98	\$46.37
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2014		\$27.02	\$20.75	\$47.77
Operators (Building/Heavy, Class 07/A - See Notes)	5/1/2009		\$35.30	\$19.38	\$54.68
Operators (Building/Heavy, Class 07/A - See Notes)	5/1/2010		\$36.91	\$20.43	\$57.34
Operators (Building/Heavy, Class 07/A - See Notes)	5/1/2011		\$38.47	\$21.53	\$60.00
Operators (Building/Heavy, Class 07/A - See Notes)	5/1/2012		\$38.47	\$23.16	\$61.63
Operators (Building/Heavy, Class 07/A - See Notes)	5/1/2013		\$38.47	\$24.79	\$63.26
Operators (Building/Heavy, Class 07/A - See Notes)	5/1/2014		\$39.24	\$25.69	\$64.93

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Building/Heavy, Class 07/B - See Notes)	5/1/2009		\$34.96	\$19.27	\$54.23
Operators (Building/Heavy, Class 07/B - See Notes)	5/1/2010		\$36.56	\$20.33	\$56.89
Operators (Building/Heavy, Class 07/B - See Notes)	5/1/2011		\$38.12	\$21.43	\$59.55
Operators (Building/Heavy, Class 07/B - See Notes)	5/1/2012		\$38.12	\$23.06	\$61.18
Operators (Building/Heavy, Class 07/B - See Notes)	5/1/2013		\$38.12	\$24.69	\$62.81
Operators (Building/Heavy, Class 07/B - See Notes)	5/1/2014		\$38.89	\$25.59	\$64.48
Painters Class 1 (see notes)	5/1/2013		\$23.07	\$11.92	\$34.99
Painters Class 1 (see notes)	5/1/2014		\$23.47	\$12.42	\$35.89
Painters Class 1 (see notes)	5/1/2015		\$23.47	\$12.42	\$35.89
Painters Class 1 (see notes)	5/1/2016		\$23.47	\$12.82	\$36.29
Painters Class 1 (see notes)	5/1/2017		\$23.47	\$13.32	\$36.79
Painters Class 2 (see notes)	5/1/2011		\$24.05	\$11.32	\$35.37
Painters Class 2 (see notes)	5/1/2012		\$24.95	\$11.12	\$36.07
Painters Class 2 (see notes)	5/1/2013		\$24.95	\$11.92	\$36.87
Painters Class 2 (see notes)	5/1/2014		\$25.35	\$12.42	\$37.77
Painters Class 2 (see notes)	5/1/2015		\$25.60	\$12.42	\$38.02
Painters Class 2 (see notes)	5/1/2016		\$25.60	\$12.82	\$38.42
Painters Class 2 (see notes)	5/1/2017		\$25.60	\$13.32	\$38.92
Painters Class 3 (see notes)	5/1/2011		\$28.05	\$11.32	\$39.37
Painters Class 3 (see notes)	5/1/2012		\$29.95	\$11.12	\$41.07
Painters Class 3 (see notes)	5/1/2013		\$29.95	\$11.92	\$41.87
Painters Class 3 (see notes)	5/1/2014		\$30.35	\$12.42	\$42.77
Painters Class 3 (see notes)	5/1/2015		\$31.35	\$12.42	\$43.77
Painters Class 3 (see notes)	5/1/2016		\$31.35	\$12.82	\$44.17
Painters Class 3 (see notes)	5/1/2017		\$31.35	\$13.32	\$44.67
Pile Driver Divers (Building, Heavy, Highway)	1/1/2010		\$44.39	\$12.25	\$56.64
Pile Driver Divers (Building, Heavy, Highway)	1/1/2011		\$45.53	\$13.00	\$58.53
Pile Driver Divers (Building, Heavy, Highway)	1/1/2012		\$46.28	\$13.60	\$59.88
Pile Driver Divers (Building, Heavy, Highway)	1/1/2013		\$47.18	\$14.10	\$61.28

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Plasterers	5/1/2014		\$23.48	\$19.53	\$43.01
Plasterers	5/1/2015		\$23.83	\$20.03	\$43.86
Plumbers and Steamfitters	5/1/2014		\$33.97	\$22.16	\$56.13
Plumbers and Steamfitters	5/1/2015		\$34.87	\$22.56	\$57.43
Roofers (Composition)	5/1/2013		\$31.05	\$28.40	\$59.45
Roofers (Composition)	5/1/2014		\$32.15	\$28.65	\$60.80
Roofers (Composition)	5/1/2015		\$33.65	\$28.65	\$62.30
Roofers (Shingle, Slate, Tile)	5/1/2012		\$24.00	\$16.37	\$40.37
Roofers (Shingle, Slate, Tile)	5/1/2014		\$24.50	\$17.37	\$41.87
Roofers (Shingle, Slate, Tile)	5/1/2015		\$25.00	\$18.37	\$43.37
Sheet Metal Workers	6/1/2013		\$31.58	\$30.45	\$62.03
Sheet Metal Workers	1/6/2014		\$31.58	\$30.95	\$62.53
Sheet Metal Workers	6/1/2014		\$32.55	\$30.98	\$63.53
Sheet Metal Workers	12/1/2014		\$32.64	\$31.39	\$64.03
Sheet Metal Workers	6/1/2015		\$32.64	\$32.39	\$65.03
Sheet Metal Workers	12/1/2015		\$32.64	\$32.89	\$65.53
Sign Makers and Hangars	7/1/2009		\$24.17	\$15.99	\$40.16
Sign Makers and Hangars	5/21/2010		\$24.33	\$16.37	\$40.70
Sprinklerfitters	1/1/2010		\$33.85	\$17.60	\$51.45
Sprinklerfitters	1/1/2011		\$33.35	\$18.45	\$51.80
Sprinklerfitters	4/1/2011		\$34.18	\$18.45	\$52.63
Sprinklerfitters	1/1/2012		\$34.18	\$18.60	\$52.78
Sprinklerfitters	4/1/2012		\$35.21	\$18.65	\$53.86
Sprinklerfitters	1/1/2013		\$35.21	\$18.80	\$54.01
Sprinklerfitters	4/1/2013		\$33.03	\$20.12	\$53.15
Sprinklerfitters	7/1/2013		\$33.69	\$20.12	\$53.81
Sprinklerfitters	4/1/2014		\$34.36	\$20.47	\$54.83
Sprinklerfitters	4/1/2015		\$35.05	\$20.62	\$55.67
Terrazzo Finisher	5/1/2013		\$29.13	\$14.58	\$43.71
Terrazzo Finisher	5/1/2014		\$29.47	\$14.99	\$44.46
Terrazzo Setter	5/1/2013		\$28.39	\$17.54	\$45.93

PREVAILING WAGES PROJECT RATES

Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Terrazzo Setter	5/1/2014		\$28.67	\$18.01	\$46.68
Tile & Marble Finisher	5/1/2013		\$24.62	\$12.73	\$37.35
Tile & Marble Finisher	5/1/2014		\$24.91	\$13.14	\$38.05
Tile & Marble Finisher	5/1/2015		\$25.55	\$13.30	\$38.85
Tile & Marble Finisher	5/1/2016		\$26.19	\$13.56	\$39.75
Tile & Marble Layer	5/1/2013		\$27.28	\$14.21	\$41.49
Tile & Marble Layer	5/1/2014		\$27.51	\$14.68	\$42.19
Tile & Marble Layer	5/1/2015		\$28.09	\$14.90	\$42.99
Tile & Marble Layer	5/1/2016		\$28.64	\$15.25	\$43.89
Truckdriver class 1(see notes)	5/1/2010		\$29.58	\$0.00	\$29.58
Truckdriver class 1(see notes)	5/1/2011		\$30.73	\$0.00	\$30.73
Truckdriver class 1(see notes)	5/1/2012		\$30.98	\$0.00	\$30.98
Truckdriver class 2 (see notes)	5/1/2010		\$29.65	\$0.00	\$29.65
Truckdriver class 2 (see notes)	5/1/2011		\$30.80	\$0.00	\$30.80
Truckdriver class 2 (see notes)	5/1/2012		\$31.05	\$0.00	\$31.05
Truckdriver class 3 (see notes)	5/1/2010		\$30.14	\$0.00	\$30.14
Truckdriver class 3 (see notes)	5/1/2011		\$31.29	\$0.00	\$31.29
Truckdriver class 3 (see notes)	5/1/2012		\$31.54	\$0.00	\$31.54

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Carpenters	5/1/2013		\$27.92	\$12.84	\$40.76
Carpenters	5/1/2014		\$28.72	\$13.24	\$41.96
Carpenters	5/1/2015		\$29.13	\$13.83	\$42.96
Carpenters	5/1/2016		\$29.67	\$14.54	\$44.21
Carpenters	5/1/2017		\$30.12	\$15.34	\$45.46
Laborers (Class 01 - See notes)	5/1/2013		\$18.16	\$14.04	\$32.20
Laborers (Class 01 - See notes)	5/1/2014		\$18.66	\$14.69	\$33.35
Laborers (Class 01 - See notes)	5/1/2015		\$19.21	\$15.34	\$34.55
Laborers (Class 02 - See notes)	5/1/2009		\$22.84	\$11.03	\$33.87
Laborers (Class 02 - See notes)	5/1/2010		\$23.39	\$11.88	\$35.27
Laborers (Class 02 - See notes)	5/1/2011		\$23.94	\$12.78	\$36.72
Laborers (Class 02 - See notes)	5/1/2012		\$24.33	\$13.39	\$37.72
Laborers (Class 02 - See notes)	5/1/2013		\$24.78	\$14.04	\$38.82
Laborers (Class 02 - See notes)	5/1/2014		\$25.28	\$14.69	\$39.97
Laborers (Class 02 - See notes)	5/1/2015		\$25.83	\$15.34	\$41.17
Laborers (Class 03 - See notes)	5/1/2009		\$19.83	\$11.03	\$30.86
Laborers (Class 03 - See notes)	5/1/2010		\$20.38	\$11.88	\$32.26
Laborers (Class 03 - See notes)	5/1/2011		\$20.93	\$12.78	\$33.71
Laborers (Class 03 - See notes)	5/1/2012		\$21.32	\$13.39	\$34.71
Laborers (Class 03 - See notes)	5/1/2013		\$21.77	\$14.04	\$35.81
Laborers (Class 03 - See notes)	5/1/2014		\$22.27	\$14.69	\$36.96
Laborers (Class 03 - See notes)	5/1/2015		\$22.82	\$15.34	\$38.16
Laborers (Class 04 - See notes)	5/1/2009		\$20.18	\$11.03	\$31.21
Laborers (Class 04 - See notes)	5/1/2010		\$20.73	\$11.88	\$32.61
Laborers (Class 04 - See notes)	5/1/2011		\$21.28	\$12.78	\$34.06
Laborers (Class 04 - See notes)	5/1/2012		\$21.67	\$13.39	\$35.06
Laborers (Class 04 - See notes)	5/1/2013		\$22.12	\$14.04	\$36.16
Laborers (Class 04 - See notes)	5/1/2014		\$22.62	\$14.69	\$37.31
Laborers (Class 04 - See notes)	5/1/2015		\$23.17	\$15.34	\$38.51
Laborers (Class 05 - See notes)	5/1/2009		\$20.85	\$11.03	\$31.88
Laborers (Class 05 - See notes)	5/1/2010		\$21.40	\$11.88	\$33.28

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 05 - See notes)	5/1/2011		\$21.95	\$12.78	\$34.73
Laborers (Class 05 - See notes)	5/1/2012		\$22.34	\$13.39	\$35.73
Laborers (Class 05 - See notes)	5/1/2013		\$22.79	\$14.04	\$36.83
Laborers (Class 05 - See notes)	5/1/2014		\$23.29	\$14.69	\$37.98
Laborers (Class 05 - See notes)	5/1/2015		\$23.84	\$15.34	\$39.18
Laborers (Class 06 - See notes)	5/1/2009		\$20.27	\$11.03	\$31.30
Laborers (Class 06 - See notes)	5/1/2010		\$20.82	\$11.88	\$32.70
Laborers (Class 06 - See notes)	5/1/2011		\$21.37	\$12.78	\$34.15
Laborers (Class 06 - See notes)	5/1/2012		\$21.76	\$13.39	\$35.15
Laborers (Class 06 - See notes)	5/1/2013		\$22.21	\$14.04	\$36.25
Laborers (Class 06 - See notes)	5/1/2014		\$22.71	\$14.69	\$37.40
Laborers (Class 06 - See notes)	5/1/2015		\$23.26	\$15.34	\$38.60
Laborers (Class 07 - See notes)	5/1/2009		\$20.56	\$11.03	\$31.59
Laborers (Class 07 - See notes)	5/1/2010		\$21.11	\$11.88	\$32.99
Laborers (Class 07 - See notes)	5/1/2011		\$21.66	\$12.78	\$34.44
Laborers (Class 07 - See notes)	5/1/2012		\$22.05	\$13.39	\$35.44
Laborers (Class 07 - See notes)	5/1/2013		\$22.50	\$14.04	\$36.54
Laborers (Class 07 - See notes)	5/1/2014		\$23.00	\$14.69	\$37.69
Laborers (Class 07 - See notes)	5/1/2015		\$23.55	\$15.34	\$38.89
Laborers (Class 08 - See notes)	5/1/2009		\$21.04	\$11.03	\$32.07
Laborers (Class 08 - See notes)	5/1/2010		\$21.59	\$11.88	\$33.47
Laborers (Class 08 - See notes)	5/1/2011		\$22.14	\$12.78	\$34.92
Laborers (Class 08 - See notes)	5/1/2012		\$22.53	\$13.39	\$35.92
Laborers (Class 08 - See notes)	5/1/2013		\$22.98	\$14.04	\$37.02
Laborers (Class 08 - See notes)	5/1/2014		\$23.48	\$14.69	\$38.17
Laborers (Class 08 - See notes)	5/1/2015		\$24.03	\$15.34	\$39.37
Operators (Highway, Class 01 - See Notes)	5/1/2009		\$27.45	\$16.30	\$43.75
Operators (Highway, Class 01 - See Notes)	5/1/2010		\$28.79	\$17.26	\$46.05
Operators (Highway, Class 01 - See Notes)	5/1/2011		\$30.09	\$18.26	\$48.35
Operators (Highway, Class 01 - See Notes)	5/1/2012		\$30.09	\$19.51	\$49.60

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Highway, Class 01 - See Notes)	5/1/2013		\$30.09	\$20.76	\$50.85
Operators (Highway, Class 01 - See Notes)	5/1/2014		\$30.38	\$21.72	\$52.10
Operators (Highway, Class 01a - See Notes)	5/1/2009		\$29.70	\$16.98	\$46.68
Operators (Highway, Class 01a - See Notes)	5/1/2010		\$31.04	\$17.94	\$48.98
Operators (Highway, Class 01a - See Notes)	5/1/2011		\$32.34	\$18.94	\$51.28
Operators (Highway, Class 01a - See Notes)	5/1/2012		\$32.34	\$20.19	\$52.53
Operators (Highway, Class 01a - See Notes)	5/1/2013		\$32.34	\$21.44	\$53.78
Operators (Highway, Class 01a - See Notes)	5/1/2014		\$32.63	\$22.40	\$55.03
Operators (Highway, Class 02 - See Notes)	5/1/2009		\$26.27	\$15.96	\$42.23
Operators (Highway, Class 02 - See Notes)	5/1/2010		\$27.61	\$16.92	\$44.53
Operators (Highway, Class 02 - See Notes)	5/1/2011		\$28.91	\$17.92	\$46.83
Operators (Highway, Class 02 - See Notes)	5/1/2012		\$28.91	\$19.17	\$48.08
Operators (Highway, Class 02 - See Notes)	5/1/2013		\$28.91	\$20.42	\$49.33
Operators (Highway, Class 02 - See Notes)	5/1/2014		\$29.21	\$21.37	\$50.58
Operators (Highway, Class 03 - See Notes)	5/1/2009		\$25.58	\$15.75	\$41.33
Operators (Highway, Class 03 - See Notes)	5/1/2010		\$26.91	\$16.72	\$43.63
Operators (Highway, Class 03 - See Notes)	5/1/2011		\$28.21	\$17.72	\$45.93
Operators (Highway, Class 03 - See Notes)	5/1/2012		\$28.21	\$18.97	\$47.18
Operators (Highway, Class 03 - See Notes)	5/1/2013		\$28.21	\$20.22	\$48.43
Operators (Highway, Class 03 - See Notes)	5/1/2014		\$28.50	\$21.18	\$49.68
Operators (Highway, Class 04 - See Notes)	5/1/2009		\$25.13	\$15.62	\$40.75
Operators (Highway, Class 04 - See Notes)	5/1/2010		\$26.46	\$16.59	\$43.05
Operators (Highway, Class 04 - See Notes)	5/1/2011		\$27.76	\$17.59	\$45.35
Operators (Highway, Class 04 - See Notes)	5/1/2012		\$27.75	\$18.85	\$46.60
Operators (Highway, Class 04 - See Notes)	5/1/2013		\$27.75	\$20.10	\$47.85
Operators (Highway, Class 04 - See Notes)	5/1/2014		\$28.05	\$21.05	\$49.10

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Highway, Class 05 - See Notes)	5/1/2009		\$24.62	\$15.47	\$40.09
Operators (Highway, Class 05 - See Notes)	5/1/2010		\$25.95	\$16.44	\$42.39
Operators (Highway, Class 05 - See Notes)	5/1/2011		\$27.25	\$17.44	\$44.69
Operators (Highway, Class 05 - See Notes)	5/1/2012		\$27.25	\$18.69	\$45.94
Operators (Highway, Class 05 - See Notes)	5/1/2013		\$27.25	\$19.94	\$47.19
Operators (Highway, Class 05 - See Notes)	5/1/2014		\$27.54	\$20.90	\$48.44
Operators (Highway, Class 06 - See Notes)	5/1/2009		\$27.69	\$16.36	\$44.05
Operators (Highway, Class 06 - See Notes)	5/1/2010		\$29.03	\$17.32	\$46.35
Operators (Highway, Class 06 - See Notes)	5/1/2011		\$30.33	\$18.32	\$48.65
Operators (Highway, Class 06 - See Notes)	5/1/2012		\$30.33	\$19.57	\$49.90
Operators (Highway, Class 06 - See Notes)	5/1/2013		\$30.33	\$20.82	\$51.15
Operators (Highway, Class 06 - See Notes)	5/1/2014		\$30.62	\$21.78	\$52.40
Operators (Highway, Class 06/A - See Notes)	5/1/2009		\$29.94	\$17.02	\$46.96
Operators (Highway, Class 06/A - See Notes)	5/1/2010		\$31.28	\$17.98	\$49.26
Operators (Highway, Class 06/A - See Notes)	5/1/2011		\$32.58	\$18.98	\$51.56
Operators (Highway, Class 06/A - See Notes)	5/1/2012		\$32.59	\$20.23	\$52.82
Operators (Highway, Class 06/A - See Notes)	5/1/2013		\$32.58	\$21.48	\$54.06
Operators (Highway, Class 06/A - See Notes)	5/1/2014		\$32.87	\$22.44	\$55.31
Operators (Highway, Class 07/A - See Notes)	5/1/2009		\$32.94	\$18.67	\$51.61
Operators (Highway, Class 07/A - See Notes)	5/1/2010		\$34.55	\$19.72	\$54.27
Operators (Highway, Class 07/A - See Notes)	5/1/2011		\$36.10	\$20.83	\$56.93
Operators (Highway, Class 07/A - See Notes)	5/1/2012		\$36.10	\$22.28	\$58.38
Operators (Highway, Class 07/A - See Notes)	5/1/2013		\$36.10	\$23.73	\$59.83
Operators (Highway, Class 07/A - See Notes)	5/1/2014		\$36.45	\$24.88	\$61.33
Operators (Highway, Class 07/B - See Notes)	5/1/2009		\$31.53	\$18.25	\$49.78
Operators (Highway, Class 07/B - See Notes)	5/1/2010		\$33.13	\$19.31	\$52.44

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Highway, Class 07/B - See Notes)	5/1/2011		\$34.69	\$20.41	\$55.10
Operators (Highway, Class 07/B - See Notes)	5/1/2012		\$34.69	\$21.86	\$56.55
Operators (Highway, Class 07/B - See Notes)	5/1/2013		\$34.69	\$23.31	\$58.00
Operators (Highway, Class 07/B - See Notes)	5/1/2014		\$35.04	\$24.46	\$59.50
Piledrivers	5/1/2009		\$25.30	\$9.86	\$35.16
Piledrivers	5/1/2010		\$25.98	\$10.83	\$36.81
Piledrivers	5/1/2011		\$27.03	\$11.43	\$38.46
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2010		\$30.27	\$26.09	\$56.36
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2012		\$34.87	\$26.86	\$61.73
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2013		\$36.02	\$27.73	\$63.75
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2014		\$37.19	\$28.83	\$66.02
Truckdriver class 1(see notes)	5/1/2010		\$29.58	\$0.00	\$29.58
Truckdriver class 1(see notes)	5/1/2011		\$30.73	\$0.00	\$30.73
Truckdriver class 1(see notes)	5/1/2012		\$30.98	\$0.00	\$30.98
Truckdriver class 2 (see notes)	5/1/2010		\$29.65	\$0.00	\$29.65
Truckdriver class 2 (see notes)	5/1/2011		\$30.80	\$0.00	\$30.80
Truckdriver class 2 (see notes)	5/1/2012		\$31.05	\$0.00	\$31.05
Truckdriver class 3 (see notes)	5/1/2010		\$30.14	\$0.00	\$30.14
Truckdriver class 3 (see notes)	5/1/2011		\$31.29	\$0.00	\$31.29
Truckdriver class 3 (see notes)	5/1/2012		\$31.54	\$0.00	\$31.54

PREVAILING WAGES PROJECT RATES

Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
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Notes:

If you can not find a classification under Heavy/Highway please refer to the Building classifications.

The Bureau of Labor Law Compliance updated its Pennsylvania Building Journey person Laborer Notes to clarify existing tasks performed throughout the Commonwealth. The "Building Laborer Notes" link on the Bureau's website provides a list of those tasks that should be read in conformity with custom and usage of the construction industry in the geographic region in which they are utilized.

For further information on construction types review the ["Notes as Referenced in Predeterminations"](#) on the Labor and Industry Website. Go to www.dli.state.pa.us, scroll down to the picture labeled "Labor Law Compliance" and click the picture. Then scroll down on the left menu and click on the "Prevailing Wage" link.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.01 BORINGS AND SUBSURFACE DATA

The Owner has not obtained subsurface data in the vicinity of the fiber optic line installation from the Borough of Carlisle. PA One Calls for design have been made in the vicinity of the railroad crossing and the entire route. The Contractor shall be responsible for locating and verifying the location and depth of subsurface facilities. Carlisle Borough utility drawings will be shared with the contractor after award of contract.

00160.02 PRECONSTRUCTION CONFERENCE

A preconstruction conference will be held after award of the Contract, but prior to commencement of construction, at a location determined by the Engineer. The Contractor shall have an authorized representative of his firm present at this meeting.

00160.03 POWER OF ATTORNEY

Attorneys-in-fact who sign Bid Bonds or Contract Bonds must file with each bond a certified and effectively dated copy of their power of attorney.

00160.04 LAWS AND REGULATIONS

The Bidder's attention is directed to the fact that all applicable Federal and State laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

00160.05 NON-COLLUSIVE BIDDING CERTIFICATION

A Non-Collusive Bidding Certification form as bound in these documents must be executed and accompany the Bid.

00160.06 LABOR

Contractor, for itself, its employees and Subcontractors, agrees that in performance of the work provided for in the Contract Documents:

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.06 LABOR - Continued

- A. The Contractor and every Subcontractor shall comply will all Federal, State and local labor laws. The wages paid to any and all workers shall not be less than the applicable minimum or prevailing wage rates established by the governing labor laws. Contractor and Subcontractors shall pay its employees and submit verified statements of wages paid (Certified Payrolls).
- B. Contractor shall take affirmative action to ensure that applicants are employed and treated during employment without regard to their age, race, creed, color, national origin, ancestry, marital status of sex, affectional or sexual orientation, familial status, liability for service in the Armed Forces of the United States, or nationality
- C. Contractor shall cooperate with Owner in the conduct of all labor relations affecting the work.
- D. At Owner's request, contractor shall provide a method of identifying its employees and checking such employees into and out of school sites. Such method must be satisfactory to Owner prior to its use at the site and shall be provided at Contractor's sole cost and expense (at no change in Contract Price);
- E. Contractor shall employ at the site only those employees who work in harmony with the employees of Owner and/or other Contractors and have the requisite skills and abilities to perform the work in a safe, good and workmanlike manner. Owner may, at any time, refuse admittance to the site or expel from the site any employee of Contractor and/or its Subcontractor including, but not limited to, Contractor's Superintendent whose presence the Owner, in Owner's sole discretion, considers undesirable and Contractor shall indemnify, defend and hold Owner harmless from all claims, lawsuits, compensation, costs, expenses (including, but not limited to, all reasonable attorneys' and other consultants' fees and charges) or damages related to Owner's refusal to admit such individual to or expulsion of such individual from the site; and
- F. Contractor acknowledges that it is Contractor's responsibility to hire all personnel for the proper and diligent prosecution of the work and Contractor shall use its best efforts to maintain labor peace for the duration of the work.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.07 CHANGES AND AMPLIFICATIONS TO GENERAL CONDITIONS

00752.01 INSURANCE, SECURITIES AND GUARANTEES

In amendment to Article 00752.01, a) Carlisle Borough, b) North Middleton Township, and c) owner of Bekins property shall be included as a named additional insured in accordance with the provision of this paragraph.

00754.03 CONTRACTOR'S ORGANIZATION & STAFF

In amendment to Article 00754.03, Paragraph 1, the Contractor shall obtain approval of the Owner of the type, size, and location of such office, shanties or other temporary structures for the project prior to their use, or deployment.

00755.01 PERMITS, TAXES, ACCESS, OTHER CONTRACTS

In amendment to Article 00755.01, the Owner has procured certain permits for the project as listed in Section 01650, "Summary of Work".

00756.04 APPROVED WORK SCHEDULES

In amplification to Article 00756.04, the Contractor shall update the work schedule at least monthly illustrating the progress to date.

In amendment to Article 00756.04, the schedule shall show the Contractor's proposed relative order and sequence of commencement [which shall be no later than December 1, 2015] and completion of all salient portions of the work, including the delivery of and installation of equipment, and shall give the estimated dates of commencement and completion of the various portions of the work. Work shall be substantially complete by June 30, 2016.

00756.08 PER DIEM CHARGES FOR DELAY

In amendment to Article 00756.08, the per diem charges for delay of substantial completion after June 30, 2016 shall represent the cost to the Owner for continuation of leased fiber cable.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.07 CHANGES AND AMPLIFICATIONS TO GENERAL CONDITIONS -
Continued

00757.04 CORRECTION OF WORK

In amplification to Article 00757.04, if an unmarked or mis-marked service line is damaged as a result of directional drilling the two (2) inch HDPE pipe, the Contractor shall be responsible for repairing damaged service lines. As damages may be found after substantial completion, the Contractor is required to repair damages from directional drilling of the two (2) inch HDPE pipe for 24 months after final acceptance of the Project.

Contractor shall cooperate with utility repairs as a result of damage to utility lines due to unmarked or mis-marked utilities.

00759.05 MONTHLY ESTIMATES AND PAYMENTS

In amendment to Article 00759.05, ten (10) percent of each estimate will be retained from each monthly estimate until substantial completion, at which time the retainage will be reduced to five (5) percent. The Owner informs the Contractor that from time of submission to date of payment by Owner is typically 30 days.

The following items shall be submitted with Payment Estimate:

- a. Revised Project Schedule
- b. Values from previous estimate highlighting values/amounts currently due
- c. Certified Payroll
- d. Waiver of Liens

00761.03 CONTRACT DRAWINGS

The Contract Drawings will be issued on CD-ROM.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.08 CHANGES AND AMPLIFICATIONS TO GENERAL REQUIREMENTS

01015.01 AREA AVAILABLE FOR CONTRACTOR USE

In amplification to Article 01015.01, the Contractor shall remove all excavation material and equipment from Borough streets and return this material and equipment to the Contractor's storage yard at the end of each business week. Small excavation piles may remain, but shall be removed from Borough streets, so as not to impede traffic. Steel plating may be used to temporarily cover trench work within the roadway. The Engineer requests the Contractor close all open trenches per final closure specifications at the end of each Friday workday, in accordance with the Borough's definition of "workday".

01019.04 EXISTING STRUCTURES BELOW GROUND

In amplification to Article 01019.04, the Contractor is required to perform "open holing" to detect utilities for each gas, water, and sewer crossing. The Contractor is required to record depth of pipe, size of pipe, utility encountered, and location documented as part of the Record Drawings. Contractor shall verify that each buried utility encountered was damaged by work associated with this Project.

Carlisle Borough has approved the use of soft digging or camering of service lines to locate these utilities. The Contractor is required to use one of these methods to locate service lines. Contractor shall record location of service line and depth of service line on Record Drawings.

01051.02 SERVICES PROVIDED BY CONTRACTOR

In amplification to Article 01051.02, Contractor shall note that all references to pipelines shall also be considered conduit for this project.

01051.04 LINES, GRADES AND ELEVATIONS

In Article 01051.04, Paragraph 1, DELETE entire first sentence and replace with [The terms "invert" or "grade" used in the Contract Documents in connection with conduits, sewers, and similar structures shall mean the inside bottom of the pipe or other surface along the center line of the completed work.]

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.08 CHANGES AND AMPLIFICATIONS TO GENERAL REQUIREMENTS -
Continued

01051.04 LINES, GRADES AND ELEVATIONS

In Article 01051.04, Paragraph 1, Contractor shall note that the terms “invert” and “grade” used in the Contract Documents shall not apply to channels or flumes. In addition the terms “invert” and “grade” shall refer to the inside bottom of the pipe or other surface along the center line of the completed work.

01064.04 CONTRACTOR’S RESPONSIBILITIES

In amplification to Article 010164.04, Paragraph E.1, Contractor shall provide the HASP to the Owner and Engineer at least five (5) days prior to the anticipated commencement of work.

01340.02 TRANSMITTAL, IDENTIFICATION, AND RESUBMITTAL

In amendment to Article 01340.02, the Contractor shall submit an electronic PDF copy of all drawings and other data for review and approval by the Engineer and Owner. The Engineer will provide the Contractor with an electronic transmittal in accordance with Article 01340.02.

01506.01 WORK AFTER DARK

In amplification to Article 01506.01, Contractor shall provide a minimum of five (5) days notice to the Owners and Engineer prior to planned work after dark. Work after dark must be approved by the Owner and Engineer.

01510.01 SANITARY FACILITIES

In amplification to Article 01510.01, Contractor shall supply mobile sanitary facilities. The sanitary facilities must be taken to the Contractor’s storage yard at the end of each work day. Sanitary facilities are not allowed in the streets overnight.

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.08 CHANGES AND AMPLIFICATIONS TO GENERAL REQUIREMENTS -
Continued

01510.02 WATER

In amendment to Article 01510.02, all water will be provided by off-site sources at Contractor's expense.

01510.03 TEMPORARY HEAT

In amendment to Article 01510.03, Temporary heat shall be provided at Contractor's expense as necessary to complete work.

01540.02 PROTECTION OF WORK AND PROPERTY

In amplification to Article 01540.02, Contractor shall be responsible for ensuring each employee, performing work which requires their presence on school property, to sign-in, daily, at the school's office. This applies to all Subcontractor's and Contractor's employees. General Contractor shall be responsible for ensuring all necessary employees have signed-in.

If an employee will be conducting work inside a school building, the employee will be responsible for obtaining a background check. The background check will include:

Contractor shall provide a copy of the completed background check application for all employees assumed to be conducting work inside the academic school buildings within fourteen (14) calendar days of award notification to the Owner and Engineer. At least ten (10) days prior to entering the school buildings, the Contractor shall provide the background check results for all employees to the Owner and Engineer. Contractor shall schedule work, within school buildings, with the Owner, a minimum of three (3) days prior to anticipated entry. Contractor shall be responsible for any costs associated with obtaining background checks.

01568.02 CONTROL SCHEDULE

In Article 01568.02, Paragraph 1, DELETE [his proposed method of erosion and sediment control on haul roads and borrow pits and]

SECTION 00160

ADDITIONAL INSTRUCTIONS

00160.08 CHANGES AND AMPLIFICATIONS TO GENERAL REQUIREMENTS -
Continued

01580 PROJECT SIGN

DELETE Section 01580 in its entirety, a project sign is not required.

01590 ENGINEER'S FIELD OFFICE TRAILER

DELETE Section 01590 in its entirety, an Engineer's field office trailer is not required.

01019.11 THIRD PARTY UTILITY LOCATION

Contractor shall engage the services of a firm experienced in the location of underground utilities. That firm shall field identify and verify the locations of underground utilities along Orange Street between West Louther Street and West South Street. Additionally, the third party locate shall review the designated route on any private property or property owned by Carlisle Area School District. Copies of reports shall be provided to Engineer.

01640.08 TOOLS, ACCESSORIES AND MANUALS

In amplification to Article 01640.08, Contractor shall additionally furnish electronic copies of all bulletins, diagrams, parts lists, instructions, manuals, and other data required for operations, maintenance and repair of the equipment, in PDF format.

END OF SECTION

SECTION 00301

BIDDER'S CHECKLIST

(All pages of this color to be completed by Bidder PRIOR to Bid Submission)

Bid Prices, Page 00370-1 to 00370-5: All blanks appropriately filled in ink with both words and figures, and signed where applicable.

NOTICE, REVISIONS OR ADDENDUM ACKNOWLEDGEMENT Section 00375, page 00375-1. Complete form and sign.

BACKGROUND QUESTIONNAIRE, Section 00380, pages 00380-1 to 00380-4. Complete all applicable sections.

SUBCONTRACTOR DECLARATION Section 00385, page 00385-1. Complete as applicable.

CERTIFICATE OF BIDDER SHOWING ABILITY TO PERFORM CONTRACT Section 00390, page 00390-1. Complete, sign and have notarized.

STATEMENT OF CORPORATE OWNERSHIP, Section 00395 pages 00395-1 to 00395-3. Check box and complete applicable section.

NON-COLLUSIVE BIDDING CERTIFICATION, Section 00480, page 00480-1: Requires Bidder's signature and Notarization.

CONSENT OF SURETY Section 00481, page 00481-1. Complete and sign by attorney in fact.

BID SECURITY, Section 00499, page 00499-1: Attach Bid Security to page labeled "BID SECURITY"
(ATTACH HERE – CERTIFIED CHECK, CASH OR BID BOND).

NOTE: To Bid all Contracts, the Bidder must fill in all pages this color.

END OF SECTION

SECTION 00370

BID FOR CONSTRUCTION OF
CONTRACT NO. 1 - GENERAL CONSTRUCTION
CARLISLE AREA SCHOOL DISTRICT FIBER OPTIC CABLE PROJECT

The signer of this Proposal as Bidder declares that the only person, persons, company or parties interested in the proposal are named in this Proposal; that the Bid is made without any connection with any person making another Bid for the same Contract; that the Bid is in all respects fair and without collusion or fraud; that no officer, agent or employee of the Owner is directly or indirectly interested in the Bid; and that he has carefully examined the annexed form of Contract and Contract Documents.

The Bidder further certifies that: (a) the Bid has been arrived at by the Bidder independently and has been submitted without collusion with any other vendor of materials, supplies or equipment of the type described in the invitation for Bids; and (b) the contents of the Bid have not been communicated by the Bidder nor, to its best knowledge and belief, by any of its employees or agents, to any person not an employee or agent of the Bidder or its surety on any bond furnished herewith prior to the official opening of the Bid.

If written notice of the acceptance of this Bid is mailed, telegraphed or delivered to the undersigned within forty-five (45) days after the date of opening of the Bids, or any time thereafter before this Bid is withdrawn, the undersigned will, within five (5) days after the date of such mailing, telegraphing, or delivering of such notice, execute and deliver a contract in the form of Contract attached hereto.

The undersigned hereby designates as his office to which such notice of acceptance may be mailed, telegraphed or delivered:

The undersigned further agrees to comply with the requirements as to conditions of employment, wage rates and hours of labor set forth in the Contract Documents.

This bid may be withdrawn at any time prior to the scheduled time for the opening of bids or any authorized postponement thereof.

SECTION 00370

BID FOR CONSTRUCTION OF
CONTRACT NO. 1 - GENERAL CONSTRUCTION
CARLISLE AREA SCHOOL DISTRICT FIBER OPTIC CABLE PROJECT

Accompanying this Bid, is a Bid security in the form of a certified check*, cash*, or a bid bond* for the sum of _____ (\$_____) Dollars. In case this Bid is accepted by the Owner, and the undersigned shall fail to execute a contract with and give the required bonds to the Owner within five (5) days after the date of a written notice by the Owner to the undersigned so to do, this Bid security shall be forfeited and will be retained by the Owner as liquidated damages.

Dated _____, 20__ ** _____

Signature of Bidder

Print Name of Signer of Bid _____

Address _____

* Cross out designations not applicable.

** Insert bidder's name; if a corporation, give the state of incorporation using the phrase "a corporation organized under the law of"; if a partnership, give the name of the partners, using also the phrase "co-partners trading and doing business under the firm name and style of"; if an individual using a trade name, give individual name, using also the phrase "an individual doing business under the firm name and style of".

END OF SECTION

SECTION 00370
BID
CARLISLE AREA SCHOOL DISTRICT
FIBER OPTIC CABLE PROJECT
CONTRACT NO. 1 - GENERAL CONSTRUCTION

JOB NO. 1648.001.001

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
1	NEC	Purchase and Install Fiber Optic Cable FOR Crestview, Hamilton, Bellaire, Wilson, Carlisle, Lambertton, LeTort, and former PennDOT Building Routes, including all auxiliary equipment and accessories PER LS				
2	NEC	Hamilton Route: Deduct Cost to Purchase and Install Fiber Optic Cable FOR Hamilton Elementary Route PER LS				
3	NEC	Bellaire Route: Deduct Cost to Purchase and Install Fiber Optic Cable FOR Bellaire Elementary Route PER LS				

SECTION 00370
BID
CARLISLE AREA SCHOOL DISTRICT
FIBER OPTIC CABLE PROJECT
CONTRACT NO. 1 - GENERAL CONSTRUCTION

JOB NO. 1648.001.001

BROUGHT FORWARD _____

ITEM NO.	ESTIMATED QUANTITIES	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT BID PRICE		AMOUNT BID	
			DOLLARS	CTS.	DOLLARS	CTS.
4	NEC	Crestview Route: Deduct Cost to Purchase and Install Fiber Optic Cable FOR Crestview Elementary Route PER LS				
5	NEC	Former PennDOT Building Route: Deduct Cost to Purchase and Install Fiber Optic Cable FOR Former PennDOT Building Route PER LS				
6	NEC	LeTort Route: Deduct Cost to Purchase and Install Fiber Optic Cable FOR LeTort Elementary Route PER LS				

SECTION 00370
BID
CARLISLE AREA SCHOOL DISTRICT
FIBER OPTIC CABLE PROJECT
CONTRACT NO. 1 - GENERAL CONSTRUCTION

JOB NO. 1648.001.001

BROUGHT FORWARD _____

<p>TOTAL OR GROSS BID WRITTEN IN WORDS – Carlisle Area School District Fiber Optic Cable Installation Project - Contract No. 1 - General Construction</p> <hr/> <hr/> <hr/>	<p>\$ _____</p>	<p>\$ _____</p>
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SECTION 00372

SCHEDULE OF UNIT PRICES

(For Additions, Deductions, or Deletions in Contract Quantities)

Changes in the quantities from the quantities indicated by the Contract Documents, if required by the Engineer, or exigencies of the work, will be adjusted by increasing or decreasing in quantities and by applying the corresponding unit prices bid under “Schedule of unit Prices for Additions, Deductions, or Deletions in Contract Quantities” which prices shall include all necessary labor, materials, tools, equipment and incidental work.

No allowance will be made for such additional work performed without written orders of the Engineer or prior to making any measurements necessary to the determination of quantities.

The contractor further agrees that if the final quantities indicated by the Contract Documents of the lump sum payment items are revised due to field adjustments, contractor will accept additions to, deductions or deletions from the sum of LUMP SUM PRICE based on the unit prices presented in the following Schedule:

All item prices below shall include purchase of the item and installation of the item.

	<u>Item</u>	<u>Unit</u>	<u>Unit Prices</u>
1	Trench Shoring (per foot of trench)	LF	\$
2	Unclassified Excavation, Except Below Subgrade	Cu. Yd.	\$
3	Unclassified Excavation Below Subgrade	Cu. Yd.	\$
4	Miscellaneous Unclassified Excavation and Backfill	Cu. Yd.	\$
5	Backfill (In-Place)	Cu. Yd.	\$
6	Native Earth Backfill (In-Place)	Cu. Yd.	\$
7	Site Embankment (In-Place)	Cu. Yd.	\$
8	Granular Fill (In-Place)	Cu. Yd.	\$
9	Lining Material (In-Place)	Cu. Yd.	\$
10	Controlled Fill (In-Place)	Cu. Yd.	\$
11	Special Backfill (In-Place)	Cu. Yd.	\$
12	Utility Backfill (In-Place)	Cu. Yd.	\$
13	Sand (In-Place)	Cu. Yd.	\$
14	Crushed Stone Aggregate (In-Place)	Cu. Yd.	\$
15	AASHTO No. 57 Coarse Aggregate (In-Place)	Cu. Yd.	\$
16	AASHTO No. 8 Aggregate (In-Place)	Cu. Yd.	\$
17	Topsoil	Cu. Yd.	\$

SECTION 00372

SCHEDULE OF UNIT PRICES

18	Class A Concrete (In-Place) & Formed & Finished	Cu. Yd.	\$
19	Flowable Fill (In-Place)	Cu. Yd.	\$
20	2" HDPE Pipe (In-Place) Including Butt-Welded Joints	LF	\$
21	Paving (Bituminous 4" Concrete Base Course)	Sq. Yd.	\$
22	Paving (Bituminous 2" Wearing Course)	Sq. Yd.	\$
23	144-Count Fiber	LF	\$
24	96-Count Fiber	LF	\$
25	72-Count Fiber	LF	\$
26	60-Count Fiber	LF	\$
27	48-Count Fiber	LF	\$
28	24-Count Fiber	LF	\$
29	12-Count Fiber	LF	\$
30	Type A Handhold	EA	\$
31	Type B Handhole	EA	\$
32	Tracer wire	LF	\$
33	Metallic Warning Tape	LF	\$
34	Tracer Wire Test Station	EA	\$
35	Roadway Marker	EA	\$
36	Concrete Marker	EA	\$
37	Soil Marker	EA	\$
38	4" Steel Casing Pipe, Including Spacers	LF	\$
39	Tree Guard	LF	\$
40	1 1/4" Self-Supporting Innerduct	LF	\$
41	1 1/4" Plenum Innerduct	LF	\$
42	1 1/4" EMT	LF	\$
43	Exterior 2" PVC Conduit	LF	\$
44	Exterior 2" RGS Conduit	LF	\$
45	Vegetative Restoration	SF	\$
46	Terminus Equipment	EA	\$
47	Interior Cable Mounting with Equipment	LF	\$
48	Exterior Cable Mounting with Equipment	LF	\$
49	Unmarked Utilities (Section 01650)	Per Crew	
		HR	\$
50	Directional Drill (Native Earth)	LF	\$
51	Directional Drill (Rock)	LF	\$
52	Third Party Utility Locate	Per HR	
		On-Site	\$
53	Utility Locate Soft Dig	Per Crew	
		HR	\$

SECTION 00372

SCHEDULE OF UNIT PRICES

The presentation in the foregoing schedule of unit prices that are obviously unbalanced, may be sufficient cause for rejection of the entire Bid, whether or not such Bid is the lowest submitted.

Additional and extra work, if any, performed in accordance with the Contract Documents, shall be paid for as provided in the Project Manual.

END OF SECTION

SECTION 00373

LIST OF SUBCONTRACTORS

<u>Item No.</u>	<u>Description of Work</u>	<u>Proposed Subcontractor</u>
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____

SECTION 00375

NOTICE, REVISIONS, OR ADDENDUM ACKNOWLEDGEMENT

The undersigned Bidder hereby acknowledges receipt of the following notices, revisions, or addenda to the bid advertisement, specifications or bid documents. By indicating date of receipt, Bidder acknowledges the submitted bid takes into account the provisions of the notice, revision or addendum. Note that the local unit's record of notice to Bidders shall take precedence and that failure to include provisions of changes in a bid proposal may be subject for rejection of the bid.

Local Unit Reference Number or Title of Addendum/Revision		Method of Receipt (mail, fax, pick-up)	Date Received	Bidder's Initials
Notice, Revision or Addenda No.	Title or Description			

Acknowledged by Bidder:

Name of Bidder: _____

By Authorized Representative:

Signature: _____

Printed Name and Title: _____

Date: _____

END OF SECTION

SECTION 00380

BACKGROUND QUESTIONNAIRE

In accordance with Article 00100.09 entitled "Qualifications of Bidders" of "Information for Bidders", provide the following information:

Date of Organization of Company: _____

Name and address of officers: _____

President _____

Vice President _____

Secretary _____

Treasurer _____

EXPERIENCE

1. How many years has your organization been in business as a general contractor under your present business name? _____
2. How many years experience in this type of construction work has your organization had?

3. What are the latest projects (within the last five years) your organization has completed?
(Attach additional pages if necessary)

	<u>Contract Amount</u>	<u>Date Work Completed</u>	<u>For Whom</u>
A.	\$ _____	_____	_____
B.	\$ _____	_____	_____
C.	\$ _____	_____	_____
D.	\$ _____	_____	_____
E.	\$ _____	_____	_____

SECTION 00380

BACKGROUND QUESTIONNAIRE

Names, Addresses and Telephone Numbers of Reference for items listed above:

	<u>Name and Address</u>	<u>Telephone No.</u>
A.	_____	_____
B.	_____	_____
C.	_____	_____
D.	_____	_____
E.	_____	_____

4. Have you ever failed to complete any work awarded to you (within the last ten years)?

If so, where and why? _____

5. Have you or has any officer of your organization ever been an officer or partner of some other contracting organization that failed to complete any work (within the last ten years)?

If so, state the name of individual, position and the name of the other organization _____

SECTION 00380

BACKGROUND QUESTIONNAIRE

Did this other contracting organization ever fail to complete any work awarded to it (within the last ten years)? _____

If so, where and why? _____

6. Provide a list of uncompleted contracts at present held by you:

<u>Name of Contract</u>	<u>Contracting Agency</u>	<u>Amount</u>
_____	_____	\$ _____
_____	_____	\$ _____
_____	_____	\$ _____
_____	_____	\$ _____
_____	_____	\$ _____

7. State approximately the largest amount of work you have done in any one year (within the last five years) of a similar nature to the work being bid on.

SECTION 00380

BACKGROUND QUESTIONNAIRE

8. List the major pieces of equipment available for the performance of work under the proposed Contract (attach additional sheets if necessary)

END OF SECTION

SECTION 00385

SUBCONTRACTOR DECLARATION

Each Bidder shall set forth in the bid the names, addresses and license number (when required) of each Subcontractor for the furnishing labor related to the Project.

A General Contractor that intends to utilize a specific Subcontractor to perform work related to this project shall provide the required information with regard to that Subcontractor.

There shall be submitted proof that each Subcontractor is qualified in accordance with the rules and regulations of the State of Pennsylvania when such rules and regulations exist.

Subcontractor:

Name _____ Phone # _____

Address _____

Subcontractor:

Name: _____ Phone # _____

Address _____

Subcontractor:

Name _____ Phone # _____

Address _____

(Attach additional sheets for listing subcontractors, as necessary)

END OF SECTION

SECTION 00390

CERTIFICATE OF BIDDER SHOWING ABILITY TO PERFORM CONTRACT

AFFIDAVIT

I, _____ of the (City, Town, Township, Borough, etc.) of _____ in the County of _____ and the State of _____ of full age, being duly sworn according to law on my oath depose and say that:

I am a(n) owner, partner, shareholder or officer of the company set forth below and am duly authorized to execute this affidavit on its behalf.

(Check appropriate Statement(s))

_____ I own, lease or control the necessary equipment required by the plans, specifications, and advertisements under which bids are asked for.

_____ I do not own, lease or control all the necessary equipment required by the plans, specifications, and advertisements under which bids are asked for.

If the Bidder is not the actual owner or lessee of all the necessary equipment, provide the source from which the equipment will be obtained (attach additional sheets if necessary).

(Attach certification from the Owner or person in control of the equipment definitely granting to the Bidder the control of the equipment required during such time as may be necessary for the completion of that portion of the contract for which it is necessary).

SEAL

Title:

Name of Company

Subscribed and sworn to before me this _____ day of _____ 20 _____,

Notary Public of _____

My commission expires: _____
(Date)

END OF SECTION

SECTION 00395

STATEMENT OF CORPORATE OWNERSHIP

Check appropriate box:

Corporation

Partnership

Sole Proprietor

No corporation or partnership shall be awarded any contract by the State, county, municipality or municipal authority, or any subsidiary or agency thereof, unless prior to the receipt of the bid of the corporation or partnership, there is submitted to the public contracting unit a statement setting forth the names of all individuals who own 10% or more of stock or interest in the corporation or partnership.

1. If the Bidder is a partnership, then the statement shall set forth the names and addresses of all partners who own a 10% or greater interest in the partnership.
2. If the Bidder is a corporation, then the statement shall set forth the names and addresses of all stockholders in the corporation who own 10% or more of its stock in any class.
3. If a corporation owns all or part of the stock of the corporation or partnership submitting the bid, then the statement shall include a list of the stockholders who own 10% or more of the stock of any class of that corporation.
4. If the Bidder is other than a corporation or partnership, bidder shall indicate the form of corporate ownership as listed below.

BIDDER MUST COMPLETE ONE OF THE FOLLOWING STATEMENTS:

SECTION 00395

STATEMENT OF CORPORATE OWNERSHIP

I. Stockholders or Partners owning 10% or more of the company submitting bid:

1. NAME _____

ADDRESS _____

2. NAME _____

ADDRESS _____

3. NAME _____

ADDRESS _____

4. NAME _____

ADDRESS _____

5. NAME _____

ADDRESS _____

Signature _____

Date _____

II. No Stockholder or Partner owns 10% or more of the company submitting bid:

Signature _____

Date _____

III. Bid is being submitted by an individual who operates as a sole proprietorship:

Signature _____

Date _____

SECTION 00395

STATEMENT OF CORPORATE OWNERSHIP

IV. Bid is being submitted by a corporation or partnership that operates as a (check one of the following):

- | | |
|--|--|
| <input type="checkbox"/> Limited Partnership | <input type="checkbox"/> Limited Liability Corporation |
| <input type="checkbox"/> Limited Liability Partnership | <input type="checkbox"/> Subchapter S Corporation |

Stockholders or Partners owning 10% or more of the form of corporation or partnership checked above shall provide the following information:

1. NAME _____

ADDRESS _____

2. NAME _____

ADDRESS _____

3. NAME _____

ADDRESS _____

4. NAME _____

ADDRESS _____

5. NAME _____

ADDRESS _____

Signature _____

Date _____

END OF SECTION

SECTION 00480

NON-COLLUSIVE BIDDING CERTIFICATION

STATE OF _____)
) SS:
COUNTY OF _____)

I, _____ of the (City, Town, Township, Borough, etc.) of _____ in the County of _____ and the State/Commonwealth of _____, of full age, being duly sworn according to law on my oath depose and say that:

I am _____ of the firm of _____ the bidder making the Carlisle Area School District Fiber Optic Project, and that I executed the said Proposal with full authority to do so; that said Bidder had not, directly or indirectly, entered into any agreement(s), participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project; and that all statements contained in said Proposal and in this affidavit are true and correct, and made with full knowledge that the Monroe Township Municipal Authority relies upon the truth of the statements contained in said Proposal and in this affidavit in awarding the Contract for the said Project.

I further warrant that no person(s) or selling agency has been employed or retained to solicit, or secure such contract upon an agreement or understanding for a commission, percentage, brokerage or contingent, fee except bona fide employees or bona fide established commercial or selling agencies maintained by

(Name of Bidder)

(Also type or print name of affiant under signature)

Subscribed and sworn to before me this _____ day of _____ 20 _____,

Notary Public of

My commission expires:

(Date)

END OF SECTION

SECTION 00481

CONSENT OF SURETY

Attach Consent of Surety from a Surety Company, meeting the requirements, described herein, stating that if the Bidder is awarded the Contract that the surety company will supply the bonds for the Contract.

1. Must be an irrevocable, unconditional commitment by the surety to issue on behalf of the bidder the bond or bonds set forth in the Contract Documents upon award of the project in the full amounts specified.
2. Must include all bonds required by the Contract Documents i.e., performance, labor and material payment, maintenance, environmental, etc.
3. Certificate (Consent) of Surety is not waiveable and will be considered a material defect resulting in rejection of bid if omitted from bid package.
4. Must not contain any provision that would serve to limit the surety's liability to the "spread to second" Bidder in the event the Bidder fails to enter into a contract upon award.

Sample wording is as shown below:

KNOW ALL MEN BY THESE PRESENTS, that for and consideration of the sum of \$ _____, lawful money of the United States of America, the receipt whereof is hereby acknowledged, paid the undersigned, and for other valuable consideration, the _____ Insurance Company,

 (Name)

_____ (Address)
 existing under the laws of the State of Pennsylvania and licensed to do business in the State of Pennsylvania certifies and agrees, that if the Contract for (Contracting Agency) _____ for: (Project) Leidigh Pump Station Upgrades is awarded to (Bidder) _____

_____ the undersigned will execute the bond or bonds as required of the contract documents and will become Surety in the full amount set forth in the Contract Documents for the faithful performance of all obligations of the Bidder, provided however, that this commitment shall expire sixty (60) days from the bid opening, unless agreed upon by Bidder, Owner and Surety to be extended.

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

_____ INSURANCE COMPANY

 (Name)

By _____

 (Name) Attorney in Fact

(To be accompanied by the usual proof of Authority of Officers of officers of the Surety Company to execute same)

END OF SECTION

SECTION 00499

BID SECURITY

(ATTACHED HERE - CERTIFIED CHECK, CASH OR BID BOND)

END OF SECTION

SECTION 00570

AGREEMENT

THIS AGREEMENT, between the Carlisle Area School District, a School District of the Commonwealth of Pennsylvania, having its principal offices located at 623 West Penn Street Carlisle, PA 17013, Mail To: 540 W. North Street Carlisle, PA 17013, hereinafter referred to as Owner and _____, having its principal place of business located at _____ hereinafter referred to as "Contractor";

WITNESSETH;

That for and in consideration of the sum of (\$ _____) _____ items through _____, Contractor agrees to furnish to the Owner, the labor, material, equipment and services in accordance with the Contract Documents hereinafter set forth.

That for and in consideration of the amount payable under this Agreement by the Owner, the Contractor agrees, at its own proper cost and expense, and with due skill and diligence, that it will complete **"Fiber Optic Cable Install" (Project)**, in accordance with the Contract Documents and in compliance with this Agreement.

Contractor agrees to receive as full compensation the amount stated herein, namely \$ _____, for said services provided to the Owner. Contractor shall be responsible for all loss or damage arising out of the furnishing of the services aforesaid.

To prevent all disputes and litigation, it is agreed by and between the parties to the Contract that the Owner shall in all cases determine the quantity of the goods delivered and paid for under this Contract, and as to the interpretation of any ambiguity in or intent of the Contract Drawings and Specifications.

The Contract Documents shall consist of the following:

1. Notice to Bidders
2. Bidding and Contract Requirements
3. General Conditions
4. General Requirements
5. Material and Performance (Technical) Specifications
6. Contractors Bid (as accepted)
7. Contract Agreement
8. Contract Drawings
9. All Addenda

SECTION 00570

AGREEMENT

The parties to this Contract agree to incorporate into this Contract the mandatory language of the Regulations pursuant to the Commonwealth of Pennsylvania Code, Section 155.18, as amended and supplemented from time to time and the Contractor or subcontractor agrees to comply fully with the terms, provisions, and obligations of said Regulations.

This Agreement, together with the Contract Documents, form the Contract and they are as fully a part of this Contract as if hereto attached or herein repeated.

The Owner and the Contractor, for themselves, their heirs, executors, administrators, successors or assigns, hereby agree to the full performance of the covenants herein contained.

IN WITNESS WHEREOF, they have executed this Agreement.

ATTEST: _____ (Contractor)

_____ BY _____

(SEAL) Print Name & Title

Print Name & Title

Dated this ____ day of _____, 20 ____

ATTEST: _____ (Owner)

_____ BY _____
(SEAL) Print Name & Title

Dated this ____ day of _____, 20 ____

END OF SECTION

SECTION 00610
PERFORMANCE BOND

(ATTACH PERFORMANCE BOND HERE)

SECTION 00620

LABOR & MATERIALS PAYMENT BOND

(ATTACH LABOR & MATERIALS PAYMENT BOND HERE)

SECTION 00650
CERTIFICATE OF INSURANCE

(ATTACH INSURANCE CERTIFICATES HERE)

SECTION 00660

AFFIRMATIVE ACTION REQUIREMENTS

Bidder is required to comply with the requirements of the Commonwealth of Pennsylvania State Code, Section 155.18.

1. All successful Contractor(s) must submit, to the agencies named below, within three (3) days of the signing of the Contract an Initial Manning Report for any Contract award that meets or exceeds the Public Agency bidding threshold.
2. The successful Contractor(s) must submit the appropriate copies of the Initial Project Manning Report to the State Affirmative Action Office and the appropriate copy to the Public Agency.

The undersigned certifies that he/she is aware of the commitment to comply with the requirements of the Commonwealth of Pennsylvania Code, Section 155.18 and agrees to furnish the required forms of evidence.

The undersigned further understands that his/her bid must be rejected as non-responsive if the requirements the Commonwealth of Pennsylvania Code, Section 155.18 are not complied with.

Subscribed and sworn to before
me this _____ day of
_____, 20____,

Signature

Notary Public of

Name & Title
(Type or Print)

My Commission expires:

Date

END OF SECTION

GENERAL CONDITIONS

SECTION 00750

DEFINITIONS OF WORDS & TERMINOLOGY

00750.01 DEFINITIONS OF WORDS AND TERMS

Wherever the following words, or corresponding pronouns are used in this Contract, they shall have the meaning given herein:

ACT OF GOD: an earthquake, flood, excessive wind or other unusual natural occurrence. Rain, snow, wind, flood, lightning or other natural phenomenon of normal intensity for the locality shall not be included in the meaning of the term.

ADDENDUM, ADDENDA: additional Contract provisions, deletions or changes issued by the Owner prior to the receipt of bids.

APPROVED EQUAL, EQUAL: in the Contract Documents or Contract Drawings wherever brand names are specified and followed by the phrase "or approved equal", this phrase shall be modified to read "or equal".

AS SHOWN, AS SHOWN ON THE PLANS: words referring to lines, numbers, or statements, illustrations, or combinations thereof, on the Contract Drawings, unless another meaning is specifically stated.

BOND OR PERFORMANCE BOND: the guarantee signed by the Surety, that the Contractor will complete all the work as required by the Contract.

CHANGE ORDER: a written order from the Owner to the Contractor directing an alteration or modification of the nature, scope or type of the work.

CONTRACT, OR CONTRACT DOCUMENTS: each of the various documents referred to in the Agreement, both severally and as a whole, including all additions, deletions, modifications and interpretations incorporated therein or appended thereto by or with approval of the Owner prior to the execution of the Contract.

CONTRACTOR OR BIDDER: the party of the second part to this Contract, or the legal representatives or agents appointed by said party for the performance of the work.

SECTION 00750

DEFINITIONS OF WORDS & TERMINOLOGY

00750.01 DEFINITIONS OF WORDS AND TERMS - Continued

DIRECTED, ORDERED, REQUIRED, DESIGNATED, PERMITTED, GRANTED, INSTRUCTED, CONSIDERED NECESSARY, APPROVED, SATISFACTORY, ACCEPTABLE: words referring to action or satisfaction of the Engineer, unless another meaning is specifically stated. The same shall apply to words of like import.

DRAWINGS:

- a) PLANS, DRAWINGS OR CONTRACT DRAWINGS: only those drawings listed as such in the Contract Documents with all Addenda thereto.
- b) SHOP DRAWINGS, SETTING DRAWINGS, WORKING DRAWINGS, CONSTRUCTION DRAWINGS: drawings prepared, or caused to be prepared, by the Contractor, Sub-contractors, or by their equipment or material suppliers in their behalf, including standard or stock equipment drawings, necessary to the performance of the work in addition to the Contract Drawings, or as may be required by the Engineer to be submitted for review.
- c) ADDITIONAL DRAWINGS, SUPPLEMENTARY DRAWINGS: drawings, in addition to the Contract Drawings, which may be prepared and issued by the Engineer as part of the instructions to or requests of the Contractor in connection with the work of the Contract or appertaining to changes in the work.

ELEVATION: or any abbreviation of the word "elevation", followed by figures, shall refer to the distance in feet above the datum established by the Engineer for the Project.

ENGINEER: the firm of Barton & Loguidice, D.P.C., engaged by the Owner to provide Engineering services in connection with the work of this Contract, or its representatives duly authorized in writing to act therefore.

LABOR & MATERIALS PAYMENT BOND: the guarantee, signed by the Surety, that the Contractor will pay for all Labor and Material required by the Contract.

OWNER: the party of the first part to this Contract, or any duly authorized agents or officers empowered to act therefore.

PROJECT: the entire facility or improvement to which the Contract relates.

SECTION 00750

DEFINITIONS OF WORDS & TERMINOLOGY

00750.01 DEFINITIONS OF WORDS AND TERMS - Continued

SITE: the area or areas bounded by the property lines shown on the Plans, and other areas that may be similarly designated.

SPECIFICATIONS: also referred to as **DETAIL SPECIFICATIONS** or **TECHNICAL SPECIFICATIONS**. The written directions, requirements, descriptions of materials, equipment, construction systems, standards and workmanship as applied to the work and specifically including Division 1 - Division 16 of the Contract Documents.

SUBCONTRACTOR: any person, other than employee of the Contractor, or any firm or corporation who contracts to act for or in behalf of the Contractor in performing any part of the work in connection with the Contract, exclusive of one who furnishes only materials or equipment.

SUPPLEMENTAL AGREEMENT: an alteration or modification of the Contract Documents, made after execution of the Contract and agreed to in writing by the Contractor and the Owner.

SURETY: the person, persons, firm or corporation who executes the Contractor's Performance Bond and Labor & Materials Payment Bond.

WORK, OR THE WORK: all labor, equipment and materials required, either expressly or by implication, to be furnished by the Contractor under this Contract or in connection with Change Orders or Supplemental Agreements thereto to achieve a functional and useable project, or system.

WRITTEN NOTICE: all written and authoritatively signed communications required in the normal conduct of the work or required to obtain compliance with the Contract provisions or preserve the rights of any party to the Contract. Written notice shall be considered as served when either delivered in person or deposited in a post-paid wrapper in a regularly maintained U.S. Mailbox and addressed to the person, firm or corporation intended to receive such notice, or to his appropriate agent, to the last business address of such known to the server. If mailed, the period of notice shall run from the time of the postal cancellation. It shall be incumbent upon each party to the Contract, and the Engineer, to advise the other parties to the Contract, and the Engineer, of any change in his business address until completion of the Contract and the expiration of all guarantee periods connected therewith.

SECTION 00750

DEFINITIONS OF WORDS & TERMINOLOGY

00750.02 REFERENCES TO OTHER SPECIFICATIONS AND CODES

References in these Specifications to published specifications and codes of private and governmental technical societies and agencies shall mean the latest specification for the item or operation involved. The use of these other Specifications or Standards is to establish a readily accepted baseline for quality and procedures. Abbreviations of these organizations used in these Specifications may include the following:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
AGA	American Gas Association
AGCA	Associated General Contractors of America
AGMA	American Gear Manufacturers Association
AISC	American Institute of Steel Construction
AMCA	American Mechanical Contractors Association
ANSI	American National Standards Institute
APWA	American Public Works Association
ARI	American Refrigeration Institute
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigeration & Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWS	American Welding Society
AWWA	American Water Works Association
CEMA	Conveyor Equipment Manufacturers Association
CIPRA	Cast-Iron Pipe Research Association
DOT	Department of Transportation, Standard Specifications (Construction and Materials) for the State where the project is located
FM	Factory Mutual System
HEI	Heat Exchange Institute
HI	Hydraulics Institute
IBC	International Building Code
IEEE	Institute of Electrical and Electronics Engineer

SECTION 00750

DEFINITIONS OF WORDS & TERMINOLOGY

00750.02 REFERENCES TO OTHER SPECIFICATIONS AND CODES - Continued

IPCEA	Insulated Powers Cable Electric Association
NAFM	National Association of Fan Manufacturers
NBC	National Building Code
NBFPU	National Board of Fire Protection Underwriters
NBCA	National Bituminous Concrete Association
NCPI	National Clay Pipe Institute
NEC	National Electrical Code
NELA	National Electrical Lamp Association
NEMA	National Electrical Manufacturers Association
NETA	National Electrical Testing Association
NFPA	National Fire Protection Association
NSWMA	National Solid Wastes Management Association
OSHA	Occupational, Safety and Health Act
PCA	Portland Cement Association
SAE	Society of Automotive Engineers
SMACNA	Sheet Metal & Air Conditioning Contractors National Association
SSPC	Steel Structures Painting Council
UL	Underwriter Laboratories, Inc.
USEPA	United States Environmental Protection Agency
SWANA	Solid Waste Association of North American

END OF SECTION

GENERAL CONDITIONS

SECTION 00751

POWERS AND DUTIES OF ENGINEER

00751.01 RESPONSIBILITY OF THE ENGINEER

The Engineer shall decide questions which may arise as to the quality and acceptability of materials furnished, work performed, rate of progress of work, interpretation of Drawings and Specifications and all questions as to the acceptable fulfillment of the Agreement on the part of the Contractor. The duties and responsibilities of the Engineer as set forth herein shall not be extended except through written consent of the Engineer and the Owner.

- A. Observation of the Work: The Engineer will make periodic visits to the site to observe the progress and the quality of the executed work. All materials and each part or detail of the work shall be subject at all times to observation by the Engineer and the Owner, and the Contractor will be held strictly to the intent of the Contract Documents in regard to quality of materials, workmanship, and the diligent execution of the Contract. Observations may be made at the site or at the source of material supply, whether mill, plant or shop. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make his observations and construction review.
- B. Acceptability of Work: The Engineer's decision as to the acceptability or adequacy of the work shall be final and binding upon the Contractor. The Contractor agrees to abide by the Engineer's decision relative to the acceptability of the work.
- C. Engineer's Decisions: All claims of the Owner or the Contractor shall be presented to the Engineer for decision which shall be final except in cases where time and/or financial considerations are involved.
- D. The Engineer shall not be responsible for the Contractors or any Subcontractor's construction means, methods, controls, techniques, sequences, procedures or construction safety or his failure to complete the work in accordance with the Contract Documents. Any commentary to the Contractor by the Engineer regarding the previous statement shall not relieve the Contractor of any responsibilities or liabilities. Rather, such inquiries by Engineer shall be construed as Engineer performing its responsibilities to Owner to observe the work.

SECTION 00751

POWERS AND DUTIES OF ENGINEER

00751.01 RESPONSIBILITY OF THE ENGINEER - Continued

- E. Oral Agreements: No oral order, objection, claim or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents, and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or modification thereof in writing, and no evidence shall be introduced in any proceedings of any other waiver or modification.
- F. Assignment of Duties By Owner: The Owner may assign certain of its contract administrative duties to Engineer. Contractor shall cooperate with Engineer by providing data, documents, and each other requests that maybe required by Owner to fulfill the Contract.

00751.02 INSPECTION OF WORK

Inspection services, performed by the Engineer pursuant to this Contract, whether of material or work, and whether performed prior to, during or after completion of construction, are performed solely for the purpose of determining general conformity of the work with the Contract Plans and Specifications and not to imply guarantee or warranty of work.

Nothing contained herein shall create, or be deemed to create:

- A) any duty upon the Engineer to supervise the construction procedures and safety procedures followed by any Contractor or Sub-contractor or their respective employees or by any other persons at the job site, or
- B) any liability whatsoever by the Engineer to any employees or any Contractor or Sub-contractor or to any other person.

The work shall be conducted under the general observation of the Engineer through such Inspectors as the Engineer employs. Inspectors are stationed on the site of the work to represent the Engineer and to report to him concerning the observation of progress of the work and the workmanship and materials being furnished. Such Inspectors shall inform the Engineer and the Contractor when they observe that work being performed and/or the materials being furnished do not conform to the requirements of the Contract Documents. Such observation, if and when provided, shall not relieve the Contractor of any responsibility to furnish materials and perform

SECTION 00751

POWERS AND DUTIES OF ENGINEER

00751.02 INSPECTION OF WORK - Continued

work in complete accordance with the requirements of the Contract Documents, nor does such observation create any duty or obligation to any employee or invitee of Contractor, Subcontractor, or to any third party.

00751.03 NO WAIVER OF RIGHTS

No inspection or approval by the Owner, the Engineer, or any of their employees, nor any order, measurement or certification by the Engineer, nor payment for, nor acceptance of the whole or any part of the work by the Owner or the Engineer, nor any order of the Owner for payment of money, nor any possession taken by the Owner, nor any extension of time shall operate as a waiver of any provision of the Contract, or of any right to damage herein provided or of any power herein reserved. Neither shall a waiver of any breach of the Contract be construed to be a waiver of any other or subsequent breach. All remedies in the Contract shall be construed as being cumulative, in addition to each and every other remedy herein contained. The Owner shall have any and all legal and equitable remedies and recourse which he would in any case have.

END OF SECTION

GENERAL CONDITIONS

SECTION 00752

INSURANCE, SECURITIES AND GUARANTEES

00752.01 PERFORMANCE, PAYMENT AND MAINTENANCE BONDS

The Contractor shall furnish Performance and Labor and Materials Payment Bonds each in an amount not less than the full amount of the accepted bid. The Performance Bond shall guarantee faithful performance of the work in compliance with all Contract Documents. The Labor and Materials Payment Bonds shall guarantee the payment of all persons performing labor or furnishing materials in connection therewith. The Bonds shall be in a form approved by the Owner and dated the same as the executed Agreement. The Surety company or companies shall be designated by the Contractor and shall be authorized to transact business in State where the Project is located, and if this is a Federally aided project, shall appear on the U.S. Treasury Department's most current list (Circular 570 as amended). The premium for these Bonds shall be paid by the Contractor and shall be included as a part of his Bid. An Attorney-in-fact who signs Performance or Labor and Materials Payment Bonds shall file with each Bond or copy thereof a certified copy of his Power-Of-Attorney to sign such Bonds.

Cash in the form of United States currency or a certified check payable to the Owner in the full amount of the accepted Bid, deposited with the Owner, will be accepted in lieu of both Bonds. Such deposit shall serve as the Performance, and Labor and Materials Payment Bonds for all purposes specified, and the Contractor agrees that such deposit, or such portion thereof as may be required to satisfactorily complete the work, shall be forfeited to the Owner.

The Owner reserves the right to order or approve additions to, omissions from, or changes in the work without notice to the Surety.

The Contractor guarantees all the work, materials and equipment called for in the Contract against defects in materials or workmanship for a period of twenty-four (24) months following the date of the Notice of Substantial Completion. Under this guarantee, the Contractor shall make good, at his own expense and without delay, any failure of any part due to poor or faulty materials, construction or installation, or to the failure of any equipment to satisfactorily perform the work required of it by the Specifications. The Contractor shall also make good any damage to any part of the Project, the environment or other property of the Owner caused by such failure.

The Bidder whose bid is accepted shall furnish to the Owner, a performance bond and labor and material payment bond, or a combination performance and labor and material payment bond, and at the completion of the work, a two (2) year maintenance bond, each in the amount of 100% of the final contract price, with such sureties as shall be approved by the Owner and as detailed and described below.

SECTION 00752

INSURANCE, SECURITIES AND GUARANTEES

00752.01 PERFORMANCE, PAYMENT AND MAINTENANCE BONDS - Continued

All surety companies must be authorized to transact such business in Pennsylvania. The surety must designate a Pennsylvania agent on whom service of process can be made. The Contractor shall be responsible for updating the surety's expiration from the list or an agent change, to the Engineer or Owner. All surety companies must have the minimum capital and surplus or net cash assets required on the date of advertisement for the project. All surety companies must complete a Surety Disclosure Statement and Certification for all payment and performance bonds.

In addition, for these public works project bids, including any and all alternates, that equals at least \$850,000.00 but not more than \$3.5 million, the surety company must hold a current certificate of authority issued by the U.S. Secretary of the Treasury that is valid in Pennsylvania as listed annually in the U. S. Treasury Circular 570. However, if the surety company has been operational for a period in excess of five years, the surety company shall also be considered to have satisfied this requirement if it is rated in one of the three highest categories by an independent nationally recognized United States rating company that determines the financial stability of insurance companies.

In addition, for those public works project bids, including any and all alternates, is in excess of \$3.5 million, the surety company must hold a current certificate of authority issued by the United States Secretary of the Treasury that is valid in the State of Pennsylvania listed annually in U.S. Treasury Circular 570. And, if the surety company has been operational for a period in excess of five years, it must be rated in one of the three highest categories by an independent, nationally recognized United States rating company that determines the financial stability of insurance companies.

A surety company, which seeks to provide a payment and performance bond in excess of \$3.5 million, is exempt from the requirement of Treasury Circular 570 if it meets standards developed by the Commissioner of Insurance through regulations which, at least equal, and may exceed, the general criteria required for Treasury listing.

00752.02 CONTRACTORS INSURANCE

1. INSURANCE PRODUCER

Your client, as a supplier to the Owner is required to provide a certificate of insurance for the coverage and amounts indicated on the reverse side of this insurance

SECTION 00752

INSURANCE, SECURITIES AND GUARANTEES

00752.02 CONTRACTORS INSURANCE - Continued

certificate. It is important to your client that you respond quickly since continued business relationships depend upon valid insurance. Additionally, the minimum amount and type of coverage shown on our certificate is not negotiable and is not intended to imply that is all the insurance necessary to protect him/her from all losses or liability. It is the Owner's policy to require all suppliers who make deliveries or perform assembly, repair operations or a service in, on or upon our property/premises or property/premises under our care, custody and control to maintain the insurance coverage described below; such insurance must be obtained prior to the start of any such work the Owner. The Contractor shall accept and file with the Township proof of compliance with, or any exemption from, the Pennsylvania "Workers' Compensation Act." Any Contract executed in violation of this Section is void.

A. Comprehensive General Liability (CGL)

This coverage must include: Premises-Operations, Products/Completed Operations Hazard, Contractual Insurance (Blanket Coverage), Broad Form Property Damage, Independent Contractors, and Personal Injury and all others shown on "X" in the required column.

Minimum Coverage

Bodily Injury and Property Damage combined - as shown in the amount required column

AMOUNTS OF LESS THAN \$500,000 WILL NOT BE ACCEPTABLE.

Contractual Insurance (Blanket Coverage)

Contractual Indemnification - Save Harmless Agreement which is incorporated into all Vouchers, General Purchase Agreements and Contracts.)

INDEMNIFICATION

Supplier shall defend, indemnify and save harmless, the Owner from and against all losses, costs, damages, expense claims or demands arising out of or caused or alleged to have been caused in any manner by a defect in any equipment or

SECTION 00752

INSURANCE, SECURITIES AND GUARANTEES

00752.02 CONTRACTORS INSURANCE – Continued

materials supplied hereunder or by doing the work herein provided, including all suits or actions of every kind of description brought against Owner, either individually or jointly with Supplier for or on account of any damage or injury to any person or persons or property, caused or occasioned or alleged to have been caused by or on account of the performance of any work pursuant to or in connection with this contract or through any negligence or alleged negligence in guarding the work or through any act, omission or fault or alleged act, omission or fault of the Supplier, its employees or agents, or others under Supplier's control.

B. Automobile Liability – Comprehensive Form

Minimum Coverage – As shown on Certificate of Insurance form provided herein.

Bodily Injury and Property Damage combined - as shown on Certificate of Insurance form provided herein.

C. Worker's Compensation – As required by Pennsylvania State Statute Employer's Liability (minimum \$100,000)

D. Excess Liability
Commercial Umbrella Form – \$1,000,000.

E. Other Coverage(s)
As shown on reverse side.

Important - Producer:

PLEASE CHECK THE AFFORDED BLOCK FOR EACH COVERAGE PROVIDED.

THE CERTIFICATE MUST BE SIGNED BY THE AGENT OF THE INSURER OR CERTIFICATE WILL BE RETURNED.

IT IS NECESSARY TO SUBMIT YOUR CLIENT'S COVERAGE THIRTY (30) DAYS PRIOR TO THE EXPIRATION OF THE EXISTING COVERAGE ON OUR CERTIFICATE ONLY; ALL OTHERS WILL BE RETURNED TO THE SUPPLIER AND SERVE TO DELAY FUTURE BUSINESS DEALINGS BETWEEN THE OWNER AND YOUR CLIENT.

CERTIFICATE OF INSURANCE

Name & Address of Insured

Afforded <small>Enter X (X)</small> Required	Type of Insurance	Policy Number & Insuring Company(ies)	Policy Expiration Date	Limits of Liability in Thousands (000)		
				Amounts of Less Than \$1,000,000 Will Not Be Acceptable	Amount <u>Required</u> Each Occurrence	Amount <u>Provided</u> Each Occurrence
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> General Liability <input checked="" type="checkbox"/> Comprehensive Gen. Form <input checked="" type="checkbox"/> Premises-Operations <input checked="" type="checkbox"/> Explosion & Collapse Hazard <input checked="" type="checkbox"/> Underground Hazard <input checked="" type="checkbox"/> Products/Completed <input checked="" type="checkbox"/> Operations Hazard <input checked="" type="checkbox"/> Contractual Ins. (Blanket) <input checked="" type="checkbox"/> Broad Form Prop. Damage <input checked="" type="checkbox"/> Independent Contractors <input checked="" type="checkbox"/> Personal Injury			Bodily Injury	\$1,000	\$
				Property Damage	\$1,000	\$
				Bodily Injury and Property Damage Combined	\$1,000	\$
				Personal Injury	\$	\$
				Bodily Injury (Each Person)	\$	\$
				Bodily Injury (Each Accident)	\$	\$
				Property Damage	\$	\$
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> Automobile Liability <input checked="" type="checkbox"/> Comprehensive Form <input checked="" type="checkbox"/> Owned <input checked="" type="checkbox"/> Non-Owned <input type="checkbox"/> Garagekeepers Insurance (Without regard to legal liability as direct coverage on a primary basis) <input type="checkbox"/> Excess Liability <input checked="" type="checkbox"/> Umbrella Form <input type="checkbox"/> Other Than Umbrella Form			Bodily Injury and Property Damage Combined	\$1,000	\$1,000
				Bodily Injury and Property Damage Combined	\$1,000	\$
				Worker's Compensation and Employers' Liability	*All States Endorsement	
				Minimum \$100,000	\$100,000	\$

Remarks: Additional Insured:

It is understood and agreed that in the event of any material change in, cancellation of, or expiration of the above policy or policies the undersigned Insurance Company agrees to give a written notice to the Owner, at the above address thirty (30) days in advance of such change or cancellation.

This certificate is executed and issued to the Owner on the day and date herein below written certifying that the Insured has been issued the above policy or policies with Limits of Liability of at least the required amounts.

*** PLEASE PUT "X'S" IN AFFORDED COLUMN OR CERTIFICATE WILL BE RETURNED ***

Name of Agency

Signature of Authorized Representative of Insurance Company

Street Address

Address

Date

City, State & Zip Code

Agency Telephone No.

END OF SECTION

GENERAL CONDITIONS

SECTION 00753

STATUS OF CONTRACTOR

00753.01 REPRESENTATIONS OF CONTRACTOR

The Contractor warrants and represents that:

- A. He is familiar with all Federal, State, County and Municipal laws, ordinances, regulations and codes pertinent to the work and those employed in connection therewith, including any special acts relating to the work or the Project.
- B. He has carefully examined all the Contract Documents and the site and has, thereby satisfied himself as to: the location and nature of the work; the quantity, quality and nature of both surface and subsurface structures and materials apt to be encountered; the quantity, quality and types of plant, equipment and other facilities necessary for the performance of the work; the general and local conditions; and all other matters which may in any way affect the work or his performance under the Contract.
- C. Such work, both temporary and permanent, required under the Contract can be satisfactorily constructed and used for its intended purpose, without injury to any person or damage to any property.
- D. He is financially solvent and experienced in and competent to perform the work of the Contract.
- E. The corporation may do business in the State where the project is located only after obtaining a certificate of authority from the Secretary of State.
- F. If a corporation, he is aware of the legal provisions and limitations of the practice of professional engineering, or the use of the word "engineer" or "engineering" in a corporate name.

00753.02 ADDRESS OF CONTRACTOR

Both the address given in the bid and the Contractor's office at or near the site, if such is established, are designated as places to either of which letter, notices, or other communications to the Contractor may be mailed or delivered. The delivery at either place, or the depositing, in a post-paid wrapper addressed to either place, in any regularly maintained U.S. Post Office Box, of

SECTION 00753

STATUS OF CONTRACTOR

00753.02 ADDRESS OF CONTRACTOR - Continued

any letter, notice, or other communication shall be deemed sufficient service thereof upon the Contract. If at any time during the life of the Contract, it is necessary to change either address, the Contractor shall give written notice to the Owner, the Surety and the Engineer.

Nothing herein shall act to prevent or invalidate the personal delivery in hand of any letter, notice or other communication to the Contractor.

00753.03 PATENTS

The Contractor shall pay, as part of this Contract, all costs and fees required to obtain the legal right to use patented equipment, designs, or procedures to be used, as part of the work on this Contract.

The Contractor shall defend, indemnify, keep and save harmless the Owner from all costs, damages, liabilities, judgments and expenses, including reasonable attorney fees which may in any way arise against the Owner because of the use of any patented material, equipment or process furnished or used in the performance of the work or because of the use of patented designs supplied by the Contractor and accepted by the Owner.

If any claim, suit or action at law or inequity of any kind involving any such patent is brought against the Owner, the Owner may retain from any moneys due or to become due to the Contractor an amount considered sufficient by the Owner to protect itself against loss until such action is settled and satisfactory evidence to that effect has been supplied to the Owner.

00753.04 CONTRACTOR'S OBLIGATIONS

The Contractor shall furnish all the plant, machinery, labor, equipment, material, tools, appliances, shoring, bracing and scaffolding necessary to the proper and safe completion of the work in the manner specified, shown and directed within the time specified. He shall suitably cover the work whenever necessary, and otherwise protect it from damage from any cause whatsoever.

If in the opinion of the Engineer the Contractor's procedures or appliances appear at any time, either before or during progress of the work, to be inadequate or insufficient to provide the quality of the work, or the rate of progress specified, he may order the Contractor to improve their character and increase their sufficiency, and the Contractor shall comply therewith.

SECTION 00753

STATUS OF CONTRACTOR

00753.04 CONTRACTOR'S OBLIGATIONS - Continued

However, failure of the Engineer to issue such an order shall not relieve the Contractor of his obligations to secure the safety, quality or progress of the work, and the Contractor alone shall be responsible for the safety, adequacy and efficiency of his methods, plant and appliances.

00753.05 LIABILITY FOR INJURIES OR DAMAGE

The Contractor shall be solely responsible and liable for the safety and protection of all persons, including but not limited to the Owner, Engineer, Contractor and Subcontractor and their employees, suppliers and visitors, and shall be solely responsible and liable for the safety and protection of property, including but not limited to the site and its appurtenances and equipment, and he shall be solely responsible for all physical injuries, including death, to any such persons and for all damage to any such property and its appurtenances, which occurs on account of the work, or because of any negligence, fault or default of the Contractor, a Subcontractor or any of their officers, employees or agents.

The Contractor shall have on the project site at all times, while work is in progress, at least one person skilled in safety and health procedures and familiar with State and Federal safety and health regulations whose responsibility shall be to observe methods and procedures. He shall have the duty and authority to stop and/or correct all unsafe and unhealthy conditions.

00753.06 GENERAL INDEMNIFICATION

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Engineer, Engineer's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Contractor's Work under this Contract, provided that any 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, the Contractor's Subcontractors, 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. Such obligation shall not be construed to negate, abridge, or otherwise reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Paragraph.

SECTION 00753

STATUS OF CONTRACTOR

00753.07 CONTRACTOR'S CLAIM FOR DISPUTED WORK

If the Contractor believes he or his Subcontractor or anyone directly or indirectly employed by any of them has sustained damage for disputed work, for which he claims he should be compensated, he shall give written notice to the Engineer, describing the nature and circumstances of the disputed work, within seven days after sustaining such damage. The Contractor shall also file with the Engineer, within 30 days of the date on which the alleged damage occurred, an itemized statement of the character and amounts of such damage. Unless both statements shall be filed as so required, the claim for compensation shall be considered invalid and the Contractor shall not be entitled to any payment thereof.

The Contractor shall proceed diligently with performance of the disputed work pending final resolution of his claim for damages.

During the progress of such disputed work, the Contractor shall provide to the Engineer daily records and make reports of all labor, material and equipment used in connection with such work and the cost thereof as specified in SECTION 00757.03.

If the Owner determines that the work in question is Contract work and not a Changed condition, he shall direct the Contractor to continue the disputed work, and the Contractor must promptly comply.

If the Owner determines that the work in question is not Contract work and is a Changed condition, he shall direct the Contractor to continue the work and shall have prepared a Change Order in accordance with SECTION 00757.03.

00753.08 NO CLAIMS AGAINST INDIVIDUALS

No claim shall be made by the Contractor or his Subcontractor or anyone directly or indirectly employed by any of them against any officer, employee or agent of the Owner and the Engineer for, or because of, anything done or failure to be done in connection with the work.

00753.09 CONTRACTOR'S TITLE TO MATERIALS

Neither the Contractor nor any Subcontractor shall purchase any materials, equipment or supplies for work subject to any chattel mortgage or under a conditional sale agreement or other agreement by which an interest is retained by the seller. The Contractor shall obtain and maintain good and clear title to all materials and supplies used by him in the work until attachment to or incorporation in the work.

SECTION 00753

STATUS OF CONTRACTOR

00753.09 CONTRACTOR'S TITLE TO MATERIALS - Continued

Nothing in the Contract shall be construed as vesting in the Contractor any property right in materials or equipment specified after they shall have been attached to or incorporated in the work or the ground, nor in materials and equipment for which partial payments have been made. All such materials and equipment shall become the property of the Owner upon such attachment or incorporation.

00753.10 TITLE TO OLD MATERIALS

All materials removed from existing structures or construction, and all materials or articles of intrinsic or historic value found in excavations or on the site shall be brought to the attention of the Engineer, and if he shall so order, shall become or remain the property of the Owner, and shall be carefully preserved for future use. If not claimed by the Owner, such materials or articles shall be removed from the site and disposed of by the Contractor at his own expense.

END OF SECTION

GENERAL CONDITIONS

SECTION 00754

CONTRACTOR'S ORGANIZATION & STAFF

00754.01 SUPERINTENDENTS, FOREMEN & AGENTS

The Contractor shall at all times, except during periods of shut-down or work suspension that have been approved or directed, have a competent superintendent, foreman or other representative on the Site, who shall see that the work is performed in accordance with the Contract Documents and directions of the Engineer given thereunder, and who shall have authority to act for the Contractor and to receive and carry out orders from the Engineer, and who shall receive materials and equipment shipped to the Contractor. The Contractor shall be responsible for the acts of his superintendents, foremen, agents and employees during the life of the Contract.

00754.02 COMPETENCY & CHARACTER OF EMPLOYEES

The Contractor shall employ only competent and skillful persons to perform the work. This provision shall apply equally to common laborers and skilled craftsmen or tradesmen.

Whenever the Engineer informs the Contractor that any person on the work is, in the Engineer's opinion, incompetent, intemperate, unfaithful, insufficiently skillful, or disorderly, or refuses to carry out the provisions of the Contract, or to stop doing unsatisfactory work when so ordered, or who uses threatening or abusive language to, or engages in offensive, hostile, or harassing conduct toward the Owner, Engineer, or any authorized representative(s) thereof, such person shall be discharged from the work by the Contractor and shall not again be employed without written consent of the Engineer.

00754.03 CONTRACTOR'S FIELD OFFICE

Unless waived by provisions within Additional Instructions, the Contractor shall provide, furnish and maintain for his own use a field office, with telephone, on the Site during the entire period of construction. The Contractor shall obtain approval of the Engineer of the type, size and location of such office, shanties or other temporary structures on the Site, prior to their erection.

The Contractor will receive no direct payment for providing, maintaining or removing the Contractor's Field Office specified above, and compensation for same shall be included, as part of his overhead, in the prices to be paid for the various items in this Contract.

END OF SECTION

GENERAL CONDITIONS

SECTION 00755

PERMITS, TAXES, ACCESS, OTHER CONTRACTS

00755.01 LAWS, REGULATIONS & PERMITS

The Owner has procured certain permits for the project that are listed in Additional Instructions. This shall not relieve the Contractor from procuring at his own expense any necessary permits from the Federal, State, County, Town, municipal or other public agencies that may be involved in the work or the Project or have jurisdiction thereover, and shall serve all notices required by law or ordinance and pay all fees and charges incidental thereto. He shall at all times keep himself fully informed of all laws, ordinances and regulations which in any way affect the work, the materials, methods and equipment used in the work, the conduct of the work, and persons engaged or employed on the work, and of all orders, instructions and decrees of bodies, agencies or tribunals having any authority or jurisdiction over the work or the Project.

If the Contractor should discover any discrepancy or inconsistency in any Contract Documents relating to any permit, law, ordinance, regulation, code, order, decree or instruction, he shall immediately report the same in writing to the Engineer.

The Contractor shall at all times observe and comply with all such existing and all laws which come into existence during the execution of the Contract, as well as permits, codes, decrees, ordinances, regulations, orders and instructions, and shall cause his superintendents, foremen, employees and agents to do likewise.

The bidder's attention is directed to the fact that all applicable Federal, State, County and municipal laws ordinances, regulations, etc. and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though therein written out in full including, but not limited to the Department of Transportation Specifications Pub 408, latest revision Section 100—General Provisions and the Federal Construction Safety Act (Public Law 91-54), Federal Register, Chapter VXII, Part 1926 of Title 29 Code of Federal Regulations, Occupational Safety and Health Regulations for Construction, and subsequent publications updating these regulations.

00755.02 REQUIRED LEGAL PROVISIONS DEEMED INCLUDED

All clauses and provisions of law required by law to be included in the Contract shall be deemed to be included herein, and the Contract shall be interpreted, administered and enforced as though they were included. If, through oversight or otherwise, any such clause or provision is

SECTION 00755

PERMITS, TAXES, ACCESS, OTHER CONTRACTS

00755.02 REQUIRED LEGAL PROVISIONS DEEMED INCLUDED - Continued

not included, or is not correctly included, the Contract shall immediately be physically amended or corrected, at the request of either party, to provide the necessary compliance.

The inclusion in the Contract Documents of any portion of any law or ordinance or code, regulation, decree, order, permit, instruction or interpretation emanating from a public body or agency, shall not be construed to mean that all such laws or legal requirements deemed necessary, in effect, or applicable to all or any portion of the work or the Contract have been included.

00755.03 UNLAWFUL REQUIREMENTS DEEMED EXCLUDED

If the Contract Documents contain any unlawful provision not an essential part of the Contract and which shall not appear to have been a controlling or material inducement to the making of the Contract by the parties thereto, such provision shall be construed to be of no effect and shall, upon written notice by either party, be deemed stricken from the Contract without affecting the binding force of the remainder on both parties.

00755.04 TAXES

The Contractor shall pay all sales, use, excise, transportation and other taxes and fees for which he is liable under the Contract. The cost of such taxes and fees shall be included in the price, or total of several prices, given in the Bid on which the Agreement is based, and no separate payment will be made therefor.

00755.05 ACCESS TO WORK AND CONTRACTOR'S RECORDS

The Owner and the Engineer, and their employees, agents and representatives, shall have access to the work, the Site, and the premises used by the Contractor, and the Contractor shall provide and maintain safe and suitable facilities therefor. Subcontractors, and any other parties who may contract with the Owner to do work on the Site shall, for all purposes which may be required by their contracts, have the same privileges and facilities.

Whenever requested, the Contractor shall give the Engineer access to invoices, bills of lading, trip tickets, lists of employees, survey notes and other such data connected with the work.

END OF SECTION

GENERAL CONDITIONS

SECTION 00756

TIME ELEMENTS

00756.01 COMMENCEMENT & COMPLETION

The Contractor shall begin performance of the work within the time specified in the Information for Bidders, and shall substantially complete the work within the time specified in the Information for Bidders.

00756.02 TIME OF ESSENCE

Since the provisions of this Contract relating to the commencement and completion of the work are to enable the Owner to construct and place in use an improvement or facility in accordance with a pre-determined program, such provisions are of the essence of this Contract. It is agreed that the Owner will suffer damages if the work is not completed in the time specified.

00756.03 PROGRESS

The rate of progress shall be as uniform as practicable and such that all the work will be completed within the time specified, or within any time extensions that may be granted by the Owner.

The Engineer will notify the Contractor in writing if, at any time, he is of the opinion the work is unnecessarily delayed and will not be completed on time. The Contractor shall, within 10 days after receipt of such notice, take such action as will, in the opinion of the Engineer, improve the rate of progress to an extent that will insure completion of the work within the time specified. If the Contractor shall fail or refuse to take such steps within 10 days, the Owner may notify the Contractor to stop work or terminate the Contract in accordance with the provisions of SECTION 00760.01, OWNER'S RIGHT TO STOP WORK OR TERMINATE CONTRACT.

00756.04 APPROVED WORK SCHEDULES

Unless waived by provision in the Information for Bidders, within three weeks after award of the Contract, the Contractor shall submit to the Engineer for approval three copies of his proposed work schedule. The schedule shall show the Contractor's proposed relative order and sequence of commencement and completion of all salient portions of the work, including the delivery and installation of equipment, and shall give the estimated dates of commencement and completion of the various portions of the work.

SECTION 00756

TIME ELEMENTS

00756.04 APPROVED WORK SCHEDULES - Continued

If more than one Contract is to be awarded on the same phase of the project, the General Contractor shall provide the Engineer with additional copies of his work schedule after the schedule shall have been approved. The Engineer will transmit these to the other Contractors for reference in the preparation of their proposed work schedules and submittal of same for approval. In such case each Contractor other than the General Contractor shall submit his proposed schedule for approval within three weeks after receipt of a copy of the General Contractor's approved schedule.

Each Contractor shall adhere to the approved schedule for his Contract. If a Contractor causes one or more other Contractors to be damaged by failing to adhere to his schedule, he shall save harmless the Owner and the Engineer from any and all actions and charges of the other Contractors against the Owner or the Engineer as the result of such failure.

If the Contractor is behind schedule any month, the Contractor shall indicate what measures it will take in the next thirty (30) days to put the work back on schedule. If the Engineer finds the revised schedule not acceptable, they may require the Contractor to submit a new revised schedule.

If the Contractor fails to submit a work schedule within the time period described or any revision or update when required, the Owner may withhold payment pursuant to SECTION 00759.07 of the Contract until such time as the Contractor submits the required work schedule.

See also SECTION 01012.01, COLLATERAL WORK.

00756.05 WORK SUSPENSION

When, in the opinion of the Engineer, good cause of suspension of the work exists, the Contractor shall suspend the work or any portion thereof, upon written order of the Engineer, for such period of time as the Engineer may direct. If the reason for suspension is beyond the control of the Contractor, the time within which the work is required to be completed shall be extended by the number of calendar days the work is suspended.

SECTION 00756

TIME ELEMENTS

00756.06 TIME EXTENSIONS

Should the work be obstructed or delayed through the neglect, delay or default of any other Contractor on the Project, or by an Act of God, or by a general strike, or by delays caused by governmental authorities having jurisdiction over the work, or by delay on the part of the Owner in performing any work or furnishing any material or equipment stated in the Contract to be furnished by the Owner, or by any Supplementary Agreement or Change Order issued by the Owner, the Contractor shall have no claim for damages against the Owner or the Engineer, other than the price or prices agreed upon under Supplemental Agreement, or Change Order, but shall be entitled to such an extension of time for completion of the work as the Engineer certifies is equitable because of such obstruction, delay, Supplemental Agreement, or Change Order, provided that claim for a time extension is made by the Contractor, in writing within seven days from the end of the time when the alleged cause therefore shall have occurred. Time necessary for Shop Drawing review, for changes to meet actual conditions, and delays incurred by seasonal and weather limitations for the locality should be normally anticipated and are neither compensatory nor eligible for extensions of time. See also SECTION 01012.01, COLLATERAL WORK, and SECTION 00757.03, CHANGE ORDERS AND PAYMENT OR CREDIT THEREFOR.

00756.07 ENGINEERING AND INSPECTION CHARGES

When the work embraced in the Contract is not substantially completed on or before the date specified therein, or within any time extensions granted by the Owner, engineering and inspection expenses incurred by the Owner in connection with the work from the specified or extended date of substantial completion until the date of actual Substantial Completion shall be charged to the Contractor. The date of actual substantial completion shall be determined as the date of issuance of the Notice of Substantial Completion.

Supplementary Agreements or Change Orders added to the original Contract, as well as extenuating circumstances beyond the control of the Contractor, will be given due consideration by the Owner prior to assessing engineering and inspection charges against the Contractor.

In addition, should the Contractor apply for and receive dispensation to work more than eight hours per day or forty hours per week by the appropriate legal authority, the Contractor will be charged the associated overtime premium rate for the Engineer's on-site inspection representative(s).

SECTION 00756

TIME ELEMENTS

00756.07 ENGINEERING AND INSPECTION CHARGES - Continued

Should the remaining minor punch list items not be completed within sixty (60) days of the Notice of Substantial Completion or within any time extensions granted by the Owner, the Contractor shall pay the Owner for any engineering and inspection expenses incurred by the Owner from the specified or extended date of minor punch list completion until when such punch list items are fully complete.

These additional engineering and inspection charges shall be in the form of agreed-upon damages to the Owner and shall be deducted from moneys due or to become due to the Contractor. For this project, the charges are stipulated to be \$750/day.

00756.08 PER DIEM CHARGES FOR DELAY

For each calendar day or fraction thereof that any work except minor punch list items as listed on the Notice of Substantial Completion shall remain uncompleted after the Contract time specified for the substantial completion of the work in the Information For Bidders or extensions thereof granted by the Owner, the Contractor shall pay the Owner agreed-upon damages of \$1,000 per calendar day based upon the adjusted date of Substantial Completion.

The date of actual Substantial Completion shall be determined as the date of issuance of the Notice of Substantial Completion.

Such sums shall be in addition to engineering and inspection charges as provided for in SECTION 00756.07 and shall not be in the nature of a penalty, but agreed-upon damages to the Owner in such case and shall be a part of the consideration of the Contract.

The sums and charges specified above shall be deducted from moneys due or to become due to the Contractor and the amount still owing, if any, shall be paid on demand by the Contractor or the Surety. Such payments shall not relieve the Contractor or the Surety from any other obligation under the Contract.

Before assessing engineering and inspection charges, or per diem charges for damages, the Owner will give due consideration to any and all Supplementary Agreements and Change Orders as well as extenuating circumstances beyond control of the Contractor including any delays due to any preference, priority or allocation order duly issued by the Government. Such

SECTION 00756

TIME ELEMENTS

00756.08 PER DIEM CHARGES FOR DELAY - Continued

charges will be assessed, however, in cases in which the Owner considers the Contractor liable as the result of slow work, inefficient operation, insufficient labor, equipment or material, the removal and replacement of poor work, or other unwarranted reasons.

END OF SECTION

GENERAL CONDITIONS

SECTION 00757

CHANGES IN THE WORK

00757.01 RIGHT TO ALTER CONTRACT

The Owner may at any time alter or modify the Contract Documents, and the Contractor shall conform to such alterations or modifications after the Owner and the Contractor shall have entered into a Supplementary Agreement in writing. The Contractor shall perform no work and furnish no material in connection with the alterations or modifications, nor shall he receive any additional payment, unless and until such a Supplementary Agreement has been executed, as required by law. The Owner and the Contractor agree that alterations and modifications thus made shall in no way compromise the validity or coverage of the original Contract or Bond, or the liability of the signers. All work performed under any such Supplementary Agreement shall be subject to all the provisions of the original Contract not expressly altered or modified.

00757.02 MINOR CHANGES

When ordered by the Engineer, the Contractor shall make minor changes in the location of the work, installation of equipment, and other things called for in the Contract, at no change in Contract value. Such minor changes shall be limited to matters that do not alter the character, quantity or cost of the work as a whole. The Engineer shall be the sole judge of what constitutes a minor change.

00757.03 CHANGE ORDERS & PAYMENT OR CREDIT

The Owner, without invalidating the Contract, may make changes by altering, adding to or deducting from the work the contract sum being adjusted accordingly. All such work shall be executed in conformity with the terms and conditions of the original Contract, unless otherwise provided in the order for same. Any claim for extension of time caused thereby shall be adjusted at the time of ordering such change.

No instructions, either written or verbal, shall be construed as an order for changes unless it be in the form of a Change Order, bearing the signed approval of the Owner and the signed acceptance of the Contractor, except in the case of disagreement as to value of changes, when the Contractor's signature to the order will not be mandatory. Change Order shall describe or

SECTION 00757

CHANGES IN THE WORK

00757.03 CHANGE ORDERS & PAYMENT OR CREDIT - Continued

enumerate the work to be performed and state the price, if any, to be added to or deducted from the Contract sum. If the nature of the work is such that a Change Order, as above, cannot be issued until the work has been advanced sufficiently to obtain exact quantities, said work will be authorized in writing by the Owner, with the accompanying statement that a Change Order will be issued when the necessary information is at hand.

Except as provided in the above paragraph, no change shall be made, unless in pursuance of a Change Order, and no claim for an addition to the Contract sum shall be valid unless so ordered. If the Contractor believes that any instructions, by drawing or otherwise, involves extra cost under his Contract, he shall give the Owner and the Engineer written notice and then proceed as indicated in SECTION 00753.07, Contractor's Claim for Disputed Work.

The value of any Change Order shall be determined by one or more of the following methods and in the following order:

- A. By prices specifically named in the specifications or proposals.
- B. By acceptance of agreed unit prices based on estimated cost plus overhead and profit as applicable.
- C. By estimate of the actual cost of labor and materials plus overhead and profit, cost to be determined as the work progresses.
- D. By actual cost of labor and materials plus overhead and profit, cost to be determined as the work progresses.
- E. By estimate of the value as deducible from the approved detailed estimate.

Overhead shall be defined as an allowance to compensate for all costs, charges and expenses, direct or indirect, except for the actual cost of labor and material as defined by the following paragraph. Overhead shall be considered to include, but not be limited to insurance (other than as mentioned in the following paragraph) bond or bonds, field and office supervisors and assistants above the level of foreman, use of small tools and minor equipment, incidental job burdens, general office expense, etc.

SECTION 00757

CHANGES IN THE WORK

00757.03 CHANGE ORDERS & PAYMENT OR CREDIT - Continued

Actual cost of labor and material shall be defined as the amount paid for the following items, to the extent determined reasonable and necessary.

1. Cost of materials delivered to the job site for incorporation into the Contract work.
2. Wage paid to workmen and foremen and wage supplements paid to labor organizations in accordance with current labor agreements.
3. Premiums or taxes paid by the Contractor for Worker's Compensation Insurance, unemployment insurance, FICA tax and other payroll taxes as required by law, net of actual and anticipated refunds and rebates.
4. Sales tax paid as required by law.
5. Allowance for use of construction equipment (exclusive of hand tools and minor equipment), as approved for use by the Engineer. The rate on equipment shall be determined by published monthly rates for rental equipment, prorated for an appropriate time period of use on the project.
6. When the material furnished under item (1) is used material, its value shall be prorated to the value of new material, but should be no more than its cost. When, in the opinion of the Engineer, the salvage value of salvageable material furnished under item (1) exceeds the cost of salvage, a suitable credit shall be given to the Owner.

Regardless of the method used to determine the value of any change, the Contractor will be required to submit evidence satisfactory to the Engineer to substantiate each and every item that constitutes his proposal of the value of the change. The amounts allowed for overhead and profit shall not exceed the applicable percentages as established in the two following paragraphs.

If the work is done directly by the Contractor, overhead in an amount of 10% may be added if method B, C or D is used, and to the cost of the labor and materials plus overhead there may be added 10% for profit. The percentages for overhead and profit may vary according to the nature, extent and complexity of the work involved, but in no case shall exceed the percentages set forth in this paragraph and in the following paragraph. No percentages for overhead and profit will be allowed on payroll taxes or on the premium portion of overtime pay.

SECTION 00757

CHANGES IN THE WORK

00757.03 CHANGE ORDERS & PAYMENT OR CREDIT - Continued

If the work is done by a Sub-contractor, Sub-contractor's overhead in the amount of 5% may be added to cost of labor and materials if method B, C or D is used and to the cost of labor and materials plus overhead there may be added 10% for the Sub-contractor's profit. To this amount there may be added 10% for the Contractor's combined overhead and profit. No percentage for overhead and profit will be allowed on payroll taxes or on the premium portion of overtime pay. However, to the extent that the aggregate dollar value of changes under a contract exceeds \$75,000, the 10% overhead applied to total costs of labor and materials incurred by the prime Contractor shall be reduced to 5%, and the combined overhead and profit of 10% applied to sub-contract billings shall be reduced to 5%. In addition, on all individual Change Orders in excess of \$75,000, the overhead shall be no more than 5% of the total actual cost of labor and materials incurred by the prime Contractor, and the combined prime Contractor's overhead and profit allowance applied to Sub-contract billings shall be no more than 5%.

The Owner shall determine by which of the foregoing methods the value of any changes shall be computed.

00757.04 CORRECTION OF WORK

Any materials, plant or equipment delivered to the Site for use in the work which may be disapproved by the Engineer as unsuitable or not in keeping with the Specifications shall be immediately removed by the Contractor from the Site.

If any portion of the work is damaged in any way, or if defects or faults develop before the Inspection at Substantial Completion and issuance of a Certificate of Substantial Completion, or before the expiration of the 24-month guarantee period, the Contractor shall repair, replace or otherwise make good the damage or defects to the satisfaction of the Engineer, regardless of whether the work may have previously passed the specified inspections and tests. No additional payment will be made for such remedial work.

Failure on the part of the Engineer to condemn defective work shall not imply acceptance of the work, nor act to release the Contractor from his obligations to repair, replace or otherwise make good the work at his own expense, notwithstanding that such work may have been estimated for payment or that partial or full payments may have been made thereof.

SECTION 00757

CHANGES IN THE WORK

00757.05 EMERGENCY POWERS UNIMPAIRED

The provisions of this Section 00757 shall not detract from the authority of the Contractor or the Engineer to act in case of emergency, as provided elsewhere in the Contract Documents.

END OF SECTION

GENERAL CONDITIONS

SECTION 00758

ASSIGNMENT & SUBCONTRACTS

00758.01 SUBCONTRACTS

Should the Contractor desire to subcontract any portion of the work, he shall first submit to the Engineer a statement outlining the nature and amount of the work proposed to be subcontracted and the name of the person, firm or corporation he proposes as Subcontractor. If requested by the Engineer, the Contractor shall also provide a statement as to the proposed Subcontractor's experience, financial ability, insurance certificates, or other qualifications for the nature and scope of the work proposed to be undertaken.

The Owner reserves the right to approve any Subcontractors, and no Subcontractor shall enter upon the Site nor perform any work, either on or off the Site, until such approval of the Subcontractor has been granted by the Owner.

Subcontracts shall in no way, directly or indirectly, release, compromise or modify the responsibility of the Contractor or the Surety for the satisfactory and full completion of the work. The Owner shall not be liable to any Subcontractor for any lien on structures to be constructed as part of the work or claim on moneys due the Contractor or any other lien, claim or damages whatsoever. The approval by the Owner, if so given, of a Subcontractor shall in no way create a contractual obligation between the Owner and the Subcontractor.

In the event a Subcontractor shall fail in any way to abide by all conditions of the Contract, the Contractor shall, upon written order of the Owner, require the Subcontractor to discontinue work under the Contract.

The Contractor shall be responsible for the coordination of all of his Subcontractors engaged upon the work, both in connection with his own work and the work of other contractors, if any, working collaterally on the Project.

The divisions or sections of the various Contract Documents and Bid Items are not intended to define portions of the work to be divided among Subcontractors, nor to influence the Contractor to award Subcontracts, nor to limit or enlarge the work performed by any trade, unless a Subcontractor experienced in providing a certain specialized type of work is specifically required in the Contract.

SECTION 00758

ASSIGNMENT & SUBCONTRACTS

00758.02 LIMIT OF SUBCONTRACTS VALUE

The Owner reserves the right to limit the total value of all Subcontracts to forty-nine (49) percent of the total Contract price.

00758.03 ASSIGNMENT

The Contractor shall not assign, convey, transfer, sublet or otherwise dispose of this Contract, or of his right, title or interest therein, or his power to execute such Contract, to any other person or corporation without the prior written consent of the Owner.

If the Contractor shall, without such consent of the Owner, assign, convey, transfer, sublet or otherwise dispose of this Contract to any other person or corporation, the Owner may revoke and annul the Contract, in which instance the Owner shall be relieved and discharged from any and all liability and obligations to the Contractor arising from the Contract, and to the persons or corporation to which the Contract shall have been assigned, conveyed, transferred, sublet or otherwise disposed of, and the Contractor and his assignees, conveyees, transferees or sublessees shall forfeit and lose all moneys theretofore earned under such Contract, except so much as they may be required to pay his employees.

Nothing herein shall prevent an assignment by the Contractor for the benefit of his creditors made pursuant to the laws of the State where the project is located.

00758.04 PAYMENT

Payment to Subcontractors and/or material men shall be in accordance with SECTION 00759.16 of this project manual.

00758.05 INSURANCE

Subcontractor shall maintain insurances required in SECTION 00752 as if Owner had contracted directly with Subcontractor.

00758.06 HEALTH & SAFETY

Subcontractor shall employ a Health & Safety Plan (HASP) equal, or better than the HASP by the Contractor.

END OF SECTION

GENERAL CONDITIONS

SECTION 00759

PAYMENTS

00759.01 ESTIMATED QUANTITIES

The Contractor agrees that the estimated quantities given in the Bid are only for the purpose of comparing bids and that he is satisfied with and will at no time dispute the said estimates as a means of comparing the aforesaid bids, that he will make no claim for loss of profits or anticipated profits because of any difference between the said estimated quantities and the quantities of the various classes of work actually furnished or performed, that the Owner shall not be held responsible if any of the said estimated quantities should be found to not even approximate those actually measured during performance of the work, and that the Engineer may direct an increase, decrease or omission of the quantities of any class or part of the work as may be deemed necessary or desirable.

00759.02 PRICES ALL-INCLUSIVE

The price or prices herein agreed to shall be for the work complete, and shall include the furnishings of all labor, tools, plant, equipment and materials therefor, whether required directly or indirectly, unless otherwise specified.

00759.03 LUMP SUM PRICES

A lump sum price stated in the Bid for an item shall be for the work complete as shown on the Plans and described in the Specifications for the corresponding item and shall include the cost of all labor, tools, plant, equipment and materials, specified or implied, incidental to the work of the item complete and ready for the service intended.

Within three weeks after execution of the Contract, the Contractor shall submit to the Engineer for approval three copies of a detailed schedule showing the breakdown of all lump sum bid prices in the Contract. The schedule shall indicate the quantities and amount estimated for each part of the work. The schedule shall be apportioned by the Contractor for labor and for materials, if so requested by the Engineer. The Contractor shall revise the schedule until it is satisfactory to the Engineer. The approved breakdown will be used in the preparation of monthly estimates and payments to the Contractor.

SECTION 00759

PAYMENTS

00759.04 UNIT PRICES

A unit price stated in the Bid for an item of the work specified to be measured for payment by units of volume, weight, area, length or number shall be paid for each unit of the net amount of the work of the item actually performed or furnished and incorporated in the finished work in accordance with the Specifications, Plans and as directed, as measured along the payment lines specified or shown, local custom to the contrary notwithstanding. It is agreed that the planimeter shall be considered an instrument of precision for the measurement on drawings and plans of areas in connection with the estimation of quantities in cases where geometric methods would be comparatively laborious.

00759.05 MONTHLY ESTIMATES AND PAYMENTS

Unless otherwise noted in the Additional Instructions or the Specifications once each month, on a day of the month selected by him, the Contractor shall submit a payment application of the value of the work done during the previous month, provided such value exceeds one thousand dollars. The Engineer shall review any payment application and prepare a letter of recommendation to the Owner for payment. The Owner will pay the Contractor each month, within 30 days of the date of the application for payment subject to retainage amounts for, the work or major portions thereof is substantially completed.

The work will be considered Substantially Complete when the work of the Contract including all alterations or modifications (see Section 00757 - CHANGES IN THE WORK) is at least ninety-nine (99) percent complete and the estimated value of minor items to be completed is equal to or less than one (1) percent.

The Engineer will include in the Monthly Estimates the delivered cost of equipment and non-perishable materials on site and off site which have been tested or inspected by the Engineer and approved by him for incorporation in the work. Only equipment and materials for which the Contractor furnishes the Engineer receipted invoices as evidence that he has unconditional title thereto will be included. Such invoices shall be furnished by the Contractor at least ten days in advance of the established date of preparation of Monthly Estimates.

The Contractor shall provide and maintain insurance for the said equipment and materials (on site and off site) as specified in SECTION 00752.

No payments shall be made for materials and equipment delivered or stored onsite and will in no way affect the Contractor's responsibilities regarding the same.

SECTION 00759

PAYMENTS

00759.06 RETAINAGE

The Contractor is advised that for Contracts up to and including \$100,000.00 for improvement to real property, the sum of 10% of the amount due shall be held on each partial payment pending completion of the project. When Contract is fifty percent (50%) complete the retainage will be reduced to five percent (5%) for remaining Contract. Based on monthly progress payment requests, the Contractor must be making satisfactory progress, and there must be no specific cause for greater withholding.

The provisions of this section provide that the Contractor may:

1. Agree to withholding of payments in the manner prescribed in the Contract, or may deposit with the contracting unit registered book bonds, entry municipal bonds, State bonds of other appropriate bonds of the State of Pennsylvania, or negotiable bearer bonds or notes of any political subdivision of the State, the value of which is equal to the amount necessary to satisfy the amount that otherwise would be withheld pursuant to the terms of Contract. The nature and amount of the bonds, or notes to be deposited shall be subject to approval by the Contracting unit. For the purposes of this section, "value" shall mean par value or current market value, whichever is lower.
2. Such agreement will be indicated by signing of estimate payment certificates unless written communication to the contrary is made to the Owner and Engineer, or

If the Contractor agrees to the withholding of payments, the amount withheld shall be deposited, with a banking institution or savings and loan association insured by an agency of the Federal Government, in an account bearing interest at the rate currently paid by such institutions or associations on time or savings deposits, the amount withheld, or the bonds or notes deposited and any interest accruing on such bonds or notes, shall be returned to the Contractor upon fulfillment of the terms of the Contract relating to such withholding, any interest accruing on such cash withholdings shall be credited to the Owner.

Furthermore, this Section provides that for Contracts over \$100,000.00 for improvement to real property:

1. From the total amounts due as ascertained through a current Engineer's estimate will be deducted an amount equivalent to five percent (5%) of the amount due on each partial payment shall be withheld by the Owner pending completion of Contract.

SECTION 00759

PAYMENTS

00759.06 RETAINAGE - Continued

2. Upon acceptance of the work performed pursuant to the Contract for which the Contractor has agreed to the withholding of payments pursuant to this Section, all amounts being withheld by the Owner shall be released and paid in full to the Contractor within 45 days of final acceptance date agreed upon by the Contractor and Owner, without further withholding of any amounts for any purpose whatsoever, provided that the Contract has been completed as indicated.

00759.07 OWNER'S RIGHT TO WITHHOLD PAYMENTS

The Owner may withhold from the Contractor such portions of any approved payments due him as the Owner may judge necessary to:

- A. Protect the Owner from loss due to defective work not remedied;
- B. Failure to provide work schedule or revisions thereto;
- C. Assure the payment of just claims then due and unpaid for labor or materials;
- D. Protect the Owner from loss due to injury to persons or damage to the work or property of other Contractors, Subcontractors, or others caused by acts of neglect of the Contractor or his Subcontractors. The Owner shall have the right as agent for the Contractor to apply moneys so withheld as the Owner may deem proper to secure such protection or satisfy such claims, and such payments shall be deemed made for the account of the Contractor.

00759.08 INSPECTION AT SUBSTANTIAL COMPLETION

The Engineer will make an Inspection of the work within thirty (30) days after the Contractor gives written notice that the work is substantially complete. The Contractor shall assist the Engineer, as may be required, in making the Inspection. Cost to the Contractor, if any, to assist the Engineer in making the Inspection shall be included in the appropriate bid item as selected by the Contractor and no additional payment will be made to the Contractor for his work.

After making the Inspection, the Engineer will notify the Contractor in writing of the results, including particulars regarding any part of the work which, in his opinion, is incomplete or requires correction or additional cleaning. The Contractor shall make good any incomplete or defective work before again asking for another Inspection.

SECTION 00759

PAYMENTS

00759.08 INSPECTION AT SUBSTANTIAL COMPLETION - Continued

If in the opinion of the Engineer the work is substantially complete, the Engineer shall issue in writing a Notice of Substantial Completion. Said Notice will list, in detail, those minor items requiring completion and a reasonable cost for completion before Final Payment. (See also SECTION 00757.04, CORRECTION OF WORK.)

00759.09 CERTIFICATE OF SUBSTANTIAL COMPLETION

Upon issuance of the Notice of Substantial Completion by the Engineer, and the submission by the Contractor of a written statement from Surety that the Maintenance Bond (Labor & Materials Payment Bonds included) in the amount of one hundred (100) percent of the value of the Contract is in force for a period of two years following the date of Notice of Substantial Completion, the Engineer will file a Certificate of Substantial Completion with the Owner and the Contractor, certifying that the work is substantially complete and setting forth the amount of work performed and compensation earned by the Contractor. All prior estimates of the amount and value of work performed shall be subject to correction in this certification.

00759.10 PAYMENT AT SUBSTANTIAL COMPLETION

Within 30 days after the filing of the Certificate of Substantial Completion, the Owner will pay the Contractor one hundred (100) percent of the full value of the work certified therein within 45 days, less retainage and one and one half times the value of any minor work remaining to be completed and all prior payments and advances to or for the account of the Contractor, and the amount necessary to satisfy any claims, liens or judgements against the Contractor which have not been discharged.

The final payment due the Contractor from the government agency after substantial completion of the Contract shall bear interest at a rate of six percent (6%) per annum for all Contracts without provisions for retainage and at a rate of ten percent (10%) per annum for all Contracts with provisions for retainage, the interest to begin after the date that such a payment becomes due and payable to the Contractor. However, where the government agency has issued bonds to finance the project, interest shall be payable to the Contractor at the rate of interest of the bond issue or at the rate of ten percent (10%) per annum, whichever is less, but in no event shall the interest payable to the Contractor be at a rate of interest less than the legal rate of interest.

SECTION 00759

PAYMENTS

00759.11 FINAL PAYMENT

The Contractor shall fully complete the remaining minor items within sixty (60) days of the issuance of the Notice of Substantial Completion.

Upon certification by the Engineer that the remaining items of the Contract including all corrections, alterations and/or modifications have been completed and that no repairs, renewals or replacements are required of the Contractor, or that, if required, such remedies have been effected, the Engineer shall prepare a Final Payment request recommending to the Owner payment to the Contractor of the amount retained at the time of substantial completion less any amount necessary to satisfy any claims, liens or judgements against the Contractor which have not been discharged.

Within 30 days after the receipt from the Contractor of acceptable affidavits, certificates or waivers as evidence that no right to any claim or lien exists, the Owner will pay the remainder of the Contract as indicated in the Final Payment.

Contractor shall provide the following prior to Final Payment:

- Waiver of Liens
- Certified Payrolls
- Prevailing Wage Payment Certification (form in SECTION 00759.17)
- Complete copy of submittals in binders to be retained on-site for Owner's use
- Vendor O&M Manuals to be retained on-site for Owner's use
- Supply of spare parts/inventory for Owner's use
- Completion of Final Work items

00759.12 ACCEPTANCE OF FINAL PAYMENT

Acceptance by the Contractor of the Final Payment shall serve as a release to the Owner of all claims and of all liability to the Contractor for all things done or furnished in connection with the work, and for any and all acts of neglect of the Owner or others relating to or because of the work, except the Contractor's claim for interest upon the Final Payment, if this payment is unduly delayed. No payment whatsoever shall operate to release the Contractor or the Surety from their obligations under the Contract or Bond.

SECTION 00759

PAYMENTS

00759.13 GUARANTEE INSPECTION

On or about two years from and after the date of the Notice of Substantial Completion, the Engineer will again inspect the work. The Contractor shall assist the Engineer, as may be required, to make the two year inspection. Cost to the Contractor, if any, to assist the Engineer in making the two year inspection shall be included in the appropriate bid item as selected by the Contractor and no additional payment will be made to the Contractor for this work. The Contractor shall provide any and all repairs, renewals or replacements which may be revealed as necessary in this Guarantee Inspection and which, in the opinion of the Engineer, are the responsibility of the Contractor. Should the Contractor fail to comply with written instructions of the Engineer regarding these remedies, the Owner will cause the remedies to be made by others and will pay the cost which will be reimbursed by the Contractor and/or his Surety.

The Contractor and his Surety agree that the Contractor's Performance Bond (Labor & Materials Payment Bonds included) shall cover fully all guarantees as specified herein and in SECTION 00752.01.

00759.14 ACCEPTANCE OF PORTIONS OF THE WORK

The Owner reserves the right to accept for his service and use any portion of the work at any time during the life of the Contract without prejudice to the Owner in enforcing any provisions of the Contract.

The Owner may accept the portion or portions of the work which is substantially complete under the following agreed procedures:

- A. The Contractor will be notified by the Engineer in advance as to what portion or portions of the work the Owner intends to accept for his use and service.
- B. The retained percentage for the Substantially Completed portion or portions of work shall be released in accordance with SECTION 00759.09.
- C. The guarantee period applicable to that portion or portions of the work shall start from the date of acceptance.
- D. The remaining minor items of the portion or portions of substantially completed work shall be finished or corrected to the satisfaction of the Engineer.

SECTION 00759

PAYMENTS

00759.14 ACCEPTANCE OF PORTIONS OF THE WORK - Continued

- E. The Owner will assume responsibility for maintenance, heat, utilities and insurance on accepted portion or portions of the work.
- F. All applicable provisions specified in this Section for work deemed substantially complete shall apply.

00759.15 REPAIR OR REPLACEMENT OF DAMAGED, DEFECTIVE OR FAULTY WORK

If any portion of the work is damaged in any way, or if defects or faults develop before the inspection at Substantial Completion, or before the expiration of the 24-month guarantee period, the Contractor shall repair, replace or otherwise make good the damage or defect to the satisfaction of the Engineer, regardless of whether the work may have previously passed the specified inspections and tests. No additional payment will be made for such remedial work.

Failure on the part of the Engineer to condemn defective work shall not imply acceptance of the work, nor act to release the Contractor from his obligations to repair, replace or otherwise make good the work at his own expense, notwithstanding that such work may have been estimated for payment or that partial or full payments may have been made therefor.

00759.16 PAYMENT TO SUBCONTRACTORS BY CONTRACTOR

Within fifteen calendar days of the receipt of a payment from the Owner, the Contractor shall pay the Subcontractors, and/or material men a sum equal to the value of the work performed less any amount necessary to satisfy claims, liens or judgements that have been discharged less any amount retained as hereafter described.

- A. The retained amount shall not exceed more than 5% on each payment except that 10% of each payment may be retained, if the Subcontractor(s) and/or material men failed to provide a Performance Bond (Labor & Materials Payment Bonds included) in the full amount of the Subcontract.
- B. The Contractor shall not retain any money from Subcontractor(s) and/or material men, after receipt of the Certificate of Substantial Completion payment.
- C. Subcontractor(s) shall provide a waiver of liens to Contractor prior to final payment.

SECTION 00759

PAYMENTS

00759.16 PAYMENT TO SUBCONTRACTORS BY CONTRACTOR - Continued

Within fifteen calendar days of the receipt of the payment from the Contractor, the Subcontractor(s) and/or material men shall pay each of his Subcontractors and/or material men in same manner as the Contractor has paid the Subcontractor(s) and/or material man.

The Owner shall not be under any obligation to see that the Contractor makes any payment to a Subcontractor and/or material men.

END OF SECTION

GENERAL CONDITIONS

SECTION 00760

CONTRACT TERMINATION

00760.01 OWNER'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

The Owner, by seven days written notice to the Contractor with copy to Bonding Company and without prejudice to any other rights or remedies it may have, may terminate the employment of the Contractor and his right to proceed, either as to the entire work or any portion thereof on which delay shall have occurred, and may take possession of and complete the work by contract or otherwise, as the Owner may deem expedient, in the event of any of the following:

- A. If the Contractor shall refuse or fail, after being warned by the Engineer, to supply enough competent workmen, equipment or proper materials, or
- B. If the Contractor shall refuse or fail to perform the work or any part thereof with sufficient diligence to insure its completion within the time specified, or shall fail to complete the work within said period, or
- C. If the Contractor shall fail to promptly pay persons supplying labor or materials for the work, or
- D. If the Contractor shall fail or refuse to comply with laws, ordinances, permits or orders from the Engineer or otherwise substantially violate any provision of this Contract, or
- E. If the Contractor shall be adjudged bankrupt or make an assignment for the benefit of creditors, or
- F. If a receiver or liquidator shall be appointed for the Contractor or for any of his property and shall not be dismissed within 20 days after such appointment or the proceedings in connection therewith shall not be stayed on appeal within the said 20 days.

If the Owner so terminates or stops the Contractor, the Contractor shall not be entitled to receive any further payment until the work is completed. If the unpaid balance of moneys to be paid the Contractor hereunder shall exceed the cost of completing the work, including the cost of additional administrative, managerial, engineering, and inspection services and or delay, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor and the Surety shall be liable to the Owner for the excess.

SECTION 00760

CONTRACT TERMINATION

00760.01 OWNER'S RIGHT TO STOP WORK OR TERMINATE CONTRACT -
Continued

If the right of the Contractor to proceed is terminated as provided herein, the Owner may take possession of and use in completing the work such materials, plant, equipment, supplies and appliances as may be on the Site and necessary to the work, provided that the termination was not made pursuant to paragraphs "E" or "F" above.

00760.02 CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

In the event the work shall be halted by order of a Court or any other public authority having jurisdiction for a period of 90 days or more without act or fault of the Contractor or any Sub-contractor, the Contractor, upon 10 days written notice to the Owner, may terminate the Contract or discontinue performance of the work. In either case the liability of the Owner to the Contractor shall be determined as provided in SECTION 00760.01, except that the Contractor shall not be obligated to pay to the Owner any excess of the cost of completing the work over the unpaid balance of the payments to be made to the Contractor hereunder.

00760.03 OTHER TERMINATION PROVISIONS

In addition to the provisions set forth in this Section 00760, specific references relating to termination or cancellation of the Contract are contained elsewhere herein. These include but are not limited to:

00150.05	AFFIRMATIVE ACTION AGAINST DISCRIMINATION
00752.02.C	WORKER'S COMPENSATION INSURANCE
00756.03	PROGRESS
00758.03	ASSIGNMENT

END OF SECTION

GENERAL CONDITIONS

SECTION 00761

DESCRIPTION & DELINEATION OF THE WORK

00761.01 INTENT OF PLANS AND SPECIFICATIONS

The intent of the Plans, Specifications and other Contract Documents is to provide for the work outlined and delineated therein, complete in every detail for the purpose designated. The Contractor agrees to furnish everything necessary for the work as intended, any omission in the Plans or Specifications notwithstanding.

The Contractor shall furnish all materials, tools, plant equipment and labor, except those specifically set forth herein as to be furnished by the Owner, required to construct and place in complete and satisfactory working order the work contemplated by the Contract Documents. The mention in any part of the Specifications of any specific liability, duty or responsibility of the Contractor will not be construed as a restriction, limitation or waiver of any general liability, duty or responsibility of the Contractor, such mention being merely for explanatory purposes. The Contractor shall be solely responsible for the adequacy of his plant, tools and equipment, approval of the Engineer notwithstanding.

The Contractor shall do the work in a manner judged to best promote rapid construction consistent with due regard for the safety of life and the preservation of property, the satisfaction of the Engineer, and the intent of the Contract Documents.

The Contractor shall:

- a) make all necessary excavations or embankments.
- b) do all clearing and grubbing.
- c) place all sheeting, shoring, bracing and supports.
- d) furnish all underdrains.
- e) provide draining, pumping, bailing, ditching and diking for surface or below ground water.
- f) provide all things necessary to protect, support and maintain structures, utilities, drains, conduits, culverts, trees, fences, poles, walls, earth banks, shrubbery, sidewalks, railways, roadways and drives.
- g) repair all damage done to items in (f) above.
- h) do all fencing, lighting and watching.
- i) drive all piles and construct all foundations.

SECTION 00761

DESCRIPTION & DELINEATION OF THE WORK

00761.01 INTENT OF PLANS AND SPECIFICATIONS - Continued

- j) construct all concrete, brick, stone, tile and timber work.
- k) place all iron and steel work and reinforcement.
- l) lay all pipes, sewers, drains and conduits and make all connections to or between such.
- m) resurface and repave all streets, sidewalks, roads or drives open cut or damaged.
- n) refill all trenches and excavations.
- o) provide all fences, bridges, fills, detours and signs for maintenance of travel in public ways.
- p) make all connections to or between existing structures and utilities.
- q) construct all buildings and structures.
- r) furnish, install, and test equipment.
- s) clean up and dispose of all rubbish and surplus materials.

00761.02 INTERPRETATION OF PLANS & SPECIFICATIONS

The Engineer shall interpret the Plans and Specifications, and determine the need of any Change Orders or Supplemental Agreements. Anything shown on the Plans but not included in the Specifications, or mentioned in the Specifications but not shown on the Plans, shall have the same effect as if set forth in both. In the event of a conflict between the Plans and Specifications, the Specifications shall govern. The attention of the Engineer shall be called to any discrepancies, as required by SECTION 01340.06.

00761.03 CONTRACT DRAWINGS

The location, nature and many details of the work are shown on the Contract Drawings. The work shall be constructed as shown on these Plans and such other drawings as may be issued during the life of the Contract by the Engineer, or furnished by the Contractor and approved by the Engineer.

The purpose of the Contract Drawings, together with other Contract Documents, is to provide Bidders with sufficient information to prepare adequate and equitable Bids and to provide an adequate and equitable basis for the Agreement. The Contract Drawings may or may not provide sufficient detail for the actual construction of all segments of the work as shown and specified. The Contractor shall furnish Construction Drawings or other drawings, as specified or requested, or, as may be required to adequately delineate for his workmen all details necessary for the work.

SECTION 00761

DESCRIPTION & DELINEATION OF THE WORK

00761.03 CONTRACT DRAWINGS - Continued

Additional copies of Contract Documents can be provided to Contractor for the cost of reproduction.

The Contractor shall keep at least one set of Specifications and one full-size set of Plans on the Site, and shall at all times give the Engineer and the Owner access thereto.

00761.04 ADDITIONAL OR SUPPLEMENTAL DRAWINGS

The Engineer may prepare Additional Drawings or Supplemental Drawings during the course of the work, in connection with minor changes, Change Orders, Supplemental Agreements, or to augment or amplify the Contract Drawings or other drawings, or as part of orders or instructions, and the Contractor shall abide by such drawings in the same manner as specified for the Contract Drawings.

Drawings required by the Contractor are discussed in SECTION 01340.01.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01012

COLLATERAL WORK

01012.01 COLLATERAL WORK

The Owner may award other contracts in connection with the Project, the work under which may proceed concurrently with the work of this Contract. In this event, the Contractor shall coordinate his operations with those of the other contractors, and shall cooperate with them in the arrangement for the storage of materials and performance of the work.

The Contractor and his Subcontractors shall keep themselves informed of the progress of the work of other contractors and subcontractors and shall notify the Engineer immediately of defective workmanship or insufficient progress on the part of others, where such will interfere with his own operations. Either failure of the Contractor to keep himself informed of the progress of work under other contracts on the Site, or failure of the Contractor to give proper notice of same, shall be deemed as acceptance by him of the status of the work under other contracts as it may affect his own work.

See also SECTION 00756.04, APPROVED WORK SCHEDULES, and SECTION 00756.06, TIME EXTENSIONS.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01015

CONTRACTOR USE OF PREMISES

01015.01 AREA AVAILABLE FOR CONTRACTOR'S USE

The Contractor shall confine his operations to those portions of the Owner's property, and to the right-of-ways or easements, temporary or permanent, acquired or designated for the work of the Contract as shown on the Drawings. Private property adjacent to the Site shall not be entered upon or used by the Contractor for any purpose without the written consent of the Owner thereof. A copy of such consent shall be filed with the Engineer.

When required, the Contractor shall provide and maintain fences at his own expense, along the roadways and around the grounds occupied by him for the protection of adjoining property and all persons lawfully using same. Fences shall be of materials and construction suitable in the opinion of the Engineer for their intended purpose.

All work within or on abutting private property shall be performed in such ways as to create the minimum of inconvenience and disturbance to the private property and its users. Excavated materials or supplies of any kind shall not be stored on off-site public or private property without written consent of the Owner thereof, and all walks and drives shall be kept open to uninterrupted passage. A copy of each such written consent shall be filed with the Engineer.

Materials delivered upon public streets shall be neatly stored between the sidewalk and the curb or ditch line, and at least 10 feet from any fire hydrant. A passageway of at least three feet shall be preserved on the sidewalk line.

01015.02 TRAVEL NOT OBSTRUCTED

The Contractor shall not needlessly hinder or inconvenience travel on any public or private way, nor shall he wholly obstruct same without written permission of the Owner. If he is permitted to obstruct a traveled way, the Contractor shall provide plain and appropriately worded signs and adequate barricades and lighting at the nearest cross streets, and at each end of the obstructed portion, announcing such obstruction and directing traffic to and along an approved detour.

Unless otherwise specified or permitted, all entrances and exits of fire houses, industrial plants, commercial buildings and public buildings shall be kept open and maintained in passable condition at all times. The Contractor shall give notice to the owner of each traveled way before interfering therewith.

SECTION 01015

CONTRACTOR USE OF PREMISES

01015.03 CLEANING UP

The Contractor shall remove from the Site and dispose of, at his own expense, all rubbish, refuse and unused materials, as the work progresses. If such work is neglected, the Engineer will give written notice thereof to the Contractor. If the work is not performed within five days thereafter, the Owner will employ other persons to do such work, and the expense thereof shall be deducted from any monies due or to become due to the Contractor.

The Contractor shall clean and leave free from obstruction all pipes, buildings, manholes and other structures. This work shall be coordinated with the Engineer's Inspection at Substantial Completion, or as directed. All rubbish, refuse, unused materials, plant and equipment shall be removed from the Site, and the entire Site shall be left in a neat condition. All equipment installed in the work by the Contractor shall be cleaned and left in a bright and new-appearing condition.

See also the E&S Control Permit requirements on Contract Drawings.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01019

SITE CONDITIONS

01019.01 PRE-BID INSPECTION & EXAMINATION

The Contractor warrants and represents that he visited the Site prior to submitting his Bid, and that he has satisfied himself as to the location and nature of the work and the quantity, quality, type and nature of both surface and subsurface structures and materials apt to be encountered.

See also SECTION 00753.01.B.

01019.02 BORINGS

Any data on subsurface conditions that may have been obtained by the Owner prior to the advertisement for bids, through test borings, test pits, seismic explorations, or other means, was obtained by the Owner for his sole use and only for his own purposes. Any such data, known or recalled as of the date of advertisement for bids, are shown on separate drawings or in separate schedules and reports which are not any part of the Contract Documents. All such data are made available to Bidders, the Contractor and other interested parties only as a convenience and without express or implied representation, assurance or guarantee that any of the information is complete, correct, or adequate or representative of a true or typical picture of subsurface conditions on the Site.

The Contractor, both during his status as Bidder and after execution of the Contract, shall satisfy himself as to the nature, character, quality and quantity of above ground and below ground conditions apt to be encountered. Any reliance on data made available by the Owner shall be at the Contractor's sole risk.

No claim whatsoever shall be made by the Contractor against the Owner or Engineer for or on account of such data available, or neglected to be made available, by the Owner or Engineer.

The Contractor at any time, and any holder of Contract Documents during the period between advertisement for and receipt of bids, will be permitted to make test borings, test pits, soundings or similar subsurface investigations on the Site. Prior to making these investigations the Contractor and/or any holder of Contract Documents must notify the Engineer when and where he proposes to make such investigations.

SECTION 01019

SITE CONDITIONS

01019.02 BORINGS - Continued

The locations where test boring samples, if any, may be examined are given in the Additional Instructions.

See also SECTIONS 00753.01.B, 00753.07, 00759.01, 01019.04 and 01019.06.

01019.03 PROTECTION OF EXISTING STRUCTURES

The Contractor shall at all times have on the Site suitable and sufficient plant and materials to adequately protect, support and sustain any and all existing structures and facilities, whether above or below ground, and shall use same as may be necessary or required to protect, support and sustain any and all such structures as may become weakened, endangered, undermined or uncovered.

He shall, at his own expense, support and sustain in their places and protect from direct or indirect damage all water, gas, steam, air or other mains or pipes, sanitary and storm water sewers and drains, conduits, subways, service connections, buildings, poles, wires, fences, pavements, sidewalks, curbs, railways, trees and other structures and property and appurtenances thereto on or in the vicinity of the Site, and shall assume all liability for damage thereto, including damage arising out of settlement or lateral movement of walls of excavations, whether occurring during performance of the work or the 24-month period of guarantee.

In the event of damage or danger to any such structure or facility the Contractor shall immediately notify the Engineer, and shall promptly repair or protect the structure as the Engineer may direct.

01019.04 EXISTING STRUCTURES BELOW GROUND

The Contract Drawings show the location and character of certain existing subsurface structures and facilities apt to be encountered in excavations or located in such proximity to the work as to require precautions for their protection. The sizes, materials, locations and depths shown are only approximate, and the Contractor shall satisfy himself as to the accuracy and completeness of such information. The Contractor shall not be relieved from any of his obligations, nor be entitled to claim for damages or additional compensation, sustained or arising out of inadequacy or inaccuracy of the information given.

SECTION 01019

SITE CONDITIONS

01019.05 ABANDONED STRUCTURES

Any structures, facilities or appurtenances therefor which are abandoned or become so by reason of the work, shall, at the Contractor's expense, be broken up and filled with approved material, if directed by the Engineer.

01019.06 LATENT SUB-SURFACE CONDITIONS

In the event that latent sub-surface conditions are found to materially differ from those on which the Plans and Specifications are based, the Contractor shall immediately notify the Engineer before they are disturbed. After prompt investigation, the Engineer will determine what changes, if any, should be made in the Plans and Specifications because of the revealed conditions, and shall instruct the Contractor accordingly. Any change in the cost of the work resulting therefrom shall be adjusted as provided in Section 00757.

01019.07 ADJUSTMENT OR CHANGES OF EXISTING STRUCTURES

If, in the opinion of the Engineer, an underground pipe or other structure requires realignment or relocation, and such realignment or relocation was not included in the Plans or Specifications, the Engineer will issue a Change Order for such work, and the Contractor shall be compensated therefor as provided in Section 00757. The Contractor shall strip or uncover and support or sustain the structure at his own expense prior to such Change Order, as part of his work under the original Contract, and he shall not be entitled to claim for damage or delay due to its presence or discovery.

Wherever existing utilities come within limits of the work, the Contractor shall notify both the Engineer and the Utility before in any way disturbing same. Any work of realignment, relocation, removal or extension of the utilities shall be done as mutually agreed by the Utility, the Contractor and the Engineer. The Contractor shall maintain satisfactory drainage of the excavation at all times from revelation of the structure until completion of its realignment or readjustment. Interruption of service by utilities shall be kept to a minimum.

The Contractor shall not cause nor permit interference with or hindrance to any municipal department, individual, public service corporation, or other company in protecting its structures and facilities, nor in removing, replacing or relocating same.

SECTION 01019

SITE CONDITIONS

01019.07 ADJUSTMENT OR CHANGES OF EXISTING STRUCTURES - Continued

Owner and Engineer have performed due diligence to obtain locations of underground utilities that may be encountered during performance of the work. Due to the nature of the properties where work is required, it is possible that Contractor will encounter unknown/unmarked utilities. Owner has provided on the Bidder's form, for a price for Contractor to hand dig around the unmarked utility, repair damage, and adjust grades of pipe being installed.

See also SECTION 01019.09.

01019.08 MAINTENANCE AND RESTORATION OF SERVICE

In the event of accidental disruption of utility service, it shall be deemed an emergency, and the Contractor shall proceed with the necessary repairs immediately and continuously, giving this work priority over all other operations, until service has been satisfactorily restored. The Contractor shall give immediate notice of such break or service interruption to the Engineer, the Utility, and all customers affected. All lines and connections shall be restored to the satisfaction of the Engineer and the Utility.

All portions of the foregoing provisions regarding utility service are applicable to water, sewer, gas, telephone or other services shall apply to maintenance and emergency repair of such services.

01019.09 POLES & POSTS ON-SITE

Poles or posts of any Utility located within the lines of the work which, in the opinion of the Engineer, will impede progress of the work, shall be supported or removed and replaced by the Contractor at his own expense and in accordance with the requirements of the Utility involved. The Contractor shall remove, relocate, replace or support all other poles and posts at his own expense and to the satisfaction of the Engineer.

The Contractor shall employ no equipment which will unduly interfere with wires or other overhead facilities.

SECTION 01019

SITE CONDITIONS

01019.10 NOTIFICATION OF OTHER PARTIES

In addition to notices to Utilities and others required elsewhere herein, the Contractor shall give written notice of his proposed construction operations to the owners of all public and private utilities at least seven days in advance of breaking ground in any area in which a utility is located. Copies of each such notice shall be simultaneously sent to the Engineer.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01051

LAYOUT OF WORK

01051.01 INFORMATION PROVIDED BY ENGINEER

The Engineer will provide, on the Contract Drawings, sufficient information for the Contractor to establish baselines, offsets and other survey control points. Unless otherwise noted, no additional survey work will be provided by the Engineer.

01051.02 SERVICES PROVIDED BY CONTRACTOR

Unless otherwise noted in the Additional Instructions or Specification, the Contractor will establish such additional lines, grades and elevations as he deems necessary and will include the following:

- A. Structures & Buildings: Corner stakes at all principal corners of exterior walls or foundations. Two bench marks in the vicinity of the structure or building.
- B. Sewers: Offset grade line stakes, on one side, with stations approximately forty linear feet on centers.
- C. Water Mains & Force Mains: When laid to grade, the same as for sewers. When not laid to grade, none.
- D. Roads & Runways: Offset center line grade stakes, on one side, with stations approximately fifty linear feet on centers.
- E. Embankments: Slope stakes on both sides at approximately one hundred linear feet on centers, with additional stakes at principal breaks in grade.
- F. Tunnels & Borings: Center line and offset baseline on the surface, on starting end. Also one progress check every fifty linear feet of long tunnels.
- G. Other Types of Construction: The Contractor will provide control stakes as he deems necessary to properly layout his work.
- H. On Traverse or Cross-country type of construction, such as pipelines and roads, a temporary center line may be required for clearing purposes.

SECTION 01051

LAYOUT OF WORK

01051.02 SERVICES PROVIDED BY CONTRACTOR - Continued

- I. The Contractor will issue a grade letter for pipeline and road construction which is to be laid or installed to a predetermined grade. All other stakes will have the information marked on a witness stake beside the hub.

The Contractor shall provide all the necessary materials for control points, including all: stakes, hubs, lath, grade boards, cleats, nails and such other materials as may be required.

The Contractor shall also provide such non-technical assistance as may be required in the establishment of marks, other than primary or basic controls, such as clearing sight lines and driving stakes.

The Contractor shall erect and establish all grade boards, batter boards and construction control lines from the information provided by the Engineer.

The Contractor shall layout the work to best suit his methods of operations, using the Engineer's information provided to assure the construction will be in the position the design anticipated.

01051.03 OBLIGATIONS OF THE CONTRACTOR

The Contractor shall carefully preserve and protect all stakes, marks, monuments and points provided or described by the Engineer, and shall reimburse the Owner for any and all additional engineering costs incurred because of the replacement or reestablishment of any such items which may be moved, removed, obliterated or destroyed due to his construction operations. When directed, the Contractor shall provide suitable barricades for the protection of points.

The Contractor shall bear the entire cost of rectifying work improperly done due to his own negligence in preserving and protecting marks, or to moving or removing same without approval of the Engineer.

He shall inform the Engineer a reasonable time in advance of his operations of the times and places he proposes to work, so that lines, grades and elevations may be established and necessary measurements for record and payment may be made with the minimum of inconvenience or delay to either himself or the Engineer. No additional compensation will be paid to the Contractor for any delay caused by insufficient notice.

SECTION 01051

LAYOUT OF WORK

01051.04 LINES, GRADES AND ELEVATIONS

The terms "invert" or "grade" used in the Contract Documents in connection with pipes, sewers, channels, flumes and similar structures shall mean the inside bottom of the pipe or other surface on which the liquid flows along the center line of the completed work. "Subgrade" refers to the bottom line or surface to which excavations are necessarily made to construct the work as shown or specified, exclusive of any additional depth of excavation required for any special foundation.

The term "Grade Letter" shall mean a data sheet giving the amount of cut or fill from offset stakes to the invert or grade.

All work shall be constructed in accordance with the lines and grades shown, specified or directed. The Contractor shall be responsible for maintaining alignment and grade between points provided or described on the Contract Drawings.

01051.05 MASONRY CHASES, OPENINGS AND INSERTS

If the Owner awards other contracts for collateral work on the Site, it shall be the obligation and responsibility of the General Contractor to provide all openings and chases in his work to fit both his own work and that of the other contractors. The General Contractor shall provide all openings shown on the Contract Drawings, or reasonably implied thereby, as confirmed or modified by Additional Drawings or drawings submitted by Contractors and approved by the Engineer.

Where pipes or conduits pass through slabs or walls, the sleeves or opening forms shall be provided by the installer of the pipes or conduits but shall be placed by the General Contractor.

If hanger inserts or similar items are required, they shall be furnished by the installer of the pipe or other equipment for which the hangers are intended, but shall be placed by the General Contractor.

Any expense resulting from mis-located, defective, or ill-timed work shall be borne by the Contractor responsible thereof. No Contractor shall alter the work of another Contractor without the consent of the Engineer and knowledge of the Contractor involved, and no Contractor shall endanger any work by cutting, excavating or other operations.

SECTION 01051

LAYOUT OF WORK

01051.06 PAYMENT FOR LAYOUT OF WORK

The cost to the Contractor of providing the services and materials specified in this Section 01051 shall be included in the price, or total of prices, given in the Bid on which the Agreement is based, and no separate payment will be made thereof. Any cost to the Owner for additional engineering layout work, as set forth in SECTION 01051.03, will be deducted from monies due or to become due to the Contractor.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01064

SAFETY AND HEALTH

01064.01 SAFETY AND HEALTH REGULATIONS

The Contractor shall comply with the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standard Act (PL 91-54), latest revisions.

In order to protect the general public and the lives and health of his employees under the Contract, the Contractor shall comply with all pertinent provisions of the latest issues of the Federal Register, Bureau of Labor Standards, Safety and Health Regulations; and the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under this Contract. In case of a conflict between the above noted authorities, the most stringent shall prevail.

The Contractor shall have on the project site at all times, while work is in progress, at least one person skilled in safety and health procedures and familiar with State and Federal safety and health regulations whose responsibility shall be to observe methods and procedures. He shall have the duty and authority to stop and/or correct all unsafe and unhealthy conditions.

01064.02 SAFETY AND FIRST AID

The Contractor shall at all times exercise caution in his operations and shall be responsible for the safety and protection of all persons on or about the Site. All hazards shall be avoided or guarded in accordance with the provisions of the Manual of Accident Prevention in Construction of the AGCA, unless such provisions contravene local law. The safety provisions of all applicable laws, codes and ordinances shall be observed.

The Contractor shall provide and maintain at the Site, at each location where work is in progress, as part of his plant, an approved first aid kit. Ready access thereto shall be provided at all times when men are employed on the work.

The Contractor shall take due precautions against infectious diseases, and shall arrange for the immediate isolation and removal from the Site of any employee who becomes ill or is injured while engaged on the work.

SECTION 01064

SAFETY AND HEALTH

01064.03 DUST HAZARDS

- A. If, in the construction of the work covered by the Contract, a harmful dust hazard is created for which appliances or methods for the elimination of dust have been approved by the County Conservation District, such appliances or methods shall be installed and maintained and effectively operated by the Contractor at his expense.

01064.04 CONTRACTOR'S RESPONSIBILITIES

- A. Safety and Protection:
 - 1. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - a. Persons on the work site or who may be affected by the work.
 - b. All the work and materials and equipment to be incorporated therein, whether in storage on or off the site; and
 - c. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
 - 2. Contractor shall comply with applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall cooperate with utility owners in the protection, removal, relocation or replacement of such utility property. Damage, injury or loss to any property referred to in these Specifications caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Plans or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor). Contractor's duties

SECTION 01064

SAFETY AND HEALTH

01064.04 CONTRACTOR'S RESPONSIBILITIES - Continued

and responsibilities for safety and for the protection of the work shall continue until such time as all the work is completed and Engineer has issued a notice to Owner and Contractor in accordance with these Specifications that the work is acceptable and determined to be substantially complete.

3. Safety Representative:

- a. Contractor shall designate a qualified and experienced safety representative at the site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

B. Emergencies:

1. In emergencies affecting the safety or protection of persons or the work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Engineer or Owner, is obligated to act to prevent threatened damage, injury or loss. Contractor shall give Owner and Engineer prompt written notice of any significant changes in the work or deviations from the Contract Documents caused thereby.

C. Safety and Protection: Contractor shall hold a meeting at least weekly while work is in progress to inform workers about potential safety issues involved with projected work.

D. Hazard Communication Programs: Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with laws, ordinances, rules, regulations and orders of any public body. Contractor shall provide a centralized location for the maintenance of the material safety data sheets (MSDS) or other hazard communication information required to be made available by any employer on the site. Upon request, Owner will provide the Contractor with a list of available MSDS for Owner-controlled materials.

SECTION 01064

SAFETY AND HEALTH

01064.04 CONTRACTOR'S RESPONSIBILITIES - Continued

E. Health and Safety Requirements:

1. Contractor and subcontractors shall develop, submit to the Owner, and have available on-site, a written Health and Safety Plan (HASP) which will protect employees of the Contractor.
2. Owner, Engineer, other representatives and personnel of Owner, independent testing laboratories and government agencies with jurisdictional interests shall have access to the work at reasonable times for their observation, inspecting and testing and are responsible for the health and safety of their own employees. Contractor shall provide for them proper and safe conditions for such access and advise them of Contractor's site safety procedures and programs so that they may interact therewith as applicable.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01340

SUBMITTALS

01340.01 DRAWINGS FURNISHED BY THE CONTRACTOR

The Contractor shall prepare, or cause to be prepared by his suppliers or Subcontractors, and submit to the Engineer for review, Shop Drawings, Setting Drawings, Working Drawings and Construction Drawings as may be specified or directed or necessary to the performance of the work. Deviations from the drawings and specifications shall be called to the attention of the Engineer at the time of the first submission of Shop Drawings, or other drawings, for consideration. Corrections or comments made on the Shop Drawings or other drawings during review do not relieve the Contractor from compliance with the requirements of the Contract Drawings and Specifications. Approval is only for general conformance with the design concept of the Project and with information set forth in the Contract Drawings and Specifications. Contractor is responsible for dimensions to be confirmed and correlated at the job site, information that pertains solely to the fabrication process or to the means and methods of construction, coordination with the work of all trades, and performing all work in a safe and satisfactory manner. Approval does not modify Contractor's duty to comply with the Contract Documents.

Within thirty days of the execution of the Agreement, the Contractor shall submit five copies of a schedule of submittals which includes a complete list of products proposed for the work tabulated by Specification Section, including manufacturer or fabricator, model number or other identifying designation.

Shop, Setting or Working Drawings shall be submitted for each type and model of fabricated materials and equipment. They shall provide complete and accurate working dimensions, weights, assembly and sectional views, details necessary to coordinating the work, anchor bolt and installation plans and instructions, parts lists and descriptions, materials and finishes lists, lists of any tools and spare parts required, diagrams of control wiring and piping, the location, sizes and types of connections to other work or other items, and any other data required to comply with the Contract or provide the workmen and the Engineer with information necessary to complete and inspect the work.

Electrical equipment drawings and data shall show physical dimensions, installation details, elementary and connection diagrams for each motor controller, interconnection diagrams for all equipment, identification of components external to electrical equipment, the coordination of control circuits, and definition of the contract arrangement and control action of the primary and final control elements.

SECTION 01340

SUBMITTALS

01340.01 DRAWINGS FURNISHED BY THE CONTRACTOR - Continued

If the Contractor proposes to furnish and install equipment requiring a layout or arrangement materially changed from that shown on the Contract Drawings as illustrative of one acceptable arrangement, he shall submit, for review, drawings showing the proposed arrangement and the appertaining changes to wiring, piping, structures and other equipment.

Submittals such as pre-printed manufacturers' installation instructions, maintenance data, parts lists, test results, or similar informational material are not considered Shop Drawings and will not be reviewed. Any submittal not required or otherwise requested will be returned to the Contractor.

See also SECTION 01340.08, ADDITIONAL ENGINEERING COSTS.

01340.02 TRANSMITTAL, IDENTIFICATION AND RESUBMITTAL

The Contractor shall accompany all drawings and other data submitted to the Engineer with a letter of transmittal in duplicate. Unless otherwise specified elsewhere herein, all other correspondence with the Engineer shall also be in duplicate.

All drawings shall be suitably identified with the name of the Project, Contract Number, Contractor name, name of the equipment or materials manufacturer, specification section designation and item number (if applicable) date, and initials indicating approval of such submittal by the Contractor under the applicable specification.

The Contractor shall submit to the Engineer for review six copies of all drawings and other data, plus the number of copies he wishes returned bearing the Engineer's review stamp, comments, or request for changes, but in no case shall the total number of copies so submitted be less than seven. If the Engineer makes comments or corrections, they will be noted on the drawings, or explained in a letter of transmittal, or both, and all but three copies will be returned to the Contractor for revision or other requested action. The Contractor shall make any requested revisions or additions and resubmit the drawings in the same manner as for the initial submittal. If requested by the Engineer, the Contractor shall supply additional copies of submitted data.

SECTION 01340

SUBMITTALS

01340.02 TRANSMITTAL, IDENTIFICATION AND RESUBMITTAL - Continued

The Engineer's review stamp shall indicate one of the following:

- Approved
- Approved as Noted
- Revise as Noted - Resubmit
- Rejected - Resubmit as Specified

Upon return of a submittal marked "Approved" or "Approved as Noted", the Contractor may order, ship or fabricate the materials so noted. A submittal marked "Approved as Noted" should not be resubmitted for further review. Submittals marked "Revise as Noted – Resubmit" include extensive corrections or corrections of major importance affecting other items and require the submittal to be amended and resubmitted for a final review. Submittals marked "Rejected – Resubmit as Specified" are reserved for materials or equipment which are unacceptable. The Contractor shall resubmit for materials or equipment which are acceptable and in accordance with the Specifications.

More than one resubmittal per material or equipment will be considered an additional cost to the Engineer which shall be reimbursed by the Contractor. Refer to SECTION 01340.08 for method of reimbursement.

01340.03 DELAY THROUGH TARDY SUBMITTAL

All submittals shall be made on such a schedule and at such time as to permit adequate review. The Contractor shall make due allowance for possible revisions and resubmittals. Delays caused by tardy submittal of drawings or data for review shall be the responsibility of the Contractor. No work covered by submitted drawings, or drawings specified to be submitted, shall be performed until such drawings and data have been reviewed.

See also SECTION 00756.04, APPROVED WORK SCHEDULES.

SECTION 01340

SUBMITTALS

01340.04 CONTRACTOR RESPONSIBLE FOR ACCURACY

The Contractor shall be responsible for the accuracy and completeness of the drawings and other data he submits, for their conformity to the Plans and Specifications, and for the proper fit and clearance of all construction work.

The Owner retains for the Engineer the option to refuse to review submitted data that are improperly identified or incomplete or which have not been checked by the Contractor for compliance with the Contract Documents.

01340.05 ADDITIONAL INSTRUCTIONS

The Engineer may from time-to-time issue additional instructions to the Contractor as may be necessary to amplify, augment, modify or clarify the Contract Documents. These may be in the form of drawings, specifications, interpretations, orders and instructions, and may be in connection with or made a part of a Supplemental Agreement, Change Order, or Minor Change.

See also SECTION 00757, CHANGES IN THE WORK.

01340.06 DRAWINGS TO BE CHECKED BY CONTRACTOR

The Contractor shall check all dimensions, quantities and representations in the Specifications, Contract Drawings, Additional Drawings and all Supplemental Agreements, Change Orders and Instructions, and shall immediately notify the Engineer of any and all errors, omissions, or discrepancies therein which he may find. The Contractor will not be permitted to take advantage of any such error, omission or discrepancy in any Contract Document or subsequent document, as full instructions will be provided by the Engineer in such case.

01340.07 SUBSTITUTES AND "OR-EQUAL" ITEMS

Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item, the Specification or description is intended to establish the type, function and quality required. Unless the Specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment may be accepted by the Engineer under the following circumstances:

SECTION 01340

SUBMITTALS

01340.07 SUBSTITUTES AND “OR-EQUAL” ITEMS - Continued

“Or-Equal”: If in Engineer’s sole discretion an item of material or equipment proposed by Contractor is of similar quality and functionally equal to that named and sufficiently similar so that no change in related work will be required, it may be considered by Engineer as an “or-equal” item, in which case review and approval of the proposed item may, in Engineer’s sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed equal items.

Substitute Items: If in Engineer’s sole discretion an item of material or equipment proposed by Contractor does not qualify as an “or-equal” item, it will be considered a proposed substitute item. Contractor shall submit sufficient information as provided below in advance to provide adequate time to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute thereof. The procedure for review by the Engineer will include the following or as the Engineer may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor. If Contractor wishes to furnish or use a substitute item of material or equipment, Contractor shall first make written application to Engineer for review thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation of the proposed substitute will prejudice Contractor’s achievement of Substantial Completion on time, whether or not the substitute for use in the work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for work on the project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish additional data about the proposed substitute.

SECTION 01340

SUBMITTALS

01340.08 ADDITIONAL ENGINEERING COSTS

In the event that the Contractor fails to submit acceptable Shop Drawings (i.e., Shop Drawings which are returned marked “Approved” or “Approved as Noted”) within two submittals, further review of the Shop Drawings will be considered an Additional cost. Similarly, all Engineering Costs associated with the review of a substitution will be considered an Additional cost.

Additional Engineering Costs include redesign, additional Shop Drawing reviews, investigations, consultant fees and revisions to the Contract Documents required because of the proposed substitution. Additional Engineering Costs will be the total of:

- a. Billing Rates Schedule
- b. Direct Expenses Plus 10%
- c. Consultant Fees plus 10%

Additional Engineering Costs shall be deducted from Contractor Payments by the Owner, in accordance with the Agreement for Engineering Services between the Owner and the Engineer.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01506

WORK UNDER UNUSUAL CONDITIONS

01506.01 WORK AFTER DARK

Unless specifically required elsewhere herein, the Contractor shall perform no work after dark except in emergencies. When time allows, he shall inform the Engineer in advance of such work and shall obtain the Engineer's approval. When time does not allow advance notice to the Engineer, he shall inform the Engineer at the earliest possible moment.

The placing of concrete shall be so scheduled as to be started early enough in daylight hours to allow sufficient time for the completion of the section under construction before dark, including the work of finishers.

When, in order to minimize interference with existing structures or utilities, or maintain traffic, it may, in the opinion of the Engineer, be expedient or necessary to do work after dark, such work shall be performed by the Contractor at no additional increase in Contract value, and the Contractor shall provide adequate lighting.

If the Contractor deems that it is necessary to perform directional drilling work on a continuous production basis once started, Contractor shall submit a written plan of program activities, lighting, staffing and security access to Engineer. Engineer will revise with landowner prior to accepting the Plan.

01506.02 WORK ON SUNDAYS OR HOLIDAYS

Unless specifically required elsewhere herein, the Contractor shall do no work on Sundays or locally recognized legal Holidays except in an emergency, and then shall confine his operations to only the work considered necessary to be performed at such time.

01506.03 WORK IN STORMS

If required by the Engineer, masonry work and the mixing and placing of concrete shall be halted during rain storms, and all fresh work shall be immediately protected with suitable coverings. The Contractor shall keep a sufficient quantity of such coverings at the Site as part of his plant and equipment.

No paving, exterior painting, fine grading, seeding or roofing shall be done during rain or snow storms.

SECTION 01506

WORK UNDER UNUSUAL CONDITIONS

01506.04 WORK IN COLD WEATHER

Certain Specifications contain provisions prohibiting the performance of certain work in cold weather, or outlining the conditions under which such work may be so performed. In the absence of specific mention elsewhere in the Contract Documents, the judgment of the Engineer shall govern in any case where temperature may adversely affect or prevent the performance of good work.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01510

SERVICES DURING CONSTRUCTION

01510.01 SANITARY FACILITIES

The Contractor shall provide on the Site, at his own expense, one or more toilets, suitably screened from public observation for the use of all persons employed on the work. They shall be provided, maintained and removed, when directed, by the Contractor, in such quantity, locations and manner as approved by the Engineer. Contents shall be removed and disposed of in a manner and at such times as shall be approved. Chemical toilets are to be preferred.

The Contractor shall not permit or condone the committance of nuisances on or about the Site. Any employee found violating these provisions shall be discharged in accordance with the provisions of Section 00754.02.

The Contractor shall comply with any and all sanitary regulations as may have been established for the locality.

If the Owner awards other contracts for collateral work on the Project, the provision of sanitary convenience shall be the responsibility of the General Contractor, and all such facilities shall be made available to other Contractors and all Subcontractors until the date of the Certificate of Substantial Completion of the General Contract. Each Contractor, however, shall be individually responsible for the acts of his employees and Subcontractors, and for all provisions of this Section after completion of the General Contract.

01510.02 WATER

The Contractor shall provide at all times sufficient drinking water from an approved source and by approved means, for all persons having reason to be on the Site in connection with the work.

If an ample supply is owned or controlled by the Owner, and is available at or near the Site, such supply will be made available to the Contractor, subject at all times to the requirements of the Owner established therefore, and at a cost to the Contractor as determined by the current schedule of charges filed by the Utility for all customers. Permission to use the water must be obtained in writing.

SECTION 01510

SERVICES DURING CONSTRUCTION

01510.02 WATER - Continued

If water is obtained from a public or private supply not owned or controlled by the Owner, the Contractor shall make such arrangement for service with the owners thereof as they may require.

Non-potable water for other than drinking purposes may be obtained at the Site from the ground or surface sources, at the Contractor's own expense. The water must, however, be suitable for the purpose intended and shall be approved by the Engineer. The Specifications, for instance, contain requirements for water for making concrete and mortar.

If the Owner awards other contracts for collateral work on the Project, it shall be the responsibility of the General Contractor to obtain potable water for drinking purposes, and such water shall be made available to all Contractors, until the date of the Certificate of Substantial Completion for the General Contract. Each Contractor, however, shall be individually responsible for providing potable water for his own employees and his Sub-contractors after completion of the General Contract.

If the General Contractor provides water, whether potable or non-potable, for his own purposes during construction of the work, besides drinking water, such water shall be made available to other Contractors and their Sub-contractors during the life of the General Contract. Removal of temporary facilities shall be by the General Contractor, but such installation and meters shall remain until need therefore by each Contractor has ceased, or until the date of the Certificate of Substantial Completion of the General Contract. Each Contractor shall provide his own services after completion of the General Contract.

01510.03 TEMPORARY HEAT

If the Owner awards other contracts for collateral work on the Project, it shall be the obligation and responsibility of the General Contractor to provide and maintain temporary heat in all above ground structures, and in all below ground structures other than manholes and similar pipeline appurtenances, by means of portable electric, oil or gas-fired appliances. The General Contractor shall provide and pay for all fuel and electric power used by such appliances, and any wiring or connections required, and shall provide suitable smoke pipes or other devices to prevent the deposit of smoke or smudge on building components or equipment.

SECTION 01510

SERVICES DURING CONSTRUCTION

01510.03 TEMPORARY HEAT - Continued

After their installation by the Heating & Ventilating Contractor, the permanent heating system facilities may be used for temporary heating purposes, the operation thereof, and any temporary wiring or piping required and all power consumed shall be the obligation and responsibility of the General Contractor, who shall also be responsible to the Heating & Ventilating Contractor for the repair of any damage of work of the Heating & Ventilating Contract suffered as the result of use by the General Contractor.

After enclosure of all spaces to be heated, except for doors, windows and similar apertures, temporary enclosures for all apertures shall be provided. Temperatures in the entirety of such spaces shall be continuously maintained at not less than 50°F between October 15 and May 15, unless written permission is granted otherwise by the Engineer. The General Contractor shall securely install on each floor of each building near the center of the building, a suitable thermometer. Either the temporary or the permanent heating system shall be available for around-the-clock use during the season specified above.

The Owner will supply all heat after the date of the Certificate of Substantial Completion of the General Contract.

No portion of the Temporary Heat provisions herein contained shall be construed to waive or modify any provisions regarding maintenance of air or materials temperatures for the protection of the work contained elsewhere in the Contract Documents.

01510.04 TEMPORARY ELECTRIC LIGHT AND POWER

If the Owner awards other contracts for collateral work on the Project, it shall be the obligation and responsibility of the General Contractor to provide and maintain temporary facilities for furnishing light and power necessary for operations under the General Contract, and to make all necessary arrangements thereof, including all required conductors, outlets and connections, ordering the meter, paying all fees and inspection charges and pay for all power bills until the date of the Certificate of Substantial Completion of the General Contract.

The facilities shall be available to other Contractors and their Sub-contractors for their use in connection with their work. The installation and meters shall remain until need for same by each Contractor has ceased, or until the date of the Certificate of Substantial Completion of the General Contract. Each Contractor shall provide his own services after completion of the General Contract.

SECTION 01510

SERVICES DURING CONSTRUCTION

01510.04 TEMPORARY ELECTRIC LIGHT AND POWER - Continued

It shall be the responsibility of the General Contractor to provide, prior to the completion of his Contract, temporary power of proper voltage and capacity necessary to test and operate all equipment installed under this Contract.

01510.05 PAYMENT FOR SERVICES DURING CONSTRUCTION

The General Contractor will receive no direct payment for providing, maintaining or removing any of the temporary facilities or services specified in this Section 01510, and compensation for same shall be included, in the price, or total of prices, given in the Bid on which this Agreement is based, and no separate payment will be made thereof.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01540

SECURITY MEASURES & SITE ACCESSIBILITY

01540.01 SUMMARY

Section Includes: General requirements for accessing, and preventing unauthorized access at the project site(s) during construction.

01540.02 PROTECTION OF WORK AND PROPERTY

Take positive measures to prevent entry to site of work and storage areas by children, animals and unauthorized adults.

1. Provide temporary fencing as required to fence off excavation, storage and operating areas.
2. Except as otherwise specified in Contract Documents, Contractor is authorized to refuse admission to project site to any person whose admission is not specifically authorized in writing by Engineer and/or Owner.
3. Provide night security, if problems arise at construction sites relating to public grounds for requiring security.
4. Costs related to security and vandalism is considered incidental to Contract and included under appropriate bid price.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01568

EROSION AND SEDIMENT CONTROL

01568.01 GENERAL

The Contractor shall control erosion and sediment caused by construction activities through the use of scheduling, phased construction and restoration, berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains and other erosion control devices or methods.

In the event of conflict between these specification requirements and pollution control laws, rules or regulations of other Federal, State or local agencies, the more restrictive laws, rules or regulations shall apply.

01568.02 CONTROL SCHEDULE

At the preconstruction conference, or prior to the start of the applicable construction, the Contractor shall be required to submit, for acceptance, his schedules for the accomplishment of erosion and sediment control. He shall also submit, for acceptance, his proposed method of erosion and sediment control on haul roads and borrow pits and his plan for disposal of waste materials or control details for other potential sources of pollution.

The Contractor shall schedule and conduct his operations to minimize erosion of soils and to prevent silting and muddying of streams, rivers, irrigation systems, impoundments (lakes, reservoirs, etc.) and lands adjacent to or affected by the work. Construction of drainage facilities and performance of other contract work which will contribute to the control of erosion and sedimentation shall be carried out prior to earthwork operations and maintained in conjunction with earthwork operations. The area of bare soil exposed at any one time by construction operations shall not exceed the maximum acreage allowable under applicable State and Federal laws.

01568.03 CONTROL MEASURES

In carrying out erosion control measures, the Contractor will be guided by, but not limited to, the following controls:

- A. When borrow material is obtained from other than commercially operated sources, erosion of the borrow site shall be so controlled both during and after completion of the work that erosion will be minimized and sediment will be prevented from

SECTION 01568

EROSION AND SEDIMENT CONTROL

01568.03 CONTROL MEASURES - Continued

entering streams or other bodies of water. Waste or disposal areas and construction roads shall be located and constructed in a manner that will prevent sediment entering streams.

- B. Frequent fording of live streams will not be permitted; therefore, temporary bridges or other structures shall be used wherever an appreciable number of stream crossings are necessary. Unless otherwise approved in writing by the Engineer, mechanized equipment shall not be operated in live streams.
- C. When work areas or gravel pits are located in or adjacent to live streams or other bodies of water, such areas shall be separated from the main stream by a dike or other barrier to prevent entry of sediment into a flowing stream. Care shall be taken during the construction and removal of such barriers to prevent the muddying of a stream or body of water.
- D. All waterways shall be cleared as soon as practicable of falsework, piling, debris or other obstructions placed during construction operations and not a part of the finished work.

Ditches which are filled, or partly inoperative, shall be cleaned, stabilized, and made operative before the Contractor stops work for any day, and shall be maintained in a condition satisfactory to the Engineer for the duration of the Contract.

- E. Water from aggregate washing, dewatering or other operations containing sediment shall be treated by filtration, settling basin or other means sufficient to reduce the turbidity so as not to cause a substantial visible contrast to natural conditions in the receiving waters.
- F. Pollutants such as fuels, lubricants, bitumens, raw sewage and other harmful materials shall not be discharged into or near rivers, streams, and impoundments or into natural or man-made channels leading thereto. Wash water or waste from concrete mixing operations shall not be allowed to enter live streams or other bodies of water.
- G. All applicable regulations of environmental protection agencies, conservation agencies, and fish and wildlife agencies and statutes relating to the prevention and abatement of pollution shall be complied within the performance of the Contract.

SECTION 01568

EROSION AND SEDIMENT CONTROL

01568.03 CONTROL MEASURES - Continued

- H. Slopes exceeding 15 percent require special treatment such as water diversion berms, straw bale sediment barriers, sodding, fabric blankets or mesh, or the use of an approved mulch tacking agent over straw or hay mulch applied over seeded areas.

The erosion and sediment control features installed by the Contractor shall be acceptably maintained by the Contractor throughout the Contract period. When it becomes necessary, the Engineer will inform the Contractor of unsatisfactory construction procedures and operations insofar as erosion control, water and air pollution are concerned. If the unsatisfactory construction procedures and operations are not corrected promptly, the Engineer may suspend the performance of any or all of other construction until the unsatisfactory condition has been corrected.

01568.04 PAYMENT

Unless a specific payment item is included in the Bid, payment for Erosion and Sediment Control shall be included in the price, or total of prices, given in the Bid on which this Agreement is based, and no separate payment will be made thereof.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01577

BASIC MAINTENANCE OF TRAFFIC

01577.01 GENERAL

This work shall consist of basic maintenance and protection of traffic within the limits of and for the duration of the Contract.

01577.02 TRAVEL NOT OBSTRUCTED DURING EXCAVATION

The Contractor shall not needlessly hinder or inconvenience travel on any public or private way, nor shall he wholly obstruct same without written permission of the Owner. If he is permitted to obstruct a traveled way, the Contractor shall provide plain and appropriately worded signs and adequate barricades and lighting at the nearest cross streets, and at each end of the obstructed portion, announcing such obstruction and directing traffic to and along an approved detour.

Unless otherwise specified or permitted, all entrances and exits of fire houses, industrial plants, commercial buildings and public buildings shall be kept open and maintained in passable condition at all times. The Contractor shall give notice to the Owner of each traveled way before interfering therewith. A minimum of 24 hours notice shall also be given to local police and fire control agencies.

01577.03 BASIC MAINTENANCE AND PROTECTION OF TRAFFIC

The Contractor shall erect or place and maintain in good condition, barricades, warning signs, lights, approved yellow-flashing light units, rubber traffic cones, and other warning and danger signals and devices, appropriate and adequate for the specific needs and subject to the Engineer's approval at working sites, closed roads, intersections, open excavations, locations of material storage, standing equipment and other obstructions, at points where the usable traffic width of the road is reduced, at points where traffic is deflected from its normal courses or lanes, and at other places of danger to vehicular or pedestrian traffic.

The Contractor shall provide sufficient watchmen and traffic directors and shall take all other precautions, including any that may be ordered by the Engineer, which are necessary for the safety of the public and protection of the work.

The Contractor shall obtain the approval of the Engineer and consent of all appropriate authorities having jurisdiction, for any detours which may be required. The Contractor shall make all necessary arrangements with such authorities regarding the establishment, maintenance

SECTION 01577

BASIC MAINTENANCE OF TRAFFIC

01577.03 BASIC MAINTENANCE AND PROTECTION OF TRAFFIC - Continued

and repair of such detours, the regulations and direction of traffic thereon, and the installation and maintenance of sign and traffic devices.

Before beginning work on any phase of the project, Contractor shall furnish and install warning signals, barricades, wood traffic guides, lights and other devices necessary, in the opinion of the Engineer, to protect the public during that phase of his operations.

If battery operated flashing warning lights are used, they shall conform to the specifications required by the PA Department of Transportation Official Traffic Control Devices. These specifications require, in part, that the flashing lights be weatherproof and reasonably tamper-proof and theft proof, be equipped with seven inch (7") minimum diameter amber plastic lens, shall operate with a flash rate between 55 and 75 flashes per minute with a flash duration of not less than 18% of each flash cycle; and shall be inspected and cleaned daily so as to maintain the lights in proper working condition.

Road construction signs shall be placed at each end of the project along with every connecting intersection. At the end of each project, detour signs shall be placed.

SCHEDULE OF TRAFFIC CONTROL DEVICES
FOR EACH SEPARATE PROJECT LOCATION

<u>Type of Device*</u>	<u>Min./Max.</u>
Traffic Cones	20/80
Sign (Construction Ahead)	2/6
Sign G20-2	2/4
Traffic Director	1/4
Drums	20/50
Breakaway Barricades	10/40

*Devices in accordance with National Manual on Uniform Traffic Control Devices, Part 6, and Pennsylvania's Supplement Publication 212, PA DPT Publication 213 and Publication 408, Section 901.

SECTION 01577

BASIC MAINTENANCE OF TRAFFIC

01577.03 BASIC MAINTENANCE AND PROTECTION OF TRAFFIC - Continued

During the work on this project, the Contractor shall provide and/or be prepared to provide traffic protection devices in accordance with the Temporary Traffic Control Guide PennDOT Pub. 213. The minimum numbers set forth in the Schedule shall be on hand at each separate project site prior to the commencement of any work (or phase of work) and shall be maintained available on the project site throughout the period of the project (or phase). Failure to provide and maintain the minimum number of devices shall be sufficient cause for the Engineer to order cessation of work. When lack of any required safety devices presents an immediate hazard, the Engineer may order that such devices be provided by the Owner or by the Contractors, deducting the cost thereof from any monies due or becoming due to the Contractor.

Additional devices shall be provided by the Contractor as required or directed prior to the commencement of any operation or phase of an operation requiring such devices.

Uniform Traffic Directors (flagmen) shall be provided whenever alternate two-way traffic is maintained in a single lane, whenever Contractor's operations require closing a lane or portion of a lane on a multiple lane roadway, whenever the Contractor's equipment or vehicles are entering or leaving active roadways at other than normal street intersections, whenever a Contractor's operations will be contrary to or cause confusion regarding normal traffic control devices (traffic signals, signs, etc.) within a work area and whenever else, in the opinion of the Engineer, the Contractor's operations cause such hazards as to require the use of Traffic Directors.

Traffic Directors shall be responsible and thoroughly familiar with their responsibilities, and, while serving as Traffic Directors, shall not be required to perform any other duties. Traffic Directors shall be provided with an orange or red flag, an orange or orange and white traffic safety vest and white or orange hard hat or other appropriate head gear. The Contractor may, at his option, secure the services of uniformed policemen having jurisdiction in the locality within which the project is located. Provisions of such uniformed policemen will be deemed sufficient in meeting the requirements of this specification.

Traffic must be maintained throughout each separate work area during construction. At least one 12' lane must be maintained for traffic during all actual construction periods and at least two 10' lanes must be maintained for traffic at all other times.

SECTION 01577

BASIC MAINTENANCE OF TRAFFIC

01577.03 BASIC MAINTENANCE AND PROTECTION OF TRAFFIC - Continued

The Contractor is advised that there is heavy commuter traffic during the morning from 7:30 AM to 9:00 AM and the afternoon from 4:00 PM to 5:30 PM. The Contractor shall schedule his construction activity such that the Contractor does not interfere or restrict traffic during the above peak hours.

Construction shall be so staged to maintain at least one lane for traffic in each direction throughout each separate work area during the morning 7:30 AM to 9:00 AM and the afternoon 4:00 PM to 5:30 PM weekday periods of peak traffic.

Any restriction of traffic at any time shall be subject to the approval of the Engineer and the Municipal Police Department/State Police. The Contractor shall submit a schedule of staged construction for approval prior to any restriction of traffic.

If detours are proposed by the Contractor, they are subject to the review and approval of the Engineer and the Municipal Police/State Police, EMT and Fire Departments.

A detour plan and schedule shall be prepared by the Contractor for each proposed detour and submitted to each of the approving agencies previously mentioned. All detour signs shall conform to the requirements for Traffic Control Devices.

Temporary traffic stripes will be necessary to control and guide traffic through individual work areas. The Contractor shall submit a scheme for approval by the Engineer of all temporary traffic stripes prior to removal of any existing traffic stripes.

Construction of proposed utility pipe or storm pipes across existing roadways shall be so staged to maintain one lane in each direction. Trenches shall not remain open overnight.

The Contractor shall provide adequate means of access for fire, police and emergency vehicles throughout the length of the project. Contractor shall also provide for safe and adequate means of access to adjacent properties both private and public.

The cost of all work as specified herein before and all other work required to protect public safety and maintaining traffic flow shall be included in the prices bid for the various items in the Bid Form. Unless specifically requested as a bid item in which case payment will be made as lump sum.

SECTION 01577

BASIC MAINTENANCE OF TRAFFIC

01577.04 REFERENCE TO THE STANDARD SPECIFICATIONS

Portions of the work performed under this Contract shall comply with the requirements of the Commonwealth of Pennsylvania Department of Transportation as applicable and all requirements, modified, as amended or supplemented and whose specifications are made part of these specifications.

The Standard Specifications are made part of these specifications by this reference as if they were set forth in full. It is the responsibility of the prospective bidder to be familiar with these Standard Specifications.

01577.05 PAYMENT

Unless a specific payment item is included in the Bid, payment for Basic Maintenance of Traffic shall be included in the price, or total of prices, given in the Bid on which this Agreement is based, and no separate payment will be made thereof.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01580

PROJECT SIGN

01580.01 GENERAL

If directed in the Additional Instructions, the Contractor shall provide and erect a project sign or signs at the project site identifying the project and the applicable funding agencies participating in the project. The project sign(s) shall also indicate the title and description of the project, Owner, Engineer and Contractor. The sign(s) shall be erected within twenty-one (21) days after the construction contract is awarded, and shall be in accordance with the specifications and detailed drawing included in the Additional Instructions.

01580.02 SIGN PANEL

Each sign panel shall be constructed of 3/4" minimum thickness marine plywood rabbetted into a 2" x 4" lumber frame. All fasteners used in the construction of each sign shall be of a rustproof nature.

01580.03 PAINTING

Each sign face shall be painted with the proper paint colors for the background, lettering and emblem as specified in the Additional Instructions. All supports, trim and the back of the sign panel, shall be painted with at least two coats of the same color paint as used for each sign face. All paint used shall be exterior grade paint, suitable for use on wood signs.

01580.04 MISCELLANEOUS

Sign(s) shall be located in a prominent position and aligned as determined by the Engineer. Adequate support for the project sign(s) shall be provided by the Contractor. The bottom edge of each sign shall be a minimum of 3 feet above grade. The project sign(s) shall be maintained in good condition by the Contractor for the duration of construction. The removal of the project sign(s) from the construction site by the Contractor shall be at the completion of construction, when ordered by the Engineer.

SECTION 01580

PROJECT SIGN

01580.05 PAYMENT

Unless a specific payment item is included in the Bid, payment for Project Sign, including fabrication, erection, maintenance and removal of each sign, shall be included in the price, or total prices, given in the Bid on which this Agreement is based, and no separate payment will be made therefor.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01590

ENGINEER'S FIELD OFFICE TRAILER

01590.01 DESCRIPTION

Unless waived by provisions within the Additional Instructions, the Contractor shall provide a field office trailer for the exclusive use of the Engineer and his assistants. The trailer shall be separate from that of the Contractor, and shall be ready for occupancy within ten days following execution of the Contract.

01590.02 FACILITIES TO BE PROVIDED

The name of the supplier and proposed layout shall be submitted to the Engineer and approved prior to delivery of the trailer.

The trailer office shall be new or in first class condition and shall be not less than 12 feet by 56 feet, excluding the tongue.

Washroom with hot water supply and toilet facilities within the trailer shall be supplied with potable water and connected to a sanitary sewage disposal system. The trailer shall be fully air conditioned. A gas or oil heat system shall be provided within the field office. A minimum of one month's fuel storage shall be provided, together with the necessary appurtenances to control heat and check fuel storage. Heating and air conditioning equipment shall be capable of maintaining an air temperature of 70°F.

An individual, unlisted, direct line telephone service shall be provided for the exclusive use of the Engineer. Telephone service, local and toll charge calls, shall be paid by the Contractor.

It shall be the responsibility of the Contractor to maintain the field office trailer and all facilities furnished with it. Maintenance shall include removal of snow, janitorial services, and adequate protection of pipes.

It shall be the Contractor's responsibility to furnish adequate heat, electric power and light to the field office trailer at his expense. Adequate lighting shall consist of a minimum, of four, two lamp, 4' fluorescent lights.

SECTION 01590

ENGINEER'S FIELD OFFICE TRAILER

01590.02 FACILITIES TO BE PROVIDED - Continued

The following office furniture and equipment shall be furnished with the trailer:

- Two 8' flat top double desks with 2 sets of two drawer metal file cabinets in each desk.
- 1 built-in drafting table 36" x 72" with double storage cabinets underneath.
- 4 swivel chairs.
- 2 drafting stools.
- 1 four drawer, fireproof legal size filing cabinet with lock.
- 2 plan racks with space for 5 plan hangers each.
- 4 wall coat hooks.
- 2 large metal waste baskets.
- 1 refrigerator, minimum 2 cubic feet.

01590.03 LOCATION

The trailer shall be erected on an approved location convenient for inspection of the work, as directed by the Engineer. The field office trailer shall be moved once if directed by the Engineer.

01590.04 PAYMENT

Payment for the Engineer's Field Office Trailer, and all services to be provided with it, not included under other unit or lump sum price items shall be made at the price stated in the Bid.

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01640

MATERIALS, EQUIPMENT AND WORKMANSHIP

01640.01 MATERIALS AND WORKMANSHIP - GENERAL REQUIREMENTS

All workmanship, materials, equipment and appliances shall comply in all respects with the applicable Specifications, unless specific exception is made.

All materials furnished or incorporated in the work shall be new, unused and of the quality and characteristics specified. Used materials may be furnished or incorporated in the work only under special circumstances and only with the Engineer's prior written approval. If the quality or characteristics of any material are not specifically set forth in the Contract Documents, the material used shall be that customarily used in first class work of a similar nature and character.

All workmanship in manufacture and construction not specifically covered in the Specifications shall be of the first class order and equal to that customarily used in first class work of a similar nature and character. The Contractor shall exercise special care during construction to make all structures watertight.

See also SECTIONS 00754.02 and 00753.08.

01640.02 SAMPLES, TESTS AND INSPECTIONS

All materials, equipment and workmanship shall be subject to inspection, examination and tests by the Engineer, or persons or corporations designated by him, at any and all times during manufacture or construction and at any place or places where manufacture or construction are performed.

If required by the Specifications, or if requested by the Engineer, the Contractor shall submit to the Engineer for examination, testing and approval, typical samples of materials and appliances. Samples shall be submitted sufficiently in advance of the time they are proposed to be used in the work so that neither rejections and re-submittals nor the time reasonably required for testing shall cause delay. Each unit, lot or batch of materials submitted shall be properly tagged or labeled and identified with the portion of the work for which they are intended. Transmittals shall be covered by a letter of transmittal in the manner specified for the submittal of drawings SECTION 01340.02.

SECTION 01640

MATERIALS, EQUIPMENT AND WORKMANSHIP

01640.02 SAMPLES, TESTS AND INSPECTIONS - Continued

All laboratory tests called for in the Specifications or requested by the Engineer shall be performed at the Contractor's expense. Documentary evidence that materials pass the required inspection and tests shall be furnished to the Engineer prior to the use of the materials in the work. Bureaus, laboratories and agencies used for the inspection and testing of materials, equipment and appliances will be selected by the Contractor, who will submit their names to the Engineer for approval prior to the performance by them of any tests.

Manufacture's Certificates of Compliance: Submit certification from manufacturer attesting that materials and equipment to be furnished for this project comply with the requirements of this specification and of the reference publications. Pre-printed certifications will not be acceptable; certifications shall be the manufacturer's original; certifications shall be not more than one year old. The certification shall not contain statements specified, such as "as good as"; "achieve the same end use and results as materials formulated in accordance with the referenced publications"; "equal or exceed the service and performance of the specified material". The certification shall simply state that the product conforms to the requirements specified. Certificates shall be signed by the manufacturer's official authorized to sign certificates of compliance.

01640.03 REMOVAL OF FINISHED WORK FOR INSPECTION

If, at any time prior to the date of the Certificate of Substantial Completion, the Engineer considers it necessary or advisable to examine any portion of the work already completed by removing or tearing out materials or coverings, or by excavating or otherwise exposing the portion of the work to be examined, the Contractor, upon receipt of a written request from the Engineer, shall promptly perform such work as is necessary so to do.

If the work in question is found to be defective, or not in conformance with the Specifications, due to the fault of or omission of the Contractor, or if any work shall be covered over without the consent or approval of the Engineer, whether or not defective, the Contractor shall bear all the expense of such removal, tearing out, excavating or exposing and of satisfactory reconstruction.

If, however, such consent or approval shall have been given, and the work exposed is found to be satisfactory and in conformance with the Specifications, the Contractor shall be compensated for the expenses of such removal, examination and reconstruction as provided in SECTION 00757.03.

SECTION 01640

MATERIALS, EQUIPMENT AND WORKMANSHIP

01640.04 FIELD TESTS

The Contractor, at his own expense, shall conduct all tests specified or required by law or permit of installed equipment and materials, when ordered by and under the supervision of the Engineer. The Engineer at his own discretion may make additional field tests of materials and equipment on the Site. The Contractor shall furnish, at his own expense, the materials required for all field tests and reasonable labor and plant to assist the Engineer in conducting the tests.

01640.05 MANUFACTURERS AND SUPPLIERS

Within 30 days following the execution of the Contract, the Contractor shall submit to the Engineer the name or names of the manufacturers or vendors from whom he proposes to purchase the equipment and materials specified for the work. Following approval of the manufacturer or supplier by the Engineer, the Contractor shall submit complete and detailed drawings, bulletins, specifications and other data in connection with the equipment and materials and arrangement thereof he proposes. See also SECTIONS 01340.01 through 01340.04 and 01340.06.

No award shall be made by the Contractor, and no work in connection with the equipment or materials shall proceed prior to review of the submitted data. All items of equipment of like type shall be the product of one manufacturer, unless specified otherwise or specifically permitted by the Engineer.

In the performance of the work, the Contractor and all Subcontractors shall use only manufactured materials and farm products of the United States of America, wherever available.

All Contractors and Subcontractors shall comply with all State and Federal statutes, which relate to the use of domestic material.

01640.06 EXPERIENCE AND EQUIVALENT CLAUSES

Unless otherwise specified, shown or permitted, all equipment and materials shall be the product of manufacturers who have built equipment or produced materials of a like or similar type, character, size and capacity for at least three years prior to submittal for approval and who, if requested by the Engineer, shall submit evidence thereof.

SECTION 01640

MATERIALS, EQUIPMENT AND WORKMANSHIP

01640.06 EXPERIENCE AND EQUIVALENT CLAUSES - Continued

Wherever reference is made in the Contract Documents to any specific material, equipment, appliance or model, it is understood that any product considered to be equivalent by the Engineer may be used, and such reference is for the purpose of illustration and establishment of a standard. This provision is understood to hold true in all instances, use or omission of the term "or equal" notwithstanding.

01640.07 INSTALLATION OF EQUIPMENT

All equipment shall be installed in a neat and workmanlike manner as shown on the Plans or as directed, and shall be accurately leveled, aligned and adjusted for satisfactory operation and so installed that all necessary connections can be readily made.

The Contractor shall furnish, install and protect all necessary bearing plates, guides, rails, anchor and attachment bolts and fastenings and all other appliances and appurtenances required for the installation of all components of the equipment specified. Adequate templates and installation drawings and instructions shall be provided. Anchor bolts shall be of the size, type and material recommended by the manufacturer or directed by the Engineer.

The Contractor shall furnish all oils and greases for initial operation, and shall provide the Engineer with a list of the lubricants used on each item of equipment. Insofar as possible, all lubricants shall be obtained from one manufacturer, approved by the Engineer and by the equipment manufacturers. Each piece of equipment shall bear a substantial metal or plastic nameplate, securely fastened in a convenient place inscribed with the name of the manufacturer, the year of manufacture, model number, serial number and basic rating data.

01640.08 TOOLS, ACCESSORIES AND MANUALS

Unless otherwise specified, the Contractor shall furnish for each type, model or size of equipment a complete set of any special tools and accessories, suitably identified, which may be required to adjust, operate, repair or maintain the equipment.

The Contractor shall also furnish and deliver to the Engineer five complete sets of bulletins, diagrams, parts lists, instructions, manuals and other data required for operation, maintenance and repair of the equipment.

SECTION 01640

MATERIALS, EQUIPMENT AND WORKMANSHIP

01640.09 CARE AND PROTECTION OF THE WORK

During the life of the Contract, the Contractor shall be solely responsible for the care and protection of the work and for all materials, appliances, supplies and equipment to be used in the work, both during storage and after installation or incorporation in the work. He shall protect all materials to be used in the work, all work in progress, and all completed work from damage by flood, fire, freezing or other undesirable results of weather, accident, theft and vandalism. Any damage or loss shall be made good by the Contractor at his own expense before a Certificate of Substantial Completion will be issued.

See also SECTIONS 00759.07, 00759.08 and 00757.04.

01640.10 ABSENCE OF ENGINEER

The Contractor shall perform no backfilling or covering operations of any underground portions of the work until after the Engineer or his inspector shall have inspected or tested and approved the work. If such work is covered in absence of an inspector, it shall be exposed by the Contractor for inspection as specified in SECTION 01640.03.

END OF SECTION

SECTION 01700

PROJECT CLOSEOUT

PART 1 – GENERAL

1.1 DESCRIPTION:

1.1.1 The Contractor shall furnish labor, materials and equipment for Project Closeout as specified herein this Specification or as required with other documentation as required by the Engineer.

1.1.2 This Section includes administrative and procedural requirements for Project Closeout including, but not limited to, the following:

- a. Inspection Procedures.
- b. Closeout Procedures.
- c. Closeout Activities:
 - i. Final site cleaning and restoration.
 - iii. Project record documents.
 - iv. Spare parts and maintenance products.
 - v. Warranties and bonds.
 - vi. Maintenance service.
- d. Substantial Completion:
 - i. Inspection of Project Work Area.
 - ii. Acceptance testing
 - iii. Start-up and commissioning of equipment.
- e. Final Acceptance.

1.2 RELATED SECTIONS: The following Sections contain requirements that relate to this Section:

- 1.2.1 Section 01015, "Contractor Use of Premises".
- 1.2.2 Section 01340, "Submittals".
- 1.2.3 Section 01568, "Erosion and Sediment Control".

SECTION 01700

PROJECT CLOSEOUT

1.2.4 Section 01720, "Project Record Documents".

1.2.5 Section 02225 "Excavation, Backfilling, and Compacting for Utilities".

1.2.6 Section 02484 "Topsoil".

1.2.7 Section 02485 "Seeding".

1.2.8 Section 02552 "HDPE Pipe-Directional Bore Method".

1.2.9 Section 16740 "Communications Cabling Standards".

1.3 INSPECTION PROCEDURES:

1.3.1 The Contractor shall make the project work available for inspection and observation by the Engineer and Owner throughout the duration of construction.

1.3.2 The Contractor shall notify the Engineer when specific items of the project work are complete and ready to be inspected, no later than five (5) days after completion. Contractor shall schedule inspections with the Engineer.

1.3.2.1 The Engineer shall inspect the project work and determine the level of completion of specific work items. Following inspection, the Engineer shall provide a written notice of completed work items or outstanding deficiencies to be completed by the Contractor in order to obtain completion status.

1.3.2.2 Prior to the applying for Substantial Completion, the Contractor shall prepare a draft punch list of outstanding work items for review by Engineer during the inspection process. The Engineer may add to this list based on inspection and review of Contractor's generated list of items.

1.4 CLOSEOUT PROCEDURES:

1.4.1 Comply with the inspection procedures and complete the closeout activities of this Specification and of the Contract Documents.

1.4.2 Provide submittals and documentation to the Engineer that are required by the Contract Documents and governing or other authorities.

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PROJECT CLOSEOUT

1.4.3 Submit written certification that Contract Documents have been reviewed, project work has been inspected, and that project work is complete in accordance with Contract Documents and ready for final review by Engineer. This shall occur for Final Acceptance of work.

1.4.4 Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.4.5 The Contractor shall turnover the complete and operational project work in accordance with the Contract Documents to the Owner for use and occupancy in accordance with the Contract Documents.

1.5 CLOSEOUT ACTIVITIES:

1.5.1 Final Site Cleaning and Restoration:

1.5.1.1 Execute final site cleaning and restoration of project work areas that were disturbed during construction as required by the Contract Documents.

1.5.1.2 Ensure areas that required surface grading drain properly and do not allow standing water to collect.

1.5.1.3 Ensure areas that required paving or concrete finish are flush with existing pavement or concrete surface or constructed to allow proper drainage and do not allow standing water.

1.5.1.4 Project work area shall either be stabilized as indicated on the Plans. Area that requires a vegetative cover shall demonstrate a good growth of grass.

1.5.1.5 Remove debris from stormwater management and other drainage systems.

1.5.1.6 Clean site; sweep hard-surface areas, rake clean landscaped surfaces.

1.5.1.7 Remove waste and surplus materials, from the project work area and Contractors storage area.

1.5.1.8 Remove temporary facilities and controls.

1.5.1.9 Clean equipment and fixtures to a like new, or sanitary condition as appropriate with cleaning materials appropriate to the surface and material being cleaned.

SECTION 01700

PROJECT CLOSEOUT

1.5.2 Final Adjusting and Balancing:

1.5.2.1 Perform final adjustment and balancing of operating equipment to ensure smooth and unhindered operation including compliance with regulatory requirements and in accordance with Manufacturer's recommendations.

1.5.2.2 Examine system components at a frequency consistent with reliable operation during start-up and commissioning of the systems and for the service and maintenance period.

1.5.2.3 Install required labels on equipment and infrastructure as required for identification, safety warnings and other purposes as identified in the Contract Documents.

1.5.3 Project Record Documents: Prepare and submit documents to the Engineer and Owner in accordance with Section 01720, "Project Record Documents".

1.5.4 Warranties and Bonds:

1.5.4.1 Prepare log of warranty and bonds to be provided to the Engineer for review. Update the log as warranties and bonds are provided to the Engineer for review and Owner for acceptance.

1.5.4.2 Provide duplicate notarized copies of warranties and bonds required by the Contract Documents for equipment and services.

1.5.4.3 Execute and assemble transferable warranty documents from subcontractors, suppliers, and manufacturers for review by Engineer in the name of and for use by the Owner.

1.5.4.4 Provide the required documentation in a three-D side ring binder with individual tabs, a durable plastic cover and a Table of Contents. The Table of Contents shall: name the individual warranty and bond, have a description of the individual warranty and bond, state the date and duration, and cite the specific reference of the Contract Documents that required the submission.

1.5.4.5 For items of work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.

1.5.4.6 Submit required warranty and bonds prior to final Application for Payment.

SECTION 01700

PROJECT CLOSEOUT

1.5.5 Maintenance Service:

1.5.5.1 Furnish service and maintenance of components indicated in Specifications and Plans sections for two (2) years from date of Substantial Completion and/or the specific warranty period for each component, whichever service and maintenance period is longer in duration.

1.5.5.2 Examine system components at a frequency consistent with reliable operation for the period following Substantial Completion through the systems and for the service and maintenance period.

1.5.5.3 Include systematic examination and adjustment of components. Repair or replace parts whenever required to ensure optimal operations with manufacturer's recommendations and performance ratings. Use parts produced by the manufacturer of the original component.

1.5.5.4 Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior review by the Engineer and formal written consent of the Owner.

1.6 SUBSTANTIAL COMPLETION:

1.6.1 Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1.6.1.1 Prior to applying for Substantial Completion, the Contractor shall prepare a draft punch list of outstanding work items for review by Engineer during the inspection process. The Engineer may add to this list based on inspection and review of Contractor's generated list of items.

1.6.1.2 The distribution of Payment that coincides with, or first follows, the date Substantial Completion is claimed, shall show 100 percent completion for the portion of the work claimed as substantially complete reserving a portion of the contract value for completion of work identified on the "punch list".

1.6.1.3 Include supporting documentation for completion as indicated in these Contract Documents.

1.6.1.4 If 100 percent completion cannot be shown, include a list of incomplete items developed by Contractor and Engineer, the value of incomplete construction, and a schedule for completing the work.

SECTION 01700

PROJECT CLOSEOUT

1.6.2 Inspection Procedures: Upon receipt of a request for inspection, the Engineer will either proceed with inspection or advise the Contractor of unfulfilled requirements. The Engineer will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1.6.2.1 The Engineer will repeat inspection when requested and assured that the work is substantially complete.

1.7 FINAL ACCEPTANCE:

1.7.1 Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment disbursement, complete the following. List exceptions in the request.

1.7.1.1 Prior to applying for Final Acceptance, the Contractor shall prepare a completed punch list of previous outstanding work items for review by Engineer to be confirmed during the inspection process. The Contractor shall show 100 percent completion for the portion of the work claimed for Final Acceptance.

1.7.1.2 Contractor shall provide the Engineer and Owner with Record Drawings for review and acceptance.

1.7.1.3 Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for completed operations where required.

1.7.1.4 Submit an updated final statement, accounting for final payment of the Contract Amount.

1.7.1.5 Submit a certified copy of the Engineer's final inspection list of items to be completed or corrected, endorsed and dated by the Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Engineer.

- a. Submit consent of surety to final payment.
- b. Submit a final liquidated damages settlement statement.

SECTION 01700

PROJECT CLOSEOUT

1.7.1.5 Continued

- c. Certificate of release of all liens.
- d. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- e. Submit a two-year maintenance bond which value shall be equal to 100% of the amount of Contract.
- f. Submit other documentation required by the contract that has not already been provided as part of Substantial Completion.

1.7.1.6 Re-inspection Procedure: The Engineer will re-inspect the project work upon receipt of notice that the project work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Engineer.

1.7.1.7 Upon completion of re-inspection, the Engineer will prepare a certificate of final acceptance. If the project work is incomplete, the Engineer will advise the Contractor of project work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

1.7.1.8 If necessary, re-inspection will be repeated.

PART 2 - PRODUCTS

(Not Used)

PART 3 – EXECUTION

3.1 CLOSEOUT PROCEDURES:

3.1.1 Comply with the inspection procedures and complete the closeout activities of this Specification and of the Contract Documents.

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PROJECT CLOSEOUT

3.1.2 Comply with the requirements of, complete and obtain the Engineer's approval of the project work included in the following articles of this Specification:

- a. Section 1.5.1 – Final Site cleaning and Restoration.
- b. Section 1.5.2 – Final Adjusting and Balancing.
- c. Section 1.5.3 – Project Record Documents.
- d. Section 1.5.4 – Spare Parts and Maintenance Products.
- e. Section 1.5.5 – Warranties and Bonds.
- f. Section 1.5.6 – Maintenance Service
- g. Section 1.6 – Substantial Completion
- h. Section 1.7 – Final Acceptance

3.1.3 Provide submittals and other documentation to the Engineer that are required by the Contract Documents and governing authorities.

3.1.4 Submit written certification that the Contract Documents have been reviewed, project work has been inspected, and that project work is complete in accordance with Contract Documents and ready for final review by Engineer. This shall occur for Final Acceptance.

3.1.5 Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

3.1.6 The Contractor shall turnover the complete and operational project work in accordance with the Contract Documents to the Owner for use and occupancy in accordance with the Contract Documents.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK:

1.1.1 The work under this Section includes, but is not necessarily limited to: establishing survey control points, providing survey control during construction, providing final as-built documentation and the maintaining, recording and submittal of Project Record Documents of the Contractor.

1.1.2 Project Record Documents shall not be used in the field for construction purposes. Project Record Documents shall be maintained and used in a manner that provides operation and maintenance information as well as detailed changes to the construction documents to the Engineer and Owner for review and approval as the final records of the Project.

1.1.3 Project Record Documents shall include, but not be limited to: licenses and permits, shop drawings, material samples and certifications, testing and acceptance data and reports, specifications, drawings, addenda, change orders/other modifications to the Contract, spare parts inventories, manufacturer's instructions for assembly, installation and adjusting materials and equipment, operation and maintenance manuals, as-built drawings, product warranties and other documents required to provide a complete final record of the project. Maintain, on-site, one set of the following record documents; record actual revisions to the project work.

1.1.4 Protect Project Record Documents from deterioration and loss in a secure, fire-resistant location. Provide access to Project Record Documents for the Engineer's reference and use on-site during the time the Project is being constructed.

1.1.5 Store Record Documents separate from documents used for construction.

1.1.6 Record information concurrent with construction progress. Provide access to engineer's field representative for a weekly review of the Record Documents to determine compliance that Contractor is maintaining Record Documents with appropriate field notes.

1.1.7 Project Record Documents require GPS field survey. The Contractor shall retain the services of an independent registered Land Surveyor licensed in the Commonwealth of Pennsylvania to establish and provide survey control for each stage of construction and to provide survey "as-built" documentation for various components of construction. The Surveyor shall furnish labor, materials, tools, supervision, transportation and equipment necessary to perform the survey work of the project as specified in these Specifications, and as illustrated on the Plans. The GPS map for the fiber route shall have an x and y coordinate accuracy of better than 100 millimeters. Engineer shall approve of any exceptions to this in writing.

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PROJECT RECORD DOCUMENTS

1.1.8 Contractor shall provide to Engineer the Project Record Documents in hard copy and electronic copy for review and approval using the submittal process. Specifically for as-built drawings, the Contractor shall provide the Engineer red-line hard copy format drawings for review and approval, unless another method of recording the data is approved by the Engineer.

1.1.9 The elevation (z coordinate) of the special features of the project work for independent field survey prior to backfill, shall include but not be limited to: pipe installation within trench, pipe butt-fusion welds, fittings, utility crossings, etc. and shall be indicated on the Plans.

1.1.10 Contractor will deliver a map of the final fiber optic network with x and y coordinate accuracy of better than 100 millimeters. The GPS map shall contain features noted above and utilities encountered during the Project. Said GPS map shall be properly referenced into the state plane coordinate system and contain the location of hand holes, utility crossings, special features and equipment in addition to the fiber route.

1.2 RELATED SECTIONS:

1.2.1 Section 01051, "Layout of Work".

1.2.2 Section 01340, "Submittals".

1.2.3 Section 01640, Materials, Equipment and Workmanship".

1.2.4 Section 01700, "Project Closeout".

1.3 RECORDING:

1.3.1 Label each Record Document with the wording "PROJECT RECORD" in neat, large-printed letters. Completely bound documents shall be labeled on the cover (i.e. operation manuals, shop drawings, etc.) and drawings (i.e. as-builts) shall be labeled on each individual drawing.

1.3.2 Record information concurrently with construction progress. Do not conceal any work until required information is recorded. Project Record Documents maybe supplemented with "as-built" surveys as required by individual technical specifications.

SECTION 01720

PROJECT RECORD DOCUMENTS

1.4 RECORD DRAWINGS:

1.4.1 Contractor is to maintain one (1) complete clean, undamaged set of red-line prints of Plans and shop drawings. Mark the record set to illustrate the actual installation where the installation varies from the project work as originally shown on the drawings. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Plans. Give particular attention to concealed elements that are difficult to measure and record at a later date.

1.4.2 Mark Project Record Documents with red erasable pencil; use other colors to distinguish between variations of the separate categories of project work.

1.4.3 Measure horizontal and vertical locations of underground pipe within trench, fittings, utilities and appurtenances, referenced to permanent surface elevations or improvements.

1.4.4 Measured locations of internal pipe, fittings, utilities and appurtenances concealed in construction, referenced to visible and accessible features of the project work.

1.4.5 Mark new record information of the project work for the Engineer and Owner to review, that was not shown on Plans or shop drawings.

1.4.6 Mark new information or changes effected by requests for information, field order, or change order. Note related change order numbers where applicable.

1.4.7 Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

1.5 RECORD PROJECT MANUAL:

1.5.1 Contractor is to maintain one (1) complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as field orders, change orders and modifications issued in printed form during construction. Mark these documents to show variations in actual project work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

SECTION 01720

PROJECT RECORD DOCUMENTS

1.5.2 Legibly mark and record at each Specification section the following of each product:

- a. manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed;
- b. changes made by requests for information, field order, or change order; and
- c. changes made by substitutions or alternates utilized.

1.6 RECORD PROJECT DATA:

1.6.1 Contractor is to maintain one (1) copy of each Product Data submittal. Mark these documents to show variations in the actual project work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

1.7 RECORD SAMPLE(S):

1.7.1 Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Engineer and the Owner's personnel to determine which of the submitted samples that have been maintained during progress of the project work are to be transmitted to the Owner for record keeping purposes. Comply with delivery to the Owner's storage area.

1.8 OPERATION AND MAINTENANCE MANUALS:

1.8.1 The Contractor shall provide three (3) identical sets of an Operation and Maintenance (O&M) Manual, sometimes referred to as a Technical Manual. The manual shall include installation, part, operation, and maintenance information for all mechanical and electrical equipment that is part of this project work.

1.8.2 Sets of the O&M Manual shall consist of one or more volumes, each of which shall be bound in heavy-duty, 3-inch-maximum, 3-ring (D-ring) vinyl-covered binders suitable for bookshelf storage. Contents of O&M Manual binders shall be indexed with tab dividers, and a table of contents shall be included at the front of each binder which lists all equipment and related information bound in the O&M Manuals. Mark the cover and spine of each binder with the project's name, Contractor, dates of construction, and volume number (e.g., Vol. 1 of 2) if appropriate.

SECTION 01720

PROJECT RECORD DOCUMENTS

1.8.3 The contents of the O&M Manual shall be originals, where available, supplied by manufacturer or supplier and shall include:

- a. Complete operating instructions, including location of controls, special tools, or other equipment required, related instrumentation, and other equipment needed for operation.
- b. Emergency instructions.
- c. Preventative maintenance procedures and schedules, including inspection procedures.
- d. Parts' lists, by generic title and identification number, complete with exploded views of each assembly.
- e. Disassembly and reassembly instructions.
- f. Name and location of nearest supplier and spare-parts warehouse.
- g. Recommended troubleshooting procedures.
- h. Prints of the record drawings.
- i. Copies of warranties.
- j. Shop drawings, product data, wiring diagrams, and other Contractor-submitted information.

1.9 MISCELLANEOUS RECORD SUBMITTALS:

1.9.1 Refer to other portions of this Specification and other Specification sections for requirements of miscellaneous recordkeeping and submittals such as product warranties in connection with actual performance of the project work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Engineer for the Owner's records.

SECTION 01720

PROJECT RECORD DOCUMENTS

1.9.2 The Contractor shall assist Engineer in supplementing the record copy maintained by Contractor with daily/weekly/monthly work activity reports, including, if existing:

- a. Field test records
- b. Photographs
- c. Reports on all emergency actions
- d. Records of all site work
- e. Chain-of-custody documents
- f. Laboratory test records
- g. Meteorological records
- h. Daily inspection records
- i. Reports on safety and accident incidents
- j. Reports on spill incidents
- k. Air monitoring reports and data
- l. Manifest documents, truck-load tickets, and shipping papers
- m. Security records
- n. Other items that may be required by owner
- o. Log of survey work and survey control

PART 2 - PRODUCTS

(Not Used)

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 3 - EXECUTION

3.1 AS-BUILT DOCUMENTATION:

3.1.1 The Contractor shall submit "Red-Lined" As-Built information weekly, based on work completed during the previous week until final As-Built Plans are submitted.

3.1.2 Unless an alternative method is approved by Engineer, as-built survey documentation shall be signed and sealed by Registered Land Surveyor.

3.1.3 A minimum of three (3) sets, or as otherwise requested by the Engineer, of the as-built documentation shall be delivered within 14 days after final review and approval by the Engineer.

3.1.4 Alternatively, Contractor can provide two (2) hard copies of project record documents if accompanied by one (1) copy of the project record documents stored on electronic media if such method has been approved by the Engineer.

3.1.5 Contractor shall also provide final as-built survey information in electronic (AutoCADD or equivalent) format.

3.2 GPS/ GIS MAP:

3.2.1 The Contractor shall produce an electronic file that can be edited that complies with the Pennsylvania 811 System requirements for utilities, which specifies the file must be in GIS or CAD and must have the location of the fiber optic line georeferenced.

END OF SECTION

SECTION 01650

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: General description of project and location.

1.2 SITE LOCATION:

1.2.1 Project location begins at the Carlisle Area School District (CASD) campus located at 623 W. Penn Street, Carlisle, PA 17013. Beginning at the CASD campus, this project will provide a direct fiber connect to the following facilities:

- a. CARLISLE HIGH SCHOOL (623 WEST PENN STREET) (point of beginning)
- b. LeTORT ELEMENTARY SCHOOL (110 EAST SOUTH STREET)
- c. LAMBERTON MIDDLE SCHOOL with 12 additional fibers for future connections to Mt. Holly Springs and/or Dickinson Elementary Schools (777 SOUTH HANOVER STREET)
- d. MOORELAND ELEMENTARY SCHOOL (329 WILSON STREET)
- e. HAMILTON ELEMENTARY SCHOOL (735 CLAY STREET)
- f. CREST VIEW ELEMENTARY SCHOOL (240 LONGS GAP ROAD)
- g. BELLAIRE ELEMENTARY SCHOOL (WAGNERS GAP ROAD)
- h. WILSON MIDDLE SCHOOL (900 WAGNERS GAP ROAD)
- i. OLD PENN DOT BUILDING (510 WEST NORTH STREET).

1.2.2 Exact location of project is as indicated on "Lateral Area Map" on first sheet of the Contract Drawings. Most, but not all of the work is located within the boundaries of Carlisle Borough.

SECTION 01650

SUMMARY OF WORK

1.3 WORK COVERED BY CONTRACT DOCUMENTS:

1.3.1 General Statement Concerning Work Covered: The following statements of the Work covered by the Contract Documents do not constitute complete descriptions of the entire Work

1.3.1 General Statement Concerning Work Covered – Continued

involved with Project. The Work to be performed is as specified throughout the Project Manual and as indicated on the Plans.

1.3.2 Without intending to limit or restrict extent of work required under this Contract, Work to be performed comprises the construction of providing a direct fiber optic connection between the CASD campus and eight (8) other facilities owned by the CASD. Provisions are made in this Contract to deduct specific CASD facilities as an evaluation of project cost.

1.3.3 Provide without additional compensation or change in contract value, any apparatus, material and labor not specifically mentioned in specifications or indicated on Plans, that is necessary to complete or perfect any portion of work in a substantial manner and in compliance with requirements implied or intended in these Contract Documents. This includes materials, devices or methods peculiar to the apparatus or system provided. This includes protection, physical location and confirmation excavations of utilities crossed by the proposed work.

1.3.4 The work is contained in one (1) bid item, which includes eight (8) individual routes. Five (5) of the individual routes are separated from the overall bid item to provide optional deducts to the Owner. The bid item, containing the eight individual routes, is described below:

1.3.4.1 Crestview Elementary School: Install Fiber Optic Cable:

- a. Work consisting of boring, trenching and installation of 2” HDPE carrier pipe and including fiber optic cable from the Carlisle High School to Crestview Elementary School (240 Longs Gap Road).
- b. Work shall include, but not limited to:
 - 1) Mobilization on-site and demobilization off-site.
 - 2) Implementation of temporary facilities and controls during construction including but not limited to traffic control, erosion and sediment control, and restoration of surface and utility damage, etc.

SECTION 01650

SUMMARY OF WORK

1.3.4.1 b) Continued

- 3) Maintaining site security as appropriate for work activity.
- 4) Installation of 2" HDPE carrier pipe and other designated conduit.
- 5) Installation of pull boxes, tracer wire and other appurtenances.
- 6) Restoration of pavement, disturbed surface areas, damaged utilities and other damage caused by work activities.
- 7) Field verify tracer wire and field locate completed fiber cable onto coordinately correct map for delivery to Owner. Install fiber optic cable markers as noted on drawings and in details.
- 8) Contract also includes a bore under PA Route 76.
- 9) Contract also includes an aerial crossing of the Conodoguinet Creek as indicated on the Plans.
- 10) Test of fiber optic cable and terminus junction for acceptance by Owner.
- 11) Purchase and installation of fiber cable support inside the school building, including but not limited to conduit, mounting equipment, terminus equipment, etc.
- 12) Work of this task is generally illustrated on Drawings Sheets G2-G7.
- 13) This route is a potential deduct bid item, but shall include 12 future fibers to Hamilton Elementary terminus.

1.3.4.2 Hamilton Elementary School Route: Install Fiber Optic Cable:

- a. Work consisting of boring, trenching and installation of 2" HDPE carrier pipe and including fiber optic cable from the Carlisle High School to Hamilton Elementary School (735 Clay Street).
- b. Work shall include, but not limited to:
 - 1) Mobilization on-site and demobilization off-site.

SECTION 01650

SUMMARY OF WORK

1.3.4.2 b) Continued

- 2) Implementation of temporary facilities and controls during construction including but not limited to traffic control, erosion and sediment control, and restoration of surface and utility damage, etc.
- 3) Maintaining site security as appropriate for work activity.
- 4) Installation of 2" HDPE carrier pipe and other designated conduit.
- 5) Installation of pull boxes, tracer wire and other appurtenances.
- 6) Restoration of pavement, disturbed surface areas, damaged utilities and other damage caused by work activities.
- 7) Field verify tracer wire and field locate completed fiber cable onto coordinately correct map for delivery to Owner.
- 8) Purchase and installation of fiber cable support inside the school building, including but not limited to conduit, mounting equipment, terminus equipment, etc.
- 9) Test of fiber optic cable and terminus junction for acceptance by Owner.
- 10) Work of this task is generally illustrated on Drawings Sheets G8-G11.
- 11) This route is a potential deduct bid item, but shall include 24 future fibers to Bellaire Elementary terminus.

1.3.4.3 Bellaire Elementary Route: Install Fiber Optic Cable:

- a. Work consisting of boring, trenching and installation of 2" HDPE carrier pipe and including fiber optic cable from the Carlisle High School to Bellaire Elementary School (Waggoners Gap Road)
- b. Work shall include, but not limited to:
 - 1) Mobilization on-site and demobilization off-site.

SECTION 01650

SUMMARY OF WORK

1.3.4.3 b) Continued

- 2) Implementation of temporary facilities and controls during construction including but not limited to traffic control, erosion and sediment control, and restoration of surface and utility damage, etc.
- 3) Maintaining site security as appropriate for work activity.
- 4) Installation of 2" HDPE carrier pipe and other designated conduit.
- 5) Installation of pull boxes, tracer wire and other appurtenances.
- 6) Restoration of pavement, disturbed surface areas, damaged utilities and other damage caused by work activities.
- 7) Field verify tracer wire and field locate completed fiber cable onto coordinately correct map for delivery to Owner.
- 8) Purchase and installation of fiber cable support inside the school building, including but not limited to conduit, mounting equipment, terminus equipment, etc
- 9) Test of fiber optic cable and terminus junction for acceptance by Owner.
- 10) Work of this task is generally illustrated on Drawings Sheet G12
- 11) This route is a potential deduct bid item, but shall include 36 future fibers to Wilson Middle School terminus.

1.3.4.4 Wilson Middle School Route: Install Fiber Optic Cable:

- a. Work consisting of boring, trenching and installation of 2" HDPE carrier pipe and including fiber optic cable from the Carlisle High School to Wilson Middle School (900 Waggoners Gap Road).
- b. Work shall include, but not limited to:
 - 1) Mobilization on-site and demobilization off-site.

SECTION 01650

SUMMARY OF WORK

1.3.4.4 b) Continued

- 2) Implementation of temporary facilities and controls during construction including but not limited to traffic control, erosion and sediment control, and restoration of surface and utility damage, etc.
- 3) Maintaining site security as appropriate for work activity.
- 4) Installation of 2" HDPE carrier pipe and other designated conduit.
- 5) Installation of pull boxes, tracer wire and other appurtenances.
- 6) Restoration of pavement, disturbed surface areas, damaged utilities and other damage caused by work activities.
- 7) Field verify tracer wire and field locate completed fiber cable onto coordinately correct map for delivery to Owner.
- 8) Purchase and installation of fiber cable support inside the school building, including but not limited to conduit, mounting equipment, terminus equipment, etc
- 9) Test of fiber optic cable and terminus junction for acceptance by Owner.
- 10) Work of this task is generally illustrated on Drawings Sheet G12

1.3.4.5 Carlisle High School Route: Install Fiber Optic Cable:

- a. Work consisting of boring, trenching and installation of 2" HDPE carrier pipe and including fiber optic cable from the Carlisle High School to Carlisle High School (623 W. Penn St.).
- b. Work shall include, but not limited to:
 - 1) Mobilization on-site and demobilization off-site.
 - 2) Implementation of temporary facilities and controls during construction including but not limited to traffic control, erosion and sediment control, and restoration of surface and utility damage, etc.
 - 3) Maintaining site security as appropriate for work activity.

SECTION 01650

SUMMARY OF WORK

1.3.4.5 b) Continued

- 4) Installation of 2" HDPE carrier pipe and other designated conduit.
- 5) Installation of pull boxes, tracer wire and other appurtenances.
- 6) Restoration of pavement, disturbed surface areas, damaged utilities and other damage caused by work activities.
- 7) Field verify tracer wire and field locate completed fiber cable onto coordinately correct map for delivery to Owner.
- 8) Purchase and installation of fiber cable support inside the school building, including but not limited to conduit, mounting equipment, terminus equipment, etc
- 9) Test of fiber optic cable and terminus junction for acceptance by Owner.
- 10) Work of this task is generally illustrated on Drawings Sheet G12

1.3.4.6 Lamberton Middle School Route: Install Fiber Optic Cable:

- a. Work consisting of boring, trenching and installation of 2" HDPE carrier pipe and including fiber optic cable from the Carlisle High School to Lamberton Middle School (777 South Hanover St.).
- b. Work shall include, but not limited to:
 - 1) Mobilization on-site and demobilization off-site.
 - 2) Implementation of temporary facilities and controls during construction including but not limited to traffic control, erosion and sediment control, and restoration of surface and utility damage, etc.
 - 3) Maintaining site security as appropriate for work activity.
 - 4) Installation of 2" HDPE carrier pipe and other designated conduit.
 - 5) Installation of pull boxes, tracer wire and other appurtenances.

SECTION 01650

SUMMARY OF WORK

1.3.4.6 b) Continued

- 6) Restoration of pavement, disturbed surface areas, damaged utilities and other damage caused by work activities.
- 7) Field verify tracer wire and field locate completed fiber cable onto coordinately correct map for delivery to Owner.
- 8) Purchase and installation of fiber cable support inside the school building, including but not limited to conduit, mounting equipment, terminus equipment, etc.
- 9) Test of fiber optic cable and terminus junction for acceptance by Owner.
- 10) Work of this task is generally illustrated on Drawings Sheet G12.
- 11) This route is a potential deduct bid item.
- 12) .Contract also included bore under railroad tracks with installation of steel casing pipe as indicated on the Plans.

1.3.4.7 LeTort Elementary School Route: Install Fiber Optic Cable:

- a. Work consisting of boring, trenching and installation of 2" HDPE carrier pipe and including fiber optic cable from the Carlisle High School to LeTort Elenebtary School (110 East South St.).
- b. Work shall include, but not limited to:
 - 1) Mobilization on-site and demobilization off-site.
 - 2) Implementation of temporary facilities and controls during construction including but not limited to traffic control, erosion and sediment control, and restoration of surface and utility damage, etc.
 - 3) Maintaining site security as appropriate for work activity.
 - 4) Installation of 2" HDPE carrier pipe and other designated conduit.
 - 5) Installation of pull boxes, tracer wire and other appurtenances.

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SUMMARY OF WORK

1.3.4.7 b) Continued

- 6) Restoration of pavement, disturbed surface areas, damaged utilities and other damage caused by work activities.
- 7) Field verify tracer wire and field locate completed fiber cable onto coordinately correct map for delivery to Owner.
- 8) Purchase and installation of fiber cable support inside the school building, including but not limited to conduit, mounting equipment, terminus equipment, etc
- 9) Test of fiber optic cable and terminus junction for acceptance by Owner.
- 10) Work of this task is generally illustrated on Drawings Sheet G12.
- 11) This route is a potential deduct bid item, and shall include an additional 12 future fibers to Lamberton Middle School.
- 12) Contract also includes a bore over an UNT to LeTort Spring Run as indicated on the Plans.

1.3.4.8 Old PennDOT Building Route: Install Fiber Optic Cable:

- a. Work consisting of boring, trenching and installation of 2" HDPE carrier pipe and including fiber optic cable from the Carlisle High School to the old PennDOT Building (510 West North St.).
- b. Work shall include, but not limited to:
 - 1) Mobilization on-site and demobilization off-site.
 - 2) Implementation of temporary facilities and controls during construction including but not limited to traffic control, erosion and sediment control, and restoration of surface and utility damage, etc.
 - 3) Maintaining site security as appropriate for work activity.
 - 4) Installation of 2" HDPE carrier pipe and other designated conduit.
 - 5) Installation of pull boxes, tracer wire and other appurtenances.

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SUMMARY OF WORK

1.3.4.8 b) Continued

- 6) Restoration of pavement, disturbed surface areas, damaged utilities and other damage caused by work activities.
- 7) Field verify tracer wire and field locate completed fiber cable onto coordinately correct map for delivery to Owner.
- 8) Purchase and installation of fiber cable support inside the school building, including but not limited to conduit, mounting equipment, terminus equipment, etc
- 9) Test of fiber optic cable and terminus junction for acceptance by Owner.
- 10) Work of this task is generally illustrated on Drawings Sheet G12
- 11) This route is a potential deduct bid item, and includes 12 future fibers to be terminated at the hand hole where the route splits.

1.3.5 Contractor shall provide Owner an anticipated schedule of work outlining timeframes for Construction at each school. Owner shall approve timeframe based on school activities.

1.3.6 Prior to substantial completion, Contractor shall be responsible for field marking the fiber optic installation in response to PA One Call notifications. Contractor shall provide a call number and designated individual to receive PA One Call notifications. This number and contact person will be entered into PA One Call for the CASD fiber optic installation. Upon substantial completion, the phone number and contact person, provided by the Contractor, will be removed from the CASD PA One Call system.

1.4 OWNER SUPPLIED EQUIPMENT:

1.4.1 The Owner has NOT procured any equipment noted on the Plans. It is the Owner's intent to have the Contractor provide, assemble and install fiber and termination components into a fully functioning system when a signal is provided at the terminus locations. The Contractor is expected to provide additional required mechanical and electrical products and work to achieve this goal.

1.4.2 The Owner expects to achieve a reliable operating system when a signal is provided at the terminus locations. Contractor shall bring to attention of Owner and Engineer any design or routing issues that are required to achieve this goal.

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SUMMARY OF WORK

1.4.3 Owner Supplied Equipment: (NONE in this Contract.)

1.5 PERMITS and APPROVALS: Contractor shall be responsible for following the conditions of each individual permit as outlined by the appropriate authority / jurisdiction.

1.5.1 E&S: Owner has applied for an E&S permit from the Cumberland County Conservation District. Total disturbance shall not exceed 1 acre.

1.5.2 PADEP Stream Crossing: Owner has applied and obtained a stream crossing permit for the UNT to LeTort Spring Run and the Conodoguinet Creek. Contractor shall be responsible for conducting work in the timeframe allowed for the specified crossings, in accordance with the permit conditions.

1.5.3 PennDOT HOP: Owner has applied and obtained an HOP permit for all state highway crossings shown on the Drawings. Any changes to road crossings shall be approved by Engineer. Contractor shall be responsible for modification to the HOP permit.

1.5.4 NSRR Permit: Owner has applied and obtained a permit from Norfolk Southern Rail Road (NSRR) to bore under the railroad as specified in the details. Changes to the bore path shall be appraised by Norfolk Southern at Contractor's expense.

1.5.5 Pennsylvania Turnpike: Owner has applied and obtained a permit from the Pennsylvania Turnpike to cross under I-76, as specified in the details. Changes to the Turnpike crossing will require approval from the Owner, Engineer and Turnpike Representative and shall be done at the Contractor's expense.

1.5.6 PPL Pole Occupancy: Owner has obtained approval to occupy PPL Poles as shown on the drawings. Contractor shall be responsible for providing and installing required mounting equipment and guy wiring, as specified by PPL, prior to installing fiber optic cable. If additional pole occupancy is deemed necessary by the Contractor, the Contractor shall be responsible for obtaining approval from the Owner, Engineer and PPL.

1.5.7 Carlisle Borough Approval: The Owner has obtained approval from Carlisle Borough to install the fiber optic cable as shown on the Drawings. Changes to the route shall be submitted to the Owner and Engineer for approval by borough.

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SUMMARY OF WORK

1.5.8 Residential Notification: Contractor shall be responsible for notifying residents along the proposed fiber optic line route of the construction activities a minimum of five (5) working days prior to construction. Contractor shall provide residents access to driveways and roadways during construction.

1.6 UTILITIES:

1.6.1 Engineer and Owner have performed due diligence investigations and field surveys to determine the location of facilities and structures as have been brought to attention of Engineer during the design process and these locations are indicated on drawings. The locations of underground features such as, but not limited to water, electric, gas, sewer, oil pipelines, telephone lines, etc., and the nature of materials is not guaranteed. Indication on drawings of such facilities will not relieve Contractor of any responsibility with respect to its location, depth or construction material nor will Owner or Engineer be held responsible for any omission or failure to give notice to Contractor of any other facility or structure on, under, or over project, or presence of rock or unsuitable material. The location of service utilities has not been available to Engineer.

1.6.2 Owner realizes that unmarked utilities maybe encountered and if a change in contract value is warranted, the schedule of unit prices identified in Section 00372 will be used when Engineer has been notified of such an encounter. This unit price shall be inclusive of an excavator with a four person crew comprised of equipment operator, two laborers, and a crew foreman. This unit price shall be employed when an unmarked utility is encountered and includes the handwork required to expose the utility and any utility repair time due to being an unknown existing condition. This unit price shall not apply to service utility connections, which remain the responsibility of contractor to locate and protect.

1.6.3 UGI has offered in a April 3, 2014 letter to dig test holes over their facilities or any other facility, at time and material charges that approximate \$500 per hole. If the successful bidder elects to use another method, UGI has requested the following information be shared with the successful bidder.

Only by digging test holes can the true depth and true location of UGI's facilities be determined. Prudent techniques are required when exposing UGI's facilities. UGI's gas lines must be properly supported when they are exposed and they must be padded with a minimum of 6" of limestone dust/limestone sand around their entire circumference before backfilling occurs, for test holes or for any phase of excavation. If boring becomes the method of installation, any time Carlisle Area School District's proposed facilities cross UGI facilities, or have the potential of being within the tolerance zone of UGI facilities, UGI facilities must be exposed. Also, please have your contractor call Mike Brumbach (610-721-1913) at least three days before exposing

SECTION 01650

SUMMARY OF WORK

1.6.3 Continued

our steel facilities, to discuss possible inspection of our steel facilities within your project, when they are exposed.

1.6.4 Contractor is responsible for camering or soft digging all underground service lines in Carlisle Borough to locate underground utilities being traversed by the proposed fiber. Contractor shall record depth, size of pipe and utility on Record Drawings.

1.7 ASBESTOS

1.7.1 Owner hereby notifies Contractor that no asbestos will be encountered at any academic school building in the performance of work for this Project.

1.7.2 Owner has recently acquired the former PennDOT building. Owner knows of the existence of asbestos on site. Contractor's performance of work may require field adjustment to avoid asbestos locations.

1.8 SECURITY

When work is required on property of the Owner, the Contractor's work force shall comply with Owner's requirements for background checks of contractor's employees. This shall include obtaining all necessary clearances required by the CASD. Upon award notification, CASD will provide the Contractor with a list of clearances required to work on school property. Contractor shall be responsible for providing a copy of said clearances to the Owner and Engineer prior to commencing work on school property. Contractor is hereby notified that these requirements for background clearances are mandated in State statutes.

1.9 CONTRACTOR'S AREA

1.9.1 Contractor shall maintain a work area provided by the Owner. Equipment and supplies shall be stored at this location at the end of each work day. Trash receptacles and portable restrooms shall be stored at this location at the end of each workday. Contractor shall be responsible for providing security of this location.

1.9.2 CASD will provide a storage area for Contractor's use at the former PennDOT building located on West North Street. Contractor is advised that this space will be shared with CASD.

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SUMMARY OF WORK

1.10 CARLISLE AREA EVENTS

1.10.1 Contractor shall schedule work to provide minimum disturbance to major roadways utilized by event goers during the time of the events listed below:

April 20-24, 2016	Spring Carlisle
May 13-15	Carlisle Imports & Kit Nationals
June 3-5, 2016	Carlisle Ford Nationals
June 24-26, 2016	Carlisle GM Nationals

PART 2 - PRODUCTS

[NOT USED]

PART 3 - EXECUTION

3.1 FIELD VERIFICATION

3.1.1 Verifications of field conditions will be conducted a minimum of five (5) working days prior to commencement of any work on a given street. A record of field conditions shall be generated jointly by Engineer and Contractor by walking the proposed route for the fiber optic cable and making a video recording and taking photographs of the existing surface conditions of the route. Measurements, paint markings and other supplemental documentation shall be employed as required to generate a record that can be used to document damage attributed to Contractor's performance of work. If documentation is not available to demonstrate surface damage was present prior to work by Contractor, Owner will presume that Contractor caused the damage and repairs to an equal, or better condition will be required by Contractor with no change in contract value.

3.2 ACCEPTANCE OF WORK PRODUCT

3.2.1 Notwithstanding other requirements detailed in the technical specifications for acceptance of fiber optic cable, provisions are included for testing fiber at certain intervals to demonstrate compliance of the work product with the specifications. The Owner desires to make it very clear that the fiber optic cable will not be accepted by Owner until testing is satisfactorily completed and passed at the terminus locations and ready for Owner's internal wiring connections.

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SUMMARY OF WORK

3.3 MAPPING OF WORK PRODUCT

3.3.1 Contractor is hereby advised that Owner requires a GPS generated map of completed work as a condition of acceptance. Said map will include the location and type of utility crossed by fiber cable.

END OF SECTION

SECTION 02225

EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Granular Fill, Excavation, Backfilling, and Compacting For Utilities as shown on the Plans, as specified and/or directed.

1.2 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.2.1 American Association of State Highway and Transportation Officials (AASHTO) Publication:

HB12 Highway Bridges

1.2.2 American Concrete Pipe Association (ACPA) Publication:

01-103 Concrete Pipe Installation Manual

1.2.3 American Society for Testing and Materials (ASTM) Publications:

A139 Electric-Fusion (Arc)-Welded Steel Pipe

A252 Welded and Seamless Steel Pipe Piles

C12 Installing Vitrified Clay Pipe Lines

C14 Concrete Sewer, Storm Drain, and Culvert Pipe

C33 Concrete Aggregates

C76 Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe

D422 Particle-Size Analysis of Soils

SECTION 02225

EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES

1.2.3 American Society for Testing and Materials (ASTM) Publications - Continued

D698	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5-lb (2.49-kg) Rammer and 12-in. (305-mm) Drop
D751	Coated Fabrics
D1140	Amount of Material in Soils Finer Than the No. 200 (75-micrometer) Sieve
D1556	Density of Soil in Place by the Sand Cone-Method
D1557	Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in. (457-mm) Drop
D1682	Breaking Load and Elongation of Textile Fabrics
D2321	Underground Installation of Flexible Thermoplastic Sewer Pipe
D2487	Classification of Soils for Engineering Purposes
D2774	Underground Installation of Thermoplastic Pressure Piping
D2922	Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D3017	Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D4253	Maximum Index Density of Soils Using Vibratory Table
D4254	Minimum Index Density of Soils and Calculation of Relative Density
D4318	Liquid Limit, Plastic Limit, and Plasticity Index of Soils

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EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES

1.2.4 American Welding Society, Inc. (AWS) Publication:

D1.1 Structural Welding Code, Steel

1.2.5 American Water Works Association (AWWA) Publications:

C300 Reinforced Concrete Pressure Pipe, Steel Cylinder Type,
for Water and Other Liquids

C600 Installation of Ductile-Iron Water Mains and Their
Appurtenances

M9 Concrete Pressure Pipe

M11 Steel Pipe Design and Installation

M23 PVC Pipe-Design and Installation

1.2.6 Army Corps of Engineers (COE) Publications:

EM-385-1-1 Safety and Health Requirements Manual

CW-02215 Plastic Filter Fabric

1.2.7 U.S. Department of Agriculture (DOA) Publication:

SSIR Soil Survey Investigation Report No. 1, Soil Survey
Laboratory Methods and Procedures for Collecting Soil
Samples, Soil Conservation Service, April

1.2.8 National Electrical Manufacturers Association (NEMA) Publications:

TC2 Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and
EPC-80)

TC6 PVC and ABS Plastic Utilities Duct for Underground
Installation

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EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES

1.2.9 National Fire Protection Association (NFPA) Publications:

30	Flammable and Combustible Liquids Code
70	The National Electrical Code Handbook

1.2.10 Standard Specifications for Construction and Materials

1.3 GENERAL REQUIREMENTS: This section includes requirements for excavating, preparation of pipe laying surface, pipe bedding and backfilling and compaction.

1.3.1 Referenced Standard Specifications: Materials and workmanship specified herein with reference to PennDOT Standard Specifications shall be in accordance with the referenced articles, sections, and paragraphs of the standard except that contractual and payment provisions do not apply. Where the term "State" is used, it shall mean "Owner".

1.4 SUBMITTALS: Submit the following:

1.4.1 Drawings:

- a. Pipeline casting fabrication drawings

1.4.2 Certificates of Conformance:

- a. Trench backfill material
- b. Pipe bedding material

1.5 DELIVERY AND STORAGE: Deliver and store materials in a manner to prevent contamination, segregation, freezing, and other damage.

1.6 CRITERIA FOR BIDDING: Base bids on the following criteria:

- a. Surface elevations are as indicated.
- b. Pipes or other man-made obstructions may be encountered. Contractor shall be responsible for locating these obstructions and ensuring the safety and operability of the fiber optic pipe conduit near these obstructions.

SECTION 02225

EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES

1.6 CRITERIA FOR BIDDING – Continued

- c. Groundwater elevations have not been determined in the field. Contractor shall be responsible for ensuring the safety during pipe installation of workers and material should groundwater be encountered. Installed pipe shall be dry and free of water.
- d. Suitable backfill material in the quantities required is available at the project site. Engineer assumes that excavated soil is suitable for trench backfill.
- e. Blasting will not be permitted.

1.7 REMOVAL OF WATER:

1.7.1 The Contractor shall at all times during construction provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the prosecution of the work or the proper placing of pipe, masonry, concrete, structures, or other work.

1.7.2 Removal of water includes the construction and removal of sheeting and bracing, the furnishing of materials, equipment and labor necessary therefore, the excavation and maintenance of ditches and sluice-ways and the furnishing and operation of pumps, wellpoints, and appliances needed to maintain thorough drainage of the work in a satisfactory manner.

1.7.3 Water shall not be allowed to rise over or come in contact with any masonry, concrete or mortar, until at least twenty-four (24) hours after placement, and no stream of water shall be allowed to flow over such work until such time as the Engineer may allow.

1.7.4 Unless otherwise specified, all excavations which extend down to below the groundwater elevation at the sites of structures shall be dewatered by lowering and maintaining the groundwater beneath such excavations at an elevation not less than that specified herein at all times when work thereon is in progress, during subgrade preparation and the placing of the structures or pipe thereon.

1.7.5 Where an upward pressure or flow of water in combination with a fine-grained subsurface material causes a quick condition, the Contractor shall install wellpoints to stabilize the subgrade. Where wellpoints are used, the groundwater table shall be continuously (day and night) maintained to an elevation of not less than twenty-four (24) inches below the excavation and when subgrade is reached the groundwater shall be maintained not less than twenty-four (24)

SECTION 02225

EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES

1.7.5 Continued

inches below the subgrade. Unless otherwise allowed by the Engineer, the groundwater shall be maintained not less than twenty-four (24) inches below the subgrade until completion of the backfilling to an elevation at least twelve (12) inches above natural groundwater level. Wellpoint headers, points, and other pertinent equipment shall not be placed within the limits of the excavation in such a manner or location as to interfere with the laying of pipe or trenching operations or with the excavation for and construction of other structures.

1.7.6 In areas where groundwater enters the excavation but does not cause a quick condition, the groundwater may be removed by any practical method which does not damage the subgrade, cause the same to become unstable or interferes with construction operations.

1.7.7 The groundwater control requirements specified for wellpointing operations apply to other dewatering methods.

1.7.8 Suitable stand-by pumping equipment shall be provided to insure the maintenance of the specified lowering of the water table.

1.7.9 Water pumped or drained from excavations, or any sewers, drains, or water courses encountered in the work, shall be disposed of in a suitable and environmentally friendly manner without injury to adjacent property, the work under construction, or to pavements, roads, and drives. No water shall be discharged to sanitary sewers. Sanitary sewage shall be pumped to sanitary sewers or shall be disposed of by an approved method.

1.7.10 Any damage caused by improper handling of water shall be repaired by the Contractor at his own expense.

1.8 SHEETING & BRACING:

1.8.1 The Contractor shall furnish, place and maintain such sheeting, bracing and shoring as may be required to support the sides and ends of excavations in such manner as to prevent any movement which could, in any way, injure the pipe, sewers, masonry, or other work; diminish the width necessary; otherwise damage or delay the work; or endanger existing structures, pipes or pavements; cause the excavation limits to exceed the right-of-way limits; or to occasion a hazard to persons engaged on the project or to the general public.

1.8.2 In no case will bracing be allowed against pipes or structures in trenches or other excavations.

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EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES

1.8.3 The Contractor shall be solely responsible for the safety and adequacy of all sheeting and bracing. He shall make good any damage resulting from failure of supports with no additional increase in Contract cost.

1.8.4 Removal of Sheeting & Bracing:

1.8.4.1 In general, all sheeting and bracing, whether of steel, timber or other material, used to support the sides of trenches or other open excavations, shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a pipe shall be withdrawn, unless approved, before more than six (6) inches of earth is placed above the top of the pipe and before any bracing is removed. The voids left by the sheeting shall be carefully refilled with selected material and rammed tight with tools especially adapted for the purpose, or otherwise as may be approved.

1.8.4.2 The Engineer may order the Contractor to delay the removal of sheeting and bracing, if in his judgment the installed work has not attained the necessary strength to permit placing of backfill.

1.8.5 Sheeting & Bracing Left In Place:

1.8.5.1 If, to serve any purpose of his own, the Contractor files a written request for permission to leave sheeting or bracing in the trench or excavation, the Engineer may grant such permission, in writing, on condition that the cost of such sheeting and bracing be assumed and paid by the Contractor.

1.8.5.2 The Contractor shall leave in place all sheeting, shoring and bracing which are shown on the Drawings or specified to be left in place or which the Engineer may order, in writing, to be left in place. All shoring, sheeting, and bracing shown to be left in place shall be included in the unit price items. All shoring, sheeting and bracing ordered to be left in place will be paid for as part of a change order agreement, only after it has been approved by the Engineer and the Owner and documented in writing. No payment allowance will be made for wasted ends or for portions above the proposed cut-off level which are driven down instead of cut-off.

1.8.5.3 In case sheeting is left in place, it shall be cut off or driven down as directed so that no portion of the same shall remain within twelve (12) inches of the finished street or ground surface.

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1.8.5.4 All timber sheeting and bracing to be left in place and paid for under an item of the Contract shall be new, sound and straight, free from cracks, shakes and large or loose knots, and shall otherwise conform with National Design Specifications for Stress Grade Lumber for lumber of a minimum fiber stress of 1,200 pounds per square inch.

1.8.5.5 Steel sheeting and bracing left in place and paid for under an item of the Contract shall be new and shall conform with ASTM 36A, with a minimum thickness of 3/8-inch.

1.8.5.6 Sheeting and bracing left in place and paid for under an item of the Contract shall be driven as the excavation progresses and in such manner as to maintain pressure against the original ground at all times. The sheeting shall be driven vertical with the edges tight together, and all bracing shall be of such design and strength as to maintain the sheeting in its proper position.

1.8.6 Utilities: Movement of construction machinery and equipment over pipes and a utility or other buried obstruction, use hand or light equipment excavation. Start hand or light equipment excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured. Support uncovered lines or other existing work affected by the contract excavation until approval for backfill is granted by the Engineer. Report damage to utility lines or subsurface construction immediately to the Utility, followed by notice to Engineer.

1.8.7 Structures and Surfaces: Protect newly backfilled areas and adjacent structures, slopes, or grades from traffic, erosion settlement, or any other damage. Repair and reestablish damaged or eroded grades and slopes and restore surface construction prior to acceptance. Protect existing streams, ditches, and storm drain inlets from waterborne soil by means of filter fabric dams as indicated on the Contract Drawings. All work shall be conducted in accordance with requirements specified on the drawings.

1.8.8. Disposal of Excavated Material: Where Engineer rejects excavated trench soils for reuse as backfill, Engineer will coordinate with landowners to allow rejected soils to be "wasted" within the pipe construction area. Dispose of excavated material so that it will not obstruct the flow of streams, endanger partly finished structures, impair the efficiency or appearance of any facilities, or be detrimental to the completed work.

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PART 2 - PRODUCTS

2.1 SOIL MATERIALS: Provide soil materials as described below free of debris, roots, wood, scrap material, vegetative matter, refuse, soft unsound particles, ice, or other deleterious and objectionable materials.

2.1.1 Lining(Pipe Bedding): Clean, sound, crushed stone free from coatings with a minimum quality of 20% maximum loss by weight at five cycles, as tested by the sodium sulphate soundness test. Lining shall conform to PennDOT Section 703.1, Type 18, Fine Aggregate.

<u>% Passing</u>	<u>Sieve</u>
100	3/8"
95-100	No. 4
70-100	No. 8
2-20	No. 100
0-10	No. 200

2.1.2 Crushed Stone Aggregate: Crushed stone aggregate shall be sound crushed stone with a minimum quality of 20% maximum loss by weight at four cycles, as tested by the magnesium sulphate soundness test. Gradation shall have the following AASHTO No. 57 gradation by weight:

<u>% Passing</u>	<u>Sieve</u>
100	1-1/2"
95-100	1"
25-60	1/2"
0-10	No. 4
0-5	No. 3

2.1.3 Granular Fill (Suitable Backfill): For structural backfill, the granular fill shall consist of crushed stone, well graded from coarse to fine, conforming to Pennsylvania Department of Transportation Standard Specification 703.2, Type 2A. Granular fill for Pennsylvania road construction shall be as indicated on the Contract Drawings.

<u>% Passing</u>	<u>Sieve</u>
100	2"
≥10	No. 200

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2.1.3 Granular Fill (Suitable Backfill) - Continued

The granular fill shall be spread in horizontal layers so that the maximum thickness of any layer after compaction shall not exceed eight (8) inches. Compaction shall be by traveling vibrators or other approved method and shall be to a minimum dry density of ninety percent (90%) of the maximum dry density as determined by the Modified Proctor Test, ASTM D1557 unless otherwise specified. Each layer shall be thoroughly compacted before placement of overlying layers.

The Contractor shall employ an approved commercial testing laboratory at his own expense to conduct the compaction tests (ASTM D6938).

Each layer shall be tested, and approved by the Engineer before succeeding layers are placed. A minimum of one field density test shall be made each day and/or for each fifty (50) cubic yards of material placed and/or as shown or specified in the drawings.

The following reports in quadruplicate shall be submitted directly to the Engineer:

- a. Report and Certification of Gradation.
- b. Field Density Reports.

Based on the reports of the testing laboratory and inspection, if the subgrade or fills which have been placed and compacted are below the specified density, the Engineer will ask for additional compaction and testing at the expense of the Contractor.

2.1.4 Topsoil: When existing topsoil is insufficient, Contractor shall import topsoil. Topsoil shall be free of subsoil, stumps, rocks larger than one inch in diameter, brush, weeds, toxic substances, and other material or substance detrimental to plant growth. Topsoil shall be a natural, friable soil representative of productive soils in the vicinity. Modify the topsoil provided if necessary to meet the requirements described in Table 1.

TABLE 1	
	ACCEPTABLE LIMITS
Sand Content	20 - 75 percent by weight
Silt Content	10 - 60 percent by weight

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Clay Content	5 - 30 percent by weight
Organic Material (Walkley-Block)	Minimum 1.5 percent
pH	5.5 to 7.0
Soluble Salts	600 ppm maximum
Absorption Rate	0.5 inch per hour minimum

2.1.5 Borrow: Provide general site fill and backfill as required to return construction area to pre-existing elevations. Obtain borrow materials in excess of those furnished from excavations described herein from supplier approved by Engineer.

2.2 MATERIAL FOR PIPE CASING:

2.2.1 Casing Pipe: ASTM A139, Grade B, or ASTM A252, Grade 2, smooth wall pipe. Casing size shall be of the outside diameter and wall thickness as indicated. Protective coating is not required on casing pipe, except casing pipe placed under railroad crossings.

2.2.2 Centering Rings: Provide centering rings attached to interior pipe every five-feet on center along the entire distance of the casing pipe unless noted on the drawing.

2.2.3 Casing and Seal: Seal ends of casing pipe after inserting pipe. Use sealing methods approved by Engineer.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION:

3.1.1 Stockpiling Topsoil: In areas of existing grass, strip suitable soil from the site where excavation or grading or where indicated on plans and stockpile separately from other excavated material at Contractor's storage yard. Material unsuitable for use as topsoil shall be wasted or used for backfilling. Locate topsoil so that the material can be used readily for the finished grading. Where sufficient existing topsoil conforming to the material requirements is not available on site, provide borrow materials suitable for use as topsoil. Protect topsoil and keep in segregated piles until needed.

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3.1.2 Cutting Pavement, Curbs, and Gutters: Saw cut with neat, parallel, straight lines one foot wider than trench width on each side of trenches and one foot beyond each edge of pits. Store asphalt/concrete material separately for disposal. See construction details for more information.

3.1.3 Backfill material retrieved from trench under roadway that meets the requirements of Granular Fill (Suitable Backfill) may be used as suitable backfill material per the Construction Drawings.

3.2 ROCK EXCAVATION:

3.2.1 Rock excavation shall include the loosening, removing, transporting, storing and disposal of all materials requiring barring or wedging for removal from their original beds. Blasting will not be permitted. All pieces of ledge or bed rock and boulders or masonry larger than one-half (1/2) cubic yard in volume are included under rock excavation.

Rock excavations shall be made to the widths and depths shown on the Plans or as approved by the Engineer. All excavated rock which cannot be handled and compacted as earth shall not be mixed with other backfill or embankment materials except as specified herein or as approved by Engineer.

3.3 GENERAL EXCAVATION: Keep excavations free from water while construction is in progress. Notify the Engineer immediately in writing if it becomes necessary to remove rock or hard, unstable, or otherwise unsatisfactory material to a depth greater than indicated. Make trench sides as nearly vertical as practicable except where sloping of sides is allowed. Sides of trenches shall not be sloped from the bottom of the trench up to the elevation of the top of the pipe. Excavate ledge rock, boulders, and other unyielding material to an over depth at least six-inches below the bottom of the pipe and appurtenances unless otherwise indicated or specified. Blasting will not be permitted. Over excavate soft, weak, or wet excavations as indicated. Use lining material placed in 6-inch-maximum layers to refill over depths to the proper grade. At the option of the Engineer, the excavations may be cut to an over depth of not less than 4-inches and refilled to required grade as specified. Grade bottom of trenches accurately to provide uniform bearing and support for each section of pipe on undisturbed soil, or lining material as indicated or specified at every point along its entire length. Trench dimensions shall be indicated on plans.

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3.4 ADDITIONAL EXCAVATION:

3.4.1 In case the materials encountered at the locations and grades shown on the Plans or specified are not suitable, or in case it is found desirable or necessary to excavate additional materials to secure good support for the structure or pipeline, the excavation shall be carried to such additional limits as the Engineer may direct. The Contractor shall refill such additional excavated space with either granular fill, Class "C" concrete or other material, as the Engineer may approve. Additional excavation, backfill material, concrete or other materials so ordered, will be paid for under the appropriate items of the Contract.

3.5 UNAUTHORIZED EXCAVATION:

3.5.1 Whenever excavations are carried beyond or below the lines and grades shown on the Plans, or as given or directed by the Engineer, all such excavated space shall be refilled with granular fill, concrete or other materials as approved by the Engineer. All refilling of unauthorized excavations shall be at the Contractor's own expense.

3.5.2 All material which slides, falls or caves into the established limits of excavations due to any cause whatsoever shall be removed and disposed of at the Contractor's own expense, and no extra compensation will be paid the Contractor for any materials ordered for refilling the void areas left by the slide, fall or cave-in.

3.6 EARTH SUBGRADE PREPARATION FOR PIPES:

3.6.1 Unless otherwise allowed by the Engineer, the trench shall have a flat bottom conforming to the depth to which the pipe is to be laid.

3.6.2 Mechanical excavation of trenches for pipe shall not extend lower than one (1) inch above the finished pipe subgrade elevation at any point. The remainder of the trench excavation shall be made with hand tools.

3.6.3 Pipe subgrade preparation shall be performed immediately prior to installing the pipe in the trench. The trench bottom shall be accurately graded by means of hand tools in such a manner that a uniform and continuous bearing and support on solid and undisturbed ground is provided for the pipe for its entire length or each section of pipe.

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3.7 EXCAVATION FOR CONCRETE CRADLE OR ENCASEMENT:

3.7.1 Where concrete cradle or encasement is required, the trench subgrade elevation will be determined by the required concrete section in each case. Unless otherwise authorized by the Engineer, concrete cradle or encasement shall extend across the full width of the trench as excavated, and the concrete therein shall be poured directly against vertical trench banks. In the case of concrete cradle or encasement of pipe in a sheeted trench, the concrete may be poured directly against sheeting which is to be left in place in the trench, as specified.

3.8 PIPE LINING:

3.8.1 All pipe shall be protected from lateral displacement and possible damage resulting from superimposed backfill loads, impact or unbalanced loading during backfilling operations by being adequately embedded in suitable material. Except where loading or subsoil conditions require the use of concrete cradle or encasement, all pipe lining shall be placed so as to insure adequate lateral and vertical stability of the installed pipe during pipe jointing and embedment operations. The amount of suitable material to hold the pipe in rigid alignment shall extend not less than 6 inches in any direction from the side of the pipe and shall be uniformly deposited and thoroughly compacted on each side of each pipe laid.

3.8.2 Pipe lining materials placed at any point below an elevation six (6) inches above the top of pipe, shall be deposited and compacted in layers not to exceed four (4) inches in uncompacted depth, and such deposition and compactions shall be done simultaneously and uniformly on both sides of the pipe. Compaction shall be by vibrating tamper or other approved method and shall be to a minimum dry density of ninety-five (95) percent of the maximum dry weight density in pounds per cubic foot as determined by the Modified Proctor Compaction Test. All such materials shall be placed in the trench with hand tools in such a manner that they will be scattered alongside the pipe and not dropped into the trench in compact masses.

3.8.3 Concrete cradle and encasement of the class specified shall be installed where and as shown on the Plans or ordered by the Engineer. Before concrete cradle or encasement is placed, the pipe shall be braced in all directions to prevent movement or flotation.

3.9 GENERAL BACKFILLING:

3.9.1 Construct backfill in two operations (initial and final) as indicated and specified in this section. Place initial backfill in 6-inch-maximum loose lifts to one-foot above pipe unless otherwise specified. Ensure that initially placed material is tamped firmly under pipe haunches. Bring up evenly on each side and along the full length of the structure. Ensure that no damage is

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EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES

3.9.1 Continued

done to structures or their protective coatings. Place the remainder of the backfill in 8-inch-maximum loose lifts unless otherwise specified. Compact each loose lift as specified in paragraph "General Compaction" before placing the next lift. Do not backfill in freezing weather or where the material in the trench is already frozen or is muddy, except as authorized. Provide a minimum cover from final grade as indicated on Plans. Where settlements greater than the tolerance allowed herein for grading occur in trenches and pits due to improper compaction, excavate to the depth necessary to rectify the problem, then backfill and compact the excavation as specified herein and restore the surface to the required elevation. Coordinate backfilling with testing of utilities. Provide buried identification tape installed in accordance with the manufacturer's recommendation.

3.10 TRENCHING:

3.10.1 The alignment, depth and pipe subgrades of all pipe trenches shall be determined by overhead grade lines parallel to the pipe invert, electrical laser beam or other grade control devices, installed and maintained by the Contractor.

3.10.2 Width and Depth of Trenches: The trenches in which pipelines are to be constructed, shall be excavated in all cases in such manner and to such depths and widths as will give suitable room for the pipelines which the trenches are to contain, for stability, sheeting, pumping, dewatering, well-pointing, and draining of water, and for removing the material not suitable for pipe subgrade.

3.10.3 Unless otherwise specified, trenches for pipes shall be not less than six (6) inches wider and deeper than the pipe on each side and below, when measured from the sidewall of the pipe.

3.11 GENERAL COMPACTION: Use hand-operated, plate-type, vibratory, or other suitable hand tampers in areas not accessible to larger rollers or compactors. Avoid damaging pipes and protective pipe coatings. Compact material in accordance with the following unless otherwise specified. If necessary, alter, change, or modify selected equipment or compaction methods to meet specified compaction requirements.

3.11.1 Compaction of Material for Sub-cuts or Over Excavations: Compact to 95% of ASTM D1557 maximum, ASTM D4254 relative density. In soft, weak, or wet soils, tamp material to consolidate to density of adjacent material in trench wall. In stable soils, compact to 90% of ASTM D1557 maximum, ASTM D4254 relative density.

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3.11.2 Compaction of Pipe: Compact to 90% of ASTM D1557 maximum density.

3.11.3 Compaction of Backfill: Compact initial backfill material surrounding pipes, to 90% of ASTM D1557 maximum density except where lining and backfill are the same material. Where lining and backfill are the same material, compact initial backfill to the density of the lining. Under areas to be seeded or sodded, compact succeeding layers of final backfill to 90% of ASTM D1557 maximum density. For utilities under railroad or highway right-of-ways, roads, streets, building slabs or other areas to be paved, compact succeeding layers of final backfill as specified under paragraph entitled "Special Earthwork Installation Requirements."

3.12 SPECIAL EARTHWORK INSTALLATION REQUIREMENTS:

3.12.1 Standard Specification References: In addition to backfill construction requirements stated above, place material in over cuts, bed material, and provide special backfill construction in accordance with the installation reference[s] identified in Table 2 for the pipe material[s] and utility system[s] listed.

TABLE 2		
PIPE MATERIAL	SPECIFICATION SECTION	INSTALLATION REFERENCE
a. Suitable Backfill	02221 Excavating, Backfill, & Compacting	PennDOT Section 703
b. Pipe Bedding	02674 HDPE Pipe & Fitting for Pipeline	PennDOT Section 703

3.12.2 Roads, Streets, Building Slabs, and Other Areas to be Paved: Place final backfill in 6-inch maximum loose lifts. If a vibratory roller is used for compaction of final backfill, the lift thickness can be increased to 9-inches. Compact all backfill surrounding pipes and other structures to 90% of ASTM D1557 maximum density except compact the top 12 inches of subgrade to 90% of ASTM D1557 maximum density. Backfill to allow the rolling and compacting of the completed excavation with the adjoining material, providing the specified density necessary to enable paving of the area immediately after backfilling has been completed. Compaction requirements for materials in pavement sections above the subgrade level shall be as specified in PennDOT Standard Specification for Roads and Bridges, Section 210.

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3.13 FINISH OPERATIONS:

3.13.1 Grading: Finish to grades indicated within one-tenth of a foot, or as indicated on Plans. Provide sod or topsoil in areas to be seeded or sodded as indicated. Grade areas to drain water away from structures and to provide suitable surfaces for mowing machines. Grade existing grades that are to remain but have been disturbed by the Contractor's operations.

3.13.2 Spreading Topsoil: Clear areas to receive topsoil for the finished surface of materials that would interfere with planting and maintenance operations. Scarify subgrade to a depth of 2-inches. Do not place topsoil when the subgrade is frozen, extremely wet or dry, or in other conditions detrimental to seeding, planting, or grading. Spread topsoil to a uniform depth of four-inches over the areas designated on the Plans.

3.13.3 Disposition of Surplus Material: Surplus or other soil material not required or suitable for filling, backfilling, or grading shall be wasted by disposition, in the area indicated within 10-feet of the site of the work or properly disposed of, off site, as approved by Engineer. Spread and level wasted material, grade to the elevations indicated. No environmentally sensitive areas shall be used for spoil areas. A copy of the signed agreement between the property owner and the Contractor granting permission to deposit spoil shall be given to the Engineer prior to placement.

3.13.4 Protection of Surfaces: Protect newly graded areas from traffic, erosion, and settlements that may occur and as required. Repair or reestablish damaged grades, elevations, or slopes.

3.13.5 Pavement Repair: Repair pavement, curbs, and gutters as indicated on Plans. Do not repair pavement until trench or pit has been backfilled and compacted as herein specified. Provide a temporary road surface of crushed stone over the backfilled portion until permanent pavement is repaired in accordance with PennDOT Publication 408 and local ordinances. Remove and dispose of temporary road surface material when permanent pavement is placed. As a minimum, maintain one-way traffic on roads and streets crossed by trenches; roads and streets shall be fully opened to traffic within 1 day.

3.13.6 Pavement Inspection: Contractor shall inspect temporary road surfaces every thirty (30) days [or when notified by the Owner], and repair damaged areas as needed or as directed by Owner.

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3.13.7 Sidewalk Repair: Repair sidewalks as indicated on Plans and as specified in PennDOT Publication 408, Section 676 – Cement Concrete Sidewalks. Do not repair sidewalks until trench or pit has been backfilled and compacted as herein specified. Concrete shall be Class A Cement Concrete for Structures as described in Section 704 of Publication 408. Contractor shall be responsible for testing concrete for conformance to Section 704 of Publication 408 and supplying necessary testing information to the Engineer and Owner.

3.14 FIELD SAMPLING AND TESTING

3.14.1 Test sand, backfill, cement and topsoil for conformance to specified requirements. Test backfill to be used under roads and paved areas for conformance to special requirements. Test backfill for moisture-density relations in accordance with ASTM D698, ASTM D1557, and ASTM D4253 as specified herein. Perform at least one of each of the required tests for each material used sufficiently in advance of construction so as not to delay work. Provide additional tests as specified above for each change of source. Perform final tests on topsoil to assure adjustment of parameters into the ranges specified. Perform density and moisture tests in randomly selected locations and in accordance with ASTM D1556, ASTM D2922, and ASTM D3017 as follows:

- a. Lining and Backfill in Trenches: One test per 400 linear feet in each lift.
- b. Appurtenance Structures: One test per 100 square feet or fraction thereof in each lift.

Where ASTM D2922 and ASTM D3017 are used to test field compaction densities, verify the results of the tests by performing at least one test per day using ASTM D1556 at a location already tested in accordance with ASTM D2922. Perform at least one additional test using ASTM D1556 for every [ten] tests performed with a nuclear device, also at locations checked in accordance with ASTM D2922.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT - EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES:

4.1.1 Measurement for Excavation, Backfilling, and Compacting for Utilities shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section.

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EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES

4.2 PAYMENT - EXCAVATION, BACKFILLING, AND COMPACTING FOR UTILITIES:

4.2.1 For Excavation, Backfilling, and Compacting For Utilities price is included in other unit bid price items, and not a separate payment item.

4.2.2 Contractor is responsible for labor, materials, and equipment necessary to make repairs on temporary road surface. No costs for this work will be reimbursed by the Owner. Costs assumed for potential repairs shall be included in Contractor's bid price items.

Payment for temporary road surface repair shall be included under other lump sum price items, and not a separate payment item. Payment shall include and cover the cost of all work, materials, labor and expense, including excavation, specified or implied, incidental to the remediation of the area.

END OF SECTION

SECTION 02315

HIGHWAY AND RAILROAD CROSSINGS

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 The Contractor shall furnish and install complete as shown, specified or directed, casing pipe of the size, material and gauge indicated, across and under the highway at the location shown or directed.

1.2 SITE INSPECTION:

1.2.1 The Contractor shall inspect the locations at the proposed crossings and familiarize himself with the conditions under which the work will be performed, and with all necessary details and the suitability of his equipment for the work required. The omission herein of any details for the satisfactory installation of the work in its entirety shall not relieve the Contractor of full responsibility.

1.3 EXPERIENCE:

1.3.1 The Contractor may install the casing with his own organization provided he has been engaged in the construction of installations of a similar nature for a period of three years and can furnish a record of successful performance.

1.3.2 If the Contractor does not meet the qualifications outlined above, he shall employ a sub-contractor to install the casing who has had the required experience. The Contractor shall submit to the Engineer the name of the sub-contractor he proposes to employ.

1.3.3 Following the approval of the Contractor or subcontractor by the Engineer, the Contractor shall submit a description of the work which he proposes to perform to construct the casing.

PART 2 - PRODUCTS

(NOT USED)

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HIGHWAY AND RAILROAD CROSSINGS

PART 3 - EXECUTION

3.1 METHODS:

3.1.1 Within the limits shown on the Drawings for the casing to be driven, the Contractor shall construct the casing by jack and bore or horizontal directional drilling unless otherwise specified. The remaining portion of the casing may be constructed in the same manner or by open cut methods in a sheeted trench.

3.1.2 The installation of the casing pipe shall be carried out without disturbance of the embankment, pavement, tracks, or other railroad or highway facilities and without obstructing the passage of traffic at any time.

3.1.3 Once the operation is started, field conditions may require it to proceed on a 24-hour basis without interruption until complete in order to prevent undermining the roadway or railroad bed and tracks. The casing pipe shall be maintained accurately to line and grade during operations. Should the Engineer permit the Contractor to interrupt operations, bulkheads and dewatering measures shall be provided as approved by the Engineer.

3.1.4 The driven portions of the casing shall be advanced from the lower end of the casing unless specific permission to do otherwise is obtained by the Contractor from the Engineer.

3.1.5 A tight fitting bulkhead shall be readily available in case unforeseen conditions require the operation to be halted.

3.2 ALTERNATE "A" JACK AND BORE:

3.2.1 Casing Pipe:

3.2.1.1 The casing pipe shall be of the minimum size indicated and shall be steel pipe of the minimum wall thickness shown on the Drawings. Steel pipe used for the casing pipe shall have a minimum yield strength of 35,000 psi and an ultimate strength of 60,000 psi.

3.2.2 Jacking:

3.2.2.1 The jacking pipe shall be maintained accurately to line and grade during the jacking operation.

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3.2.2.2 Tongue and groove pipe shall be placed with the tongue end downstream. Tongue and groove jacking pipe shall be jointed by placing a bituminous coated or tarred rope around each tongue. The inner surface of all joints shall be filled with mortar and brushed smooth.

3.2.3 Boring:

3.2.3.1 The boring machine shall be accurately aligned before boring is commenced, and the Contractor shall take such necessary steps as are required to accurately place the casing with respect to line and grade.

3.2.3.2 The leading edge of the steel casing shall be kept as close to the auger head as possible and shall be advanced at the same rate of speed as the earth auger in order to minimize any unsupported holes in the earth.

3.3 ALTERNATE "B" HORIZONTAL DIRECTIONAL DRILL:

3.3.1 See Section 02552 HIGH DENSITY POLYETHYLENE (HDPE) PIPE – DIRECTIONAL BORE METHOD

3.3.2 Fiber Optic Cable Installation:

3.3.2.1 Follow instructions and details provided in the Plans, or as approved by Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT - HIGHWAY AND RAILROAD CROSSINGS:

4.1.1 When the Bid requires a unit price bid per linear foot of crossing, the length of the crossings for which payment will be made shall be the total linear feet of casing pipe installed according to the Plans and/or as directed by the Engineer in writing, as measured in place along the center line of the pipe.

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HIGHWAY AND RAILROAD CROSSINGS

4.2 PAYMENT - HIGHWAY AND RAILROAD CROSSINGS:

4.2.1 Payment for Highway and Railroad Crossings shall be included under other lump sum price items, and not a separate payment item. Payment shall include and cover the cost of all work, materials, labor and expense, including excavation specified or implied, incidental to the completion of each crossing in accordance with the Drawings and Specifications.

END OF SECTION

SECTION 02449

WORK ZONE TRAFFIC CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Work Zone Traffic Control as indicated on the drawings, as specified and/or directed.

1.1.2 The following items of work shall be included:

- a. Furnish and install all temporary traffic signs including all labor, equipment, sign panels, posts, hardware, post anchorage and all appurtenances necessary for a complete installation.
- b. Furnish and place all traffic cones including all labor, materials and appurtenances necessary for a complete installation.
- c. Furnish and install all barricades including all labor, materials and appurtenances necessary for a complete installation.
- d. Provide flagmen as required.

1.1.3 The work shall be performed in accordance with 67 PA Code, Chapter 212 of the current edition of the Pennsylvania Department of Transportation Publication 213 Temporary Traffic Control Guidelines and the MUTCD, and any engineering instruction to these Specifications issued after that date.

1.1.4 In addition to the requirements of this Section, all items of work in Section 01577 of these Specifications shall be provided.

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 Temporary traffic signs are intended for work zone traffic control during construction operations on or near the roadway under Pennsylvania state law. Such temporary traffic signs shall be provided in accordance with the current edition of Publication 213 of the Pennsylvania Department of Transportation Temporary Traffic Control Guidelines.

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WORK ZONE TRAFFIC CONTROL

2.1.2 The sign size, shape, color and legend shall be as shown in the current edition of the National Manual of Uniform Traffic Control Devices and the PennDOT Supplements.

2.1.3 Traffic cones and barricades shall be provided in accordance with the current edition of Publication 213 of the Pennsylvania Department of Transportation Temporary Traffic Control Guidelines.

PART 3 - EXECUTION

3.1 INSTALLATION:

3.1.1 Temporary traffic signs, barricades and traffic cones shall be located in accordance with the current edition of Publication 213 of the Pennsylvania Department of Transportation Temporary Traffic Control Guidelines (Pub. 213) and the National Manual of Uniform Traffic Control Devices (MUTCD) or as approved by the Engineer. If a contradiction occurs between Pub. 213 and the MUTCD, Pub. 213 will govern.

3.1.2 All temporary traffic signs, barricades and traffic cones shall be installed in strict accordance with the requirements of the current edition of Publication 213 of the Pennsylvania Department of Transportation Temporary Traffic Control Guidelines and as indicated on the drawings.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT – WORK ZONE TRAFFIC CONTROL:

4.1.1 Measurement for Work Zone Traffic Control shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section.

4.2 PAYMENT – WORK ZONE TRAFFIC CONTROL:

4.2.1 Payment for Work Zone Traffic Control will be made at the applicable price stated in the Bid.

END OF SECTION

SECTION 02484

TOPSOIL

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Topsoil as shown on the Plans, as specified, and/or directed.

1.2 REFERENCES: The publications listed below and this latest revision form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designator only.

1.2.1 American Society for Testing and Materials (ASTM) publications D5268 Standard Specifications for Topsoil Used for Landscaping Projects.

PART 2 - PRODUCTS

2.1 MATERIAL:

2.1.1 Topsoil for such depth as directed shall be removed from areas of the site where excavations are to be made or embankments placed. The soil so removed shall be transported and stored in piles at convenient locations designated or approved and shall be kept separate from all other classes of excavated material. Should the Contractor fail to keep separate from other material any soil removed, he shall procure and furnish at his own expense an equivalent quantity of satisfactory topsoil.

2.1.2 The Contractor is required to process the topsoil with compost to achieve a topsoil gradation compliant with ASTM D5268. The material shall contain no admixture of refuse or any material toxic to plant growth and shall be free from subsoil, stones, clay lumps or similar objects larger than two inches in greatest dimension. Sod and herbaceous growth such as grass and weeds need not be removed. Topsoil shall not be delivered or placed in a frozen or muddy condition.

2.1.3 Contractor to condition topsoil as necessary. Topsoil from on-site and off-site sources shall have an acidity range of pH 5.0 to 7.0 and shall contain 2 to 20% organic matter as determined by loss of ignition of moisture-free samples dried at 100 degrees C.

- a. Where topsoil pH is below 5.0, lime shall be added at a rate of 2-1/2 lbs. per cubic yard of topsoil until the pH is above 5.0.

SECTION 02484

TOPSOIL

- b. Where topsoil pH is above 7.0, aluminum sulfate shall be added at a rate of 2-1/2 lbs. per cubic yard of topsoil until the pH drops below 7.0.

2.2 SOIL AMENDMENTS:

2.2.1 Lime: Natural dolomitic limestone containing not less than 85 percent of total carbonates with a minimum of 30 percent magnesium carbonates, ground so that not less than 90 percent passes a 10-mesh sieve and not less than 50 percent passes a 100-mesh sieve.

2.2.2 Aluminum Sulfate: Commercial grade, in dry powder form.

2.3 SUBMITTALS:

2.3.1 The Contractor shall submit six (6) copies of a pH test and organic content test for the Engineer's review for each source of topsoil to be used.

PART 3 - EXECUTION

3.1 QUALITY ASSURANCE

3.1.1 Topsoil will be visually inspected upon delivery and material that does not comply with the Specification will be rejected.

3.2 PLACING:

3.2.1 Topsoil shall include fine grading the surface of the ground upon which topsoil is to be placed and the furnishing and placing of topsoil in the areas to be seeded or planted.

3.2.2 Depth of topsoil shall be minimum 6 inches unless otherwise shown or directed.

3.2.3 After approval by the Engineer of the fine grading of the subgrade, the topsoil shall be spread and compacted with a light roller to the lines, grades and elevations shown on the drawings, or approved by the Engineer, without unsightly variations, ridges or other depressions which will hold water. Any stone, litter or objectionable material shall be removed from the topsoil and the surface raked to true lines. Any uneven spots shall be leveled. The work shall not be performed during unsuitable weather.

SECTION 02484

TOPSOIL

PART 4 – MEASUREMENT & PAYMENT

4.1 MEASUREMENT – TOPSOIL:

4.1.1 The quantity of Topsoil for which payment will be made will be the plan view in square feet at the depths specified (6 inches unless otherwise noted) covered by topsoil. This area shall be determined based on as-built drawings of the topsoil area supplied by a PA State licensed surveyor hired by the Contractor.

4.2 PAYMENT – TOPSOIL:

4.2.1 For Topsoil, payment is included in other unit bid price items, and not a separate payment item. No payment will be made for any portion of this item until the Topsoil has been placed in final location.

END OF SECTION

SECTION 02485

SEEDING

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Seeding, as specified, and/or directed.

1.1.2 The Contractor shall seed new areas and disturbed areas as specified or directed by the Engineer. Contractor shall prepare the seed bed by scarifying or otherwise loosening soil to a depth of 2 inches, applying fertilizer, lime or aluminum sulfate, seed and mulch at the rates specified.

1.1.3 Excavated topsoil shall be applied to the disturbed locations and prepared as outlined in Section 02484.

PART 2 - PRODUCTS

2.1 MATERIALS:

2.1.1 Fertilizer:

2.1.1.1 Commercial fertilizer (19-19-19) shall contain not less than nineteen percent nitrogen, nineteen percent available phosphoric acid and nineteen percent water soluble potash. The fertilizer shall be inorganic or a combination of inorganic and organic substances.

2.1.1.2 If, as an alternative, the Contractor wishes to substitute another fertilizer, such as 10-20-10 to 6-12-6, he may do so with the approval of the Engineer, and the rate of fertilizer to be used shall be whatever amount is required to furnish the same amount of nitrogen as would be supplied by the 19-19-19.

2.1.1.3 Commercial fertilizer shall be delivered in original bags of the manufacturer, showing weight, analysis and the name of the manufacturer.

2.1.1.4 If the commercial fertilizer is not used immediately after delivery, the Contractor shall store it in such a manner that its effectiveness will not be impaired.

SECTION 02485

SEEDING

2.1.2 Seed:

2.1.2.1 Grass seed shall be a mixture of the species and/or varieties specified, mixed in the proportions specified.

2.1.2.2 The seed shall be fresh, re-cleaned and of the latest crop year. It shall conform to Federal and State Standards. Each type of grass in the mixture shall meet or exceed the minimum percentage purity and germination listed for that type of grass.

2.1.2.3 The following seed mixture shall be used for lawns, ditches, slopes and all areas disturbed by construction. This seed mixture is a commercial conservation mix, manufactured by Ernst Conservation Seeds. Contractor shall plant seed in accordance with manufacturer's recommendations.

<u>Percentage by Weight</u>	<u>Species or Variety</u>
50	Annual Ryegrass
50	Perennial Ryegrass

2.1.2.4 For excessively wet areas, Reed Canary Grass shall be utilized.

2.1.2.5 The balance of material in an acceptable seed mixture, other than specified pure live seed shall, for the most part consist of nonviable seed, chaff, hulls, live seeds of crop plants and harmless inert matter. The percentage of weed shall not exceed one percent by weight for the mixture.

2.1.2.6 All seed mixtures furnished under this Item shall be mixed by the vendor and shall be delivered in standard sized bags of the vendor, showing the weight, analysis and vendor's name.

2.1.2.7 All seed shall be properly stored by the Contractor at the site of the work and any seed damaged during storage shall be replaced.

2.1.3 Mulch:

2.1.3.1 Straw or hay mulch shall consist of oats, wheat, rye or other approved crops which are free of noxious weeds. Weight shall be calculated on the basis of the straw having not more than 15% of moisture content.

SECTION 02485

SEEDING

PART 3 - EXECUTION

3.1 INSTALLATION:

3.1.1 Time For Seeding:

3.1.1.1 All seeding shall be done in a dry or moderately dry soil and at times when the wind does not exceed a velocity of five miles per hour. The Contractor is required to water seeded areas as necessary to provide favorable growing conditions.

3.1.1.2 Restoration of disturbed areas shall be completed within thirty (30) days of disturbance.

3.1.2 Preparation of Seed Bed:

3.1.2.1 After the finished grading is completed and just before seeding, the areas to be seeded shall be loosened to a depth of two inches and free from depressions which will hold water. All sticks, stones, clods, roots or other objectionable material which might interfere with the formation of a fine seed bed shall be removed from the soil.

3.1.2.2 Commercial fertilizer shall be evenly applied at the rate of 300 pounds per acre.

3.1.3 Seeding:

3.1.3.1 Grass seed mixture shall be sown at the rate of 200 pounds per acre.

3.1.3.2 The seed shall be sown by hand or by an approved machine, in such a manner that a uniform stand will result.

3.1.3.3 After sowing, seeded areas shall be rolled with a light lawn roller weighing not more than one hundred pounds per foot of width.

3.1.4 Mulching:

3.1.4.1 Within three days after the seed is sown, the seeded areas shall be covered with a uniform blanket of straw mulch at the rate of 1,000 pounds per acre of seeded area or as required to provide 90% coverage (i.e., lightly cover 90% of the surface).

SECTION 02485

SEEDING

3.1.5 Hydroseeding:

3.1.5.1 The Contractor may substitute a hydroseeding process for hand seeding and mulching as specified above.

3.1.5.2 Where hydroseeding is used, the Contractor shall mix water, seed fertilizer, mulch and mulch anchorage at the following rates and apply to the prepared seed bed by means of a hand-held hose. No truck mounted spraying equipment shall be driven over the areas to be seeded. Discharge shall be in an uphill direction only.

- | | |
|--------------------|--|
| a. Fertilizer | - 300 lbs. per acre |
| b. Seed | - 250 lbs. per acre |
| c. Mulch | - Sufficient to equal 90% straw mulch coverage |
| d. Mulch Anchorage | - Per Manufacturer's instructions |
| Chemical | 750 lbs. wood fiber/acre |
| Wood Cellulose | |

3.1.5.3 Where the mulch anchorage is provided ready mixed with the mulch, no additional mulch anchorage will be required.

3.1.5.4 Mulch shall be a commercial cellulose hydromulch such as "Conwed 2000", "Turf Fiber", or equal. Soil seal or mulch anchorage used shall be approved by the Engineer. An asphalt emulsion shall not be used as mulch anchorage.

3.2 MAINTENANCE AND PROTECTION:

3.2.1 The Contractor shall maintain and protect all seeded areas until final acceptance of the Seeding portion of the Contract.

3.2.2 Final acceptance will not be made until an acceptable uniform stand of grass is obtained in all newly seeded areas except that the Engineer at his discretion may accept a portion or portions of the work at various times.

3.2.3 Upon final acceptance of a seeded area by the Engineer, the Owner will assume responsibility for maintenance and protection of that area.

SECTION 02485

SEEDING

3.2.4 Any portions of seeded areas which are unacceptable, and which fail to show a uniform stand of grass from any cause, shall be reseeded as before except the fertilizer shall be applied at one-half the original rate. The seeding shall be repeated until the seeded areas are satisfactorily covered with grass.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - SEEDING:

4.1.1 Measurement for the quantity of Seeding for which payment will be made shall be the actual number of acres covered.

4.2 PAYMENT - SEEDING:

4.2.1 For Seeding, payment is included in other unit bid price items, and not a separate payment item.

END OF SECTION

SECTION 02521

ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Asphaltic Concrete Paving, including accessory items of work herein described, as specified, and/or directed.

1.1.2 All work and material shall be in accordance with the applicable requirements of PennDOT. Sections mentioned herein refer to those Specifications.

1.2 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basis designation only.

1.2.1 State Highway Specification:

Pennsylvania Department of Transportation, Standard Specifications, Publication 408/Latest Edition as Amended.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS:

1.3.1 Excavation and filling to establish elevation of subgrade is specified in Section 02225," Excavating, Backfilling and Compacting for Utilities".

1.4 CERTIFICATES:

1.4.1 Provide approved certification that all paving materials conform to the Specification.

PART 2 - PRODUCTS

2.1 SUBGRADE:

2.1.1 Preparation of subgrade shall be in accordance with PennDOT Section 210 [and Article 1.3.1 of this Specification].

SECTION 02521

ASPHALTIC CONCRETE PAVING

2.2 SUBBASE:

2.2.1 Materials and methods of construction of Subbase shall be in accordance with PennDOT Section 350.

2.3 BASE COURSE:

2.3.1 Materials and methods of construction of Base Course shall be in accordance with PennDOT Section 300, Type 1 (Item 403.118902).

2.4 BINDER COURSE:

2.4.1 Materials and methods of construction of Binder Course shall be in accordance with PennDOT Section 400, Type 3 (Item 403.138902).

2.5 TOP COURSE:

2.5.1 Materials and methods of construction of Top Course shall be in accordance with PennDOT Section 500, Type 6 (Item No. 403.178902).

2.6 TESTING: The Contractor shall employ an approved commercial testing laboratory at his own expense to conduct any and all tests required prior to the delivery of materials to the site of the project and shall also perform compaction as required. The Engineer may, at the Contractor's expense, require additional tests if, in his opinion, the quality of the materials has changed.

PART 3 - EXECUTION

3.1 CONSTRUCTION DETAILS: The Contractor shall comply with details of construction as specified in PennDOT Publication 408/2011 Standard Specifications.

3.1.1 Provide Engineer with copies of delivery receipts indicating mix design.

3.1.2 Delivery temperature outside of PennDot specifications will be rejected by Engineer.

SECTION 02521

ASPHALTIC CONCRETE PAVING

3.2 PREPARATION

3.2.1 Contractor shall be responsible for saw cutting existing pavement in accordance with PennDOT specifications.

3.3. INSTALLATION

3.3.1 Contractor shall be responsible for seal coating edges in accordance with PennDOT specifications.

3.3.2 Contractor shall be responsible for restoring asphalt and concrete surfaces to existing grades, or as noted in the attached drawing, and in accordance with Section 676 of PennDOT Publication 408.

3.3.3 Restoration shall be completed within thirty (30) days of initial disturbance.

3.3.4 Concrete shall be Class A in accordance with Section 704 of PennDOT Publication 408.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT – SUBBASE, BASE COURSE, BINDER COURSE AND TOP COURSE:

4.1.1 The quantity of Subbase, Base Course, Binder Course and Top Course, where used, shall be measured by the number of tons of compacted mixture placed in the work within the pavement limits shown or specified, as determined by certified truck scale weights.

4.2 PAYMENT - BASE COURSE, BINDER COURSE AND TOP COURSE:

4.2.1 For Subbase, Base Course, Binder Course and Top Course, payment is included in other unit bid price items, and not a separate payment item.

END OF SECTION

SECTION 02552

HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish labor, materials and equipment for HDPE Pipe Installation at the specific locations shown on the Plans, as specified, and/or required to produce a fully functional system. The Contractor has the option to employ open trench excavation or directional bore for installation of conduit pipe to carry the fiber optic cable. If the Contractor elects to employ directional bore methods, this technical specification shall govern the work. Contractor is limited to 1 acre or less of earth disturbance for the entire project, including proposed open trench areas.

1.1.2 This Section covers the installation of new HDPE pipe using the horizontal directional boring system. The directional boring system shall utilize a self-contained, surface-mounted boring machine to advance an electronically guided drill rod from an entrance area to an exit area at a specified depth from existing surface. The drill rod shall provide a pilot hole for pulling a back-reamer assembly, complete with nozzle, reamer, swivel, and product holder through the borehole for new product installation. Directional boring shall be the preferred method to install conduit / carrier pipe. Work of this Section shall include surface restoration, and a complete installation in accordance with the Contract Documents.

1.2 WORK SPECIFIED IN OTHER SECTIONS:

1.2.1 The work under this Section shall include the following:

- 02225 Excavation, Backfilling, and Compacting for Utilities
- 02485 Seeding
- 02521 Asphaltic Concrete Paving
- 02674 High Density Polyethylene (HDPE) Pipe & Fittings

1.3 REFERENCE STANDARDS:

- a) ASTM F1962 – Standard Guide for Use of Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit under Obstacles

1.4 SYSTEM DESCRIPTION

1.4.1 Design Criteria:

- a) Install piping at the horizontal and vertical alignment shown on the Contract Drawings.

SECTION 02552

HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

1.4.1 Design Criteria - Continued

- b) Drilling Steering System: Remote with continuous electronic monitoring of boring depth and location.
- c) Directional Change Capability: 90 degree on a 35-foot radius curve.
- d) Minimum distance for single bores and between boring areas (handholes) unless approved by Engineer:

<u>Pipe size</u>	<u>Boring Distance</u>
1 in. to 1 ½ in.	400-feet
2 in. to 2 ½ in.	350-feet
3 in to 6 in.	300-feet
6 in. to 10 in.	200-feet
>10 in.	Approval of Engineer

- e) Ratio of Reaming Diameter to Pipe Outside Diameter:
 - i. Nominal pipe diameter of 6-inches and smaller: 1.5 maximum
 - ii. Nominal pipe diameter larger than 6-inches: Submit recommended ratio and reaming procedures for review by Engineer.

1.4.2 Allowable Tolerances:

- a) Horizontal: Not to exceed one (1) foot ± of the design horizontal alignment
- b) Vertical: Not to exceed one (1) foot ± of the vertical design alignment. Minimum ground cover required:
 - i. Two (2) feet for Electric and communications
 - ii. Four (4) feet for sewer and water
- c) Clearance with other Utilities: Minimum 2.5 foot horizontal and 1 foot vertical from other utility lines. Minimum 2 feet from fire hydrants and utility poles

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HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

1.5 QUALIFICATIONS:

1.5.1 The Contractor shall be a factory-certified directional boring specialist, and shall be certified by the directional bore machine manufacturer. The Certification shall state that the Contractor is a fully trained user of the directional bore machine and is fully versed in its safe operation. The Certification shall be furnished to the Engineer for approval.

- a) Perform work by an experienced Contractor fully familiar with this type of work.
- b) Demonstrate the following qualifications:
 - i. A minimum of 5 years direct experience in horizontal directional drilling for the installation of piping by the process specified herein.
 - ii. Successful completion of at least three projects of similar size and scope to the work specified herein.
 - iii. Drilled/installed in excess of 50,000 linear feet of similar piping.
 - iv. Conventional trenching experience is not considered applicable.

1.5.2 Polyethylene pipe jointing shall be performed by personnel trained in the use of butt-fusion equipment and recommended methods for new pipe connections. Personnel directly involved with installing the new pipe shall receive training in the proper methods for handling and installing the polyethylene pipe. Training shall be performed by a qualified representative of the pipe welding equipment. Certificates of training shall not be more than 3 years old at the time work is performed.

1.6 SUBMITTALS:

1.6.1 Submit the following:

1.6.1.1 Shop Drawings, catalog data, and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe and fittings. Include manufacturer's recommendations for handling, storage, and repair of pipe and fittings damaged.

1.6.1.2 Method of construction, detail drawings showing space requirements for equipment setup at entrance area and exit area, safety provisions, etc., and written descriptions of the entire construction procedure to install the new pipe and new handholes.

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HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

1.6.1.3 Certification of workmen training for installing pipe.

1.6.1.4 Complete a Bore Path Plan (see Section 3.1.2) for each bore submitted prior to commencing bore. Approval of the Engineer shall be obtained prior to commencing any bore.

- a) Submit technical data for equipment to be employed, method of installation, and proposed sequence of construction. Include information pertaining to working and receiving shafts, dewatering, method of spoil removal, size and capacity of equipment capabilities, including installing pipe on a radius, type of cutter head, drilling fluid, method of monitoring line and grade detection of surface movement, name plate data for the drilling equipment and mobile spoils removal unit, and Safety Data Sheet (SDS) information for the drilling slurry compounds.
- b) Submit to Engineer pull back power to be applied to HDPE pipe for verification of pipe strength.
- c) Submit technical data and a sample for the product location system (for non-conductive product).
- d) Submit calculations and procedures to contain drilling mud in bore path/hole. Include contingency plan if drilling fluid escapes from bore path/hole.
- e) Submit bore path plan for verification and approval by Engineer.
- f) Submit PA One Call verification to Engineer prior to beginning work. This verification shall also include Contractor's field verification of location and depth of utility.

1.7 JOB CONDITIONS:

1.7.1 Protection:

1.7.1.1 Surrounding Areas and Surfaces

- a) Protect pavement, sidewalk, and other infrastructure items, and landscaping. Repair or replace items damaged during construction.
- b) Repair or replace at no additional cost (no change in contract value), structures that are raised by more than ¼ inch due to pressure from drilling operations, i.e., humped pavement or faulted sidewalk.

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HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

1.7.1.2 Safety Precautions Due to Existing Buried Electrical Cables:

- a) Provide the following: Drilling equipment with permanent inherent alarm system capable of detecting an electric current. Provide a visual and audible alarm to warn the operator when the drill head nears an electrified cable.
- b) Equipment crews with grounded safety mats, heavy gauge ground cables with connections, and hot boots/gloves.
- c) Trained and experienced supervisory personnel.

1.7.2 Mark pits, shafts and other open excavations with appropriate safety devices, such as barricades and cones, during periods of operational use. After working hours mark, isolate, or cover pits and shafts that remain open to prevent access by the public. Remove equipment daily from vehicular and pedestrian roads, sidewalk and pathways to allow access and use by the general public.

1.7.3 Water for Drilling Operations:

1.7.3.1 Obtain suitable water for drilling operations and include costs related to the procurement of water in the Contract price bid for this work.

1.7.4 Emergencies

- a) Provide immediate notification to local Fire and Police Departments and utility companies whenever gas or electric lines are damaged by the work. Notify the Engineer within 12 hours whenever any utility line is damaged.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS:

2.1.1 Polyethylene (PE) plastic pipe shall be high density polyethylene pipe (HDPE). The material used for the manufacturing of polyethylene pipe and fittings shall be PE 3408 High Density Polyethylene (HDPE) meeting the ASTM D3350 cell classification of 345434C. Pipe shall be marked on the exterior face with pipe specifications and vendor name.

SECTION 02552

HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

2.1.1.1 Pipe shall be made of virgin material. No rework except that obtained from the manufacturer’s own production of the same formulation shall be used.

2.1.1.2 The pipe shall be homogeneous throughout and shall be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.

2.1.1.3 Dimension Ratios: The minimum wall thickness of the polyethylene pipe shall meet the following:

<u>Depth of Cover (Feet)</u>	<u>Minimum DR of Pipe</u>
0-5	11

2.1.1.4 Polyethylene pipe shall be ductile iron pipe size (DIPS) equivalent.

2.1.1.5 Color shall be orange, unless approved in writing by Engineer.

2.1.1.6 Tracer wire shall be pulled through the HDPE pipe. Tracer wire shall be 10 gauge single copper hard conductor, Pro-Trace HDD-CCS PE45, or Engineer approved equal, provided in sufficient length to be continuous over each separate run of nonmetallic pipe, allowing for enough wire to extend to marker post installation which maybe offset from the pipe conduit location. Tracer wire shall comply with Section 02674, Section 2.5.

2.2 EQUIPMENT:

2.2.1 Directional Boring Machine:

2.2.1.1 The directional boring machine shall be of self-contained design for convenient setup at the specified locations. The self-contained design shall include, as a minimum, a power plant, rod box, and integral drilling-fluid pump. The boring machine shall be self-propelled for efficient loading, unloading and job site access.

2.2.1.2 The directional boring machine shall be capable of delivering rotational torques and pullback power required for the specified pipe installations.

2.2.1.3 The bore machine shall be capable of drilling a 3-inch diameter borehole. The bore head shall have a maximum locating depth of 50' walkover and 100' wire line. Locator accuracy shall be a minimum 5 percent of above measured value.

2.2.1.4 The bore machine’s water pumping system shall be capable of delivering sufficient flows at sufficient pressures for the proposed installation.

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HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

2.2.1.5 The bore machine drill rods shall be of a diameter recommended by the manufacturer for the specified installations. Drill rods shall be of one-piece forged design, and 15 feet in length. The maximum angle in degrees/rod shall be no less than 4.3 degrees, or 7.5 percent per rod. Drill rods shall have a torque rating adequate for the installation specified. These specifications have been established to provide a level of expectation to the Contractor relative to the performance of work. Engineer will consider other equipment options if Contractor can demonstrate power, head control, and distance of bore provided by the equipment.

2.2.1.6 The bore machine shall be equipped with and utilize safety devices as furnished by the manufacturer, including, but not limited to, grounding stake(s), voltage stake(s), voltage equalizing mats for grounding standing personnel, electrical strike alert sensing system, area warning cones, warning decals and operating instructions, and insulated linemen's gloves and boots for operating personnel.

2.3 DRILLING SLURRY:

- a) Liquid/clay slurry (bentonite) totally inert with no environmental risk.
- b) Other Slurry Materials: Non-corrosive and environmentally safe as approved by Engineer.

2.4 DELIVERY, STORAGE, AND HANDLING:

2.4.1 Transport, handle, and store pipe and fittings as recommended by manufacturer.

2.4.2 If new pipe and fittings become damaged before or during installation, it shall be repaired as recommended by the manufacturer or replaced as required by the Engineer and/or the Owner at no change in contract price.

2.4.3 Deliver, store and handle other materials as required to prevent damage and interference with the Owner's day to day operations and activities of residents.

PART 3 - EXECUTION

3.1 PREPARATION:

3.1.1 The Contractor shall verify the location (horizontal and vertical burial) of all landowner known and "One Call" identified utilities within the project area before proceeding with the bore. The Contractor shall perform any excavations for utility location and demonstrate to the

SECTION 02552

HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

3.1.1 Continued

satisfaction of Engineer that the location and depth of each utility being crossed will be protected from damage resulting from the proposed bore. Surfaces disturbed during approved utility excavations shall be restored by the Contractor. Contact property owners for location of private systems such as electric/lighting lines, water lines, plumbing/sanitary sewer services, drain pipes/roof leaders, sprinkler systems, and pet security systems.

3.1.2 The Contractor shall thoroughly review the proposed pipe installations before proceeding with any bore, and shall submit his proposed method of construction for the Engineer's approval in accordance with Paragraph 1.3.1.2 of this Section. Contractor shall submit a complete "Bore Path Plan" to the Engineer for approval prior to commencing the bore. Plan must show entry and exit points plus drill rod deflections every 20 linear feet along proposed path. Plan will also show point of entry, recovery pits and slurry sump pits as required to perform the Work. Plan will also provide details for restoration of work areas after completion of the drilling and pipe installation. Provide sump areas details and methods to contain drilling fluids. Minimize the number of access pits.

3.1.3 The Contractor shall insure that all equipment, materials, supplies, utilities, and personnel are on-site, adequately trained and properly functioning before commencing any bore.

3.1.4 The Contractor shall review soil data obtained by the Owner at the project site before commencing any bore to ensure that he/she is thoroughly familiar with the types of soils and rock which could potentially be encountered during the bores. The Contractor shall be responsible for determining soil and rock characteristics at locations not covered by the soil bores. Note: Owner does not have any soil data.

3.1.5 Water Source: Identify the source of fresh water for the drilling fluid. Provide a pH test for water source other than potable water. Provide with copy of approvals and permits for water source.

3.2 DIRECTIONAL BORE:

3.2.1 After receiving approval from Engineer to commence the bore, the Contractor shall set up the directional boring machine and perform the directional bore in accordance with the manufacturer's recommendations. The Contractor, based on soil types encountered, shall utilize the manufacturer's recommended drilling rods, drill bits, drilling fluids (i.e., water, bentonite, and polymers), back reamers and pullback speeds to allow for installation of the specified pipe sections without the occurrence of hydra-lock and frac-out surfacing of high-pressure drilling fluid), the creation of voids around the new pipe, pipe seizing due to a dry hole, or stretching the

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HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

3.2.1 Continued

new pipe due to soil resistance during the pull. Should the Contractor encounter any of the problems during his boring operations, he shall immediately inform the Engineer of the occurrence, and shall rectify the situation at no increase in contract price.

3.2.2 The Contractor shall be responsible for any damage his operations may cause to existing facilities, utilities, roadways, highways, etc., and shall be responsible for all costs associated with repairing any damaged facilities and amenities.

3.2.3 The Contractor shall determine if pre-reaming prior to the back ream is required for the specified installations. No additional payment shall be made for pre-reaming. Drilling will generally follow the sequence of events outlined below:

- a) Drill pilot hole on proposed line and grade
- b) Remove pilot bit at exit point
- c) If required, connect reamer to enlarge pilot hole to diameter capable of accepting pipe to be installed.
- d) Over drilling to a diameter greater than 1.5 times the HDPE pipe is prohibited
- e) The Contractor shall be responsible for measuring required pipe lengths for the specified installations, and shall provide sufficient excess lengths of new pipe for connections and surface terminations.

3.2.4 The Contractor shall adhere to Federal, State, and Local regulations and project permits, and shall take means necessary to prevent erosion and the migration of sediment from the construction site. This shall include, but is not limited to, employing E&S best management practices (BMPs) as outlined in the project drawings such as installation of filter fence/SiltSoxx, control of temporary placement of excavated material up slope of the excavation, and immediate stabilization of disturbed areas after construction is complete. Contractor is responsible for maintaining E&S facilities until full stabilization has been achieved.

3.2.5 The Contractor is responsible for construction and maintenance of facilities to prevent and contain any hydraulic or boring fluid spills including containment berms, liners, etc. These materials shall be prevented from entering waterways at all times. Fuel or oil may not be stored in bulk containers within 200' of any water-body or wetlands. In the event that a boring fluid fracture, inadvertent returns or returns loss occurs during pilot hole boring operations, Contractor

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HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

3.2.5 Continued

shall cease boring, wait at least 30 minutes, inject a quantity of boring fluid with a viscosity exceeding 120 seconds as measured by a March funnel and then wait another 30 minutes. If mud fracture or returns loss continues, Contractor will cease operations and notify Engineer. Engineer and Contractor will review contingency options and work will then proceed accordingly.

- a) With approval of Engineer, remove excavation materials from job site. No stock piles will be allowed to remain in excess of 5 days. Contain excess drilling fluids at entry and exit points until recycled or removed from the site. Provide spoils recovery system to remove the drilling spoils from the access pits. Remove, transport and properly dispose of spoils. Do not dispose of drilling spoils in sanitary sewers, storm sewers, or public/private drainage systems.
- b) In the event drilling fluid should leak to the surface, immediately contain the leak and barricade the area from vehicular and pedestrian travel before resuming drilling operations.
- c) Complete cleanup of drilling fluid at the end of each work day.

3.2.6 The Contractor shall be responsible for Obstructions and Alignment

- a) Do not deviate from the horizontal or vertical alignment shown on the Contract Drawings by more than the tolerances stated herein.
- b) If obstructions are encountered during drilling, notify the Engineer immediately. Do not proceed around an obstruction without the approval of the Engineer.
- c) For conditions requiring more than 2-feet deviation in horizontal alignment, submit a new installation procedure and revised Bore Path Plan to the Engineer for approval prior to resuming work. At no time shall the Contractor allow the alignment to leave the easement or right-of-way.
- d) If the pipe installation has deviated beyond the specified tolerances or the pre-approved deviations, abandon the bore, remove the installed pipe, and re-bore and reinstall the pipe in the correct alignment at no additional increase in Contract value.
- e) Abandoned bore holes greater than 3-inches in diameter shall be filled with an approved grout or flowable fill material. Show the abandoned bore path, along with

SECTION 02552

HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

e) Continued

the final bore path on the record drawing. Also show the location and depth of drill heads and any drill stems not removed from the bore path. If conditions require the removal of the materials installed in the abandoned bore path, remove at no additional increase in contract value.

3.3 PIPE JOINING:

3.3.1 The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leakproof joint. Threaded or solvent-cement joints and connections shall not be allowed. Equipment and procedures used to join pipe shall be used in strict compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of polyethylene pipe and/or fusing equipment.

3.3.2 The butt-fusion joint shall be true alignment and shall have uniform rollback beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe. All joints shall be subject to acceptance by the Engineer prior to installing. Defective joints shall be cut out and replaced at no change in contract value. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than ten percent (10%) of the wall thickness or is deleterious in the opinion of the Engineer, shall not be used and must be removed from the site. However, a defective area of the pipe may be cut out and the joint fused in accordance with the procedures stated above. Additionally, any section of the pipe having other defects such as concentrated ridges, discoloration, excessive spot roughness, manufacturing or handling defects as determined by the Engineer shall be discarded and not used. Record HDPE weld information on forms supplied by Engineer.

3.3.3 Pipe used as a conduit, or carrier pipe for electric or communications cable does not require a pressure test prior to acceptance.

3.4 PIPE INSTALLATION:

3.4.1 The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leakproof joint. Follow procedures detailed in Section 02674.

SECTION 02552

HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

3.4.1 Continued

- a) After the initial bore has been completed, install reamer head and pipe and pull reamer head and pipe back to the starting pit. Provide reamer capable of discharging liquid clay to facilitate the installation of the pipeline inside a stabilized and lubricated hole.
- b) Protect and support the pipe being pulled into the bore so that it moves freely and is not damaged in any way during installation. Do not exceed the manufacturer's recommended pullback forces for the product pipe.
- c) Provide a method for electronic detection of pipe location for nonconductive piping products. Attach a continuous conductive material either externally or integrally with the product, as applicable. Install wire continuous with each bore. Splice fiber and tracer wire only at intermediate bore pits, or at test stations indicated on the Plans. Tape or insulate to prevent corrosion and maintain integrity of the electronic detection.
- d) Terminate detection wire for each pipe run at structures along the system. Provide extra length of wire/conductive tape at each structure, so it can be pulled 10-feet out of the top of the structure for connection to detection equipment.
- e) Test the detection wire/conductive tape for continuity for each bored installation before acceptance by the Owner as provided in this section.
- f) Provide sufficient lengths of pipe to extend past the termination point to allow connections to other pipe sections. Allow a minimum of twenty-four (24) hours of stabilization after installation and prior to making any tie-ins/connections to the pulled pipe.
- g) Mark the location and depth of the bore alignment with spray paint on paved surfaces, and wooden stakes on non-paved surfaces at 25-foot intervals. Record the depth of the product pipe at 25-foot intervals, and provide a copy of that record to the Engineer upon completion of the installation of each bore. Record the actual location of the installed pipe on the set of record drawings to be submitted at the end of the project.

SECTION 02552

HIGH DENSITY POLYETHYLENE (HDPE) PIPE– DIRECTIONAL BORE METHOD

3.5 POST INSTALLATION and CLEAN-UP:

- a) Upon completion of boring and pipe installation, remove spoils, debris, and unacceptable material from the starting and termination pits. Clean up excess slurry from the ground. Restore sumps/pit areas to their original or better condition.
- b) Contractor shall maintain a daily project log of boring operations and a guidance system log and deliver a final copy of the log given to the Engineer at completion of the project. As-built drawings shall be certified as accurate by the Contractor.

3.5.1 The Contractor shall be responsible for measuring all required pipe lengths for the specified installations, and shall provide sufficient excess lengths of new pipe for connections.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT –HDPE PIPE- DIRECTIONAL BORE METHOD:

4.1.1 The quantity measured for payment shall be as a lump sum of pipe installed by the directional bore method, constructed in accordance with the Plans, or as approved by Engineer.

4.2 PAYMENT –HDPE PIPE- DIRECTIONAL BORE METHOD:

4.2.1 Payment is included under other unit or lump sum price items, and is not a separate payment item. Bid shall include the cost of all work, materials, labor and expense, including excavation, backfilling excavations with native or imported materials, installing the HDPE carrier pipe, surface restoration, and all other work, in accordance with the Contract Specifications.

END OF SECTION

SECTION 02674

HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART 1 - GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for High Density Polyethylene (HDPE) Pipe and Fittings as shown on the Plans, as specified, and/or directed.

PART 2 - PRODUCTS

2.1 MATERIAL:

2.1.1 All pipes shall be of high density high molecular weight material using PE 37 grade resin and having a cell classification number of 345470C. All HDPE pipe shall conform to ASTM D3350.

2.1.2 All HDPE pipe shall have a SDR of 11 unless otherwise specified.

2.1.3 Standard length of pipe shall be a minimum of 40 feet.

2.2 CENTRALIZERS: Dual contained piping shall be factory fabricated for simultaneous fusion with internal centralizers spaced no greater than 4-feet on center and fused in place. Centralizers shall be furnished so the annular space between the HDPE pipes is evenly distributed within the conveyance line. The centralizers shall be configured to allow for liquid to flow freely along the invert of the pipe.

2.3 END SEALS: End seals shall be factory pre-fabricated fixed end seals which anchor the carrier and containment pipes together. End seals shall accommodate simultaneous fusion and centralizers shall be fused in place.

2.4 COUPLINGS AND FUSION:

2.4.1 Joining of HDPE pipe shall be by butt fusion or where circumstances warrant couplings shall be by the electrofusion socket type connection that provides a welded connection. Electrofusion locations will require Engineer approval. Electrofusion couplings shall not be used unless otherwise approved by the Engineer.

2.4.2 The socket type couplings shall be manufactured by GF ELGEF, or equal.

SECTION 02674

HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

2.5 FLANGES: Provide ANSI B16.1, Class 150 flanges for all flange connections. Backup rings shall be lightweight stainless steel.

2.5.1 Bolting of Flanges: Material used for bolts and studs shall be stainless steel conforming to ASTM A276, Type 304, and material for nuts shall be stainless steel conforming to ASTM A276, Type 304. Dimensions of bolts, studs, and nuts shall conform to ANSI B18.2.1 and ANSI B18.2.2 with threads conforming to ANSI B1.1 coarse type with Class 2A fit for bolts and studs, and Class 2B fit for nuts. Bolts or studs shall extend through the nuts and may have reduced shanks of a diameter not less than the diameter at root of threads. Stainless steel bolts shall have American Standard regular square or heavy hexagon heads and shall have American Standard heavy, semi-finished hexagonal nuts.

2.6 SUBMITTALS:

2.6.1 The Contractor shall submit to the Engineer for approval, data for all pipe and fittings which he proposes to use. The data shall demonstrate complete compliance with the provisions of the Plans and Specifications.

2.6.2 The Contractor shall submit to the Engineer for approval, manufacturer's certifications for all personnel that will fusion weld the pipe and fittings along with dates and duration of employment.

PART 3 - EXECUTION

3.1 QUALITY ASSURANCE:

3.1.1 All pipe will be inspected on delivery, and materials that do not comply with the Specification will be rejected. The Contractor shall furnish all labor required to handle the pipe during inspection and shall remove the rejected materials from the site of the work.

3.2 INSTALLATION:

3.2.1 Installation of all pipe, fittings, specials, adapters and appurtenances shall conform to the manufacturer's recommendations and the following summary of installation recommendations. Where specifications and recommendations conflict, the strictest shall apply.

3.2.2 Location of electrofusion couplings shall be approved by Engineer.

3.2.3 Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient execution of the work.

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HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

3.2.4 Cutting of pipe shall be done with pipe cutters, motor drive saws using abrasive disks, or with handsaws as required. Where machining is necessary for cut ends or for extending factory machining, it shall be done in accordance with the manufacturer's recommendations for the type of pipe and joint used. The flame cutting of pipe by means of an oxyacetylene torch will not be allowed.

3.2.5 Pipe shall be laid to the lines and grades on a prepared earth subgrade or special embedment as shown, specified or directed.

3.2.6 The interior surface of all pipe shall be clean when installed, and shall be kept clean until final acceptance. Removable end caps shall be placed on all open ends of pipelines when pipe laying is not actively in progress. The bulkheads shall be designed to prevent the entrance of dirt, debris or small animals, and shall not be removed until pipe laying is resumed.

3.3 LEAKAGE TEST:

3.3.1 All solid HDPE Pipes and Fittings shall be tested after joining for leakage by the Contractor at no cost to the Owner in accordance with the manufacturer's recommendation for the intended use. No leakage is permitted, although appropriate allowances for expansion of pipe shall be taken into consideration for the test pressure.

3.3.2 For the fiber project, Engineer will not require leakage testing for HDPE pipe weld joints performed by certified welders and field joints approved by Engineer.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS:

4.1.1 Measurement for payment shall be the actual linear feet of pipe joined.

4.2 PAYMENT - HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS:

4.2.1 For High Density Polyethylene Pipe (HDPE) Pipe and Fittings, not included in other unit or lump sum price items, payment for High Density Polyethylene (HDPE) Pipe and Fittings will be made at the applicable price stated in the Bid.

END OF SECTION

SECTION 16132

CONDUIT

PART 1 – GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Conduit as shown on the Plans, as specified, and/or directed.

1.2 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.2.1 American National Standards Institute (ANSI) Publications:

C80.1	Rigid Steel Conduit, Zinc Coated
C80.3	Electrical Metallic Tubing, Zinc Coated
C80.5	Rigid Aluminum Conduit

1.2.2 National Electrical Manufacturers Association (NEMA) Publications:

FB 1	Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies
RN 1	Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
TC 2	Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80)
TC 3	PVC Fittings for Use with Rigid PVC Conduit and Tubing

1.2.3 National Electrical Contractors Association (NECA) Publication:

Standard of Installation

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CONDUIT

1.3 SECTION INCLUDES:

- a. Rigid steel conduit.
- b. Electrical metallic tubing.
- c. Nonmetallic conduit.
- d. Flexible nonmetallic conduit (aka plenum innerduct).
- e. Electrical nonmetallic tubing. (aka self-supporting innerduct)
- f. Fittings and conduit bodies.

1.4 RELATED SECTIONS:

VACANT

1.5 SUBMITTALS: Conduit and fittings (each type).

1.6 DELIVERY, STORAGE, AND HANDLING:

1.6.1 Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

1.6.2 Protect PVC conduit from sunlight.

1.7 PROJECT CONDITIONS:

1.7.1 Verify that field measurements are as shown on the Contract Drawings.

1.7.2 Verify routing and termination locations of conduit prior to rough-in.

1.7.3 Conduit routing when shown on the Contract Drawings are in approximate locations unless dimensioned. Route as required to complete wiring system.

1.8 QUALITY ASSURANCE: In each standard referred to herein, consider the advisory provisions to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears.

1.8.1 Verify routing and termination locations of conduit prior to rough-in.

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CONDUIT

1.8.2 Conduit routing when shown on the Contract Drawings are in approximate locations unless dimensioned. Route as required to complete wiring system.

PART 2 – PRODUCTS

2.1 MATERIALS AND EQUIPMENT: Materials, equipment, and devices shall, as a minimum, meet requirements of UL, where UL standards are established for these items, and requirements of NFPA 70.

2.1.1 Provide conduit types in specific installations as shown on Contract Drawings per Conduit Specifications below.

2.2 CONDUIT AND FITTINGS:

2.2.1 Rigid Steel Conduit (Zinc-coated): ANSI C80.1, UL 6.

2.2.2 Rigid Nonmetallic Conduit: PVC Type EPC-40, in accordance with NEMA TC2, or fiberglass conduit in accordance with NEMA TC14.

2.2.3 Electrical Metallic Tubing (EMT): UL 797, ANSI C80.3.

2.2.4 Electrical Nonmetallic Tubing (ENT) (aka self-supporting innerduct): NEMA TC13.

2.2.5 Fittings for Metal Conduit, EMT, and Flexible Metal Conduit: UL 514B. Ferrous fittings shall be cadmium- or zinc-coated in accordance with UL 514B.

2.2.5.1 Fittings for Rigid Metal Conduit and IMC: Threaded-type. Split couplings unacceptable.

2.2.5.2 Fittings for EMT: Setscrew type.

2.2.5.3 Fittings for Use in Hazardous Locations: UL 886.

2.2.6 Fittings for Rigid Nonmetallic Conduit: NEMA TC3.

2.2.7 Fittings shall match conduit type and material.

SECTION 16132

CONDUIT

PART 3 - EXECUTION

3.1 INSTALLATION: Electrical installations shall conform to requirements of NFPA 70 and to requirements specified herein.

3.1.1 Hazardous Locations: Work in hazardous locations, as defined by NFPA 70, shall be performed in strict accordance with NFPA 70 for particular "Class", "Division", and "Group" of hazardous locations involved. Provide conduit and cable seals where required by NFPA 70. Conduit shall have tapered threads.

3.1.2 Restrictions Applicable to EMT:

- a. Do not install underground.
- b. Do not encase in concrete.
- c. Do not use in areas subject to severe physical damage including, but not limited to, mechanical equipment rooms and electrical equipment rooms.
- d. Do not use in hazardous areas.
- e. Do not use outdoors.

3.1.3 Nonmetallic Conduit: Conduit shall not penetrate fire walls, fire partitions, or floors.

3.1.4 Restrictions applicable to PVC Schedule 40 and PVC Schedule 80.

- a. Do not use in areas subject to severe physical damage including, but not limited to, mechanical equipment rooms, electrical equipment rooms, hospitals, power plants, missile magazines, and other such areas.
- b. Do not use in hazardous areas.
- c. Do not use in penetrating fire-rated walls or partitions, fire rated floors, etc.

SECTION 16132

CONDUIT

3.1.5 Underground Conduit Other Than Service Entrance: Plastic-coated rigid steel; plastic-coated steel IMC; PVC, Type EPC-40; or fiberglass. Convert nonmetallic conduit, other than PVC Schedule 40 or 80, to plastic-coated rigid, or IMC, steel conduit before rising through floor slab; plastic coating shall extend minimum 6 inches above floor.

3.1.6 Conduit in Floor Slabs: Rigid steel; steel IMC; fiberglass, or PVC, Type EPC-40.

3.1.7 Conduit Installation: Unless indicated otherwise, conceal conduit within finished walls, ceilings, and floors. Keep conduit minimum 6 inches away from parallel runs of flues and steam or hot water pipes. Install conduit parallel with or at right angles to ceilings, walls, and structural members where located above accessible ceilings and where conduit will be visible after completion of project.

3.1.7.1 Conduit Through Floor Slabs: Where conduits rise through floor slabs, curved portion of bends shall not be visible above finish slab.

3.1.7.2 Conduit Support: Support conduit by pipe straps, wall brackets, hangers, or ceiling trapeze. Fasten by wood screws to wood; by toggle bolts on hollow masonry units; by concrete inserts or expansion bolts on concrete or brick; and by machine screws, welded threaded studs, or spring-tension clamps on steel work. Threaded C-clamps may be used on rigid steel conduit only. Do not weld conduits or pipe straps to steel structures. Load applied to fasteners shall not exceed one-fourth proof test load. Fasteners attached to concrete ceiling shall be vibration-resistant and shock-resistant. Holes cut to depth of more than 1-1/2 inches in reinforced concrete beams or to depth of more than 3/4 inch in concrete joints shall not cut main reinforcing bars. Fill unused holes. In partitions of light steel construction, use sheet metal screws. In suspended-ceiling construction, run conduit above ceiling. Do not support conduit by ceiling support system. Spring-steel fasteners may be used for lighting branch circuit conduit supports in suspended ceilings in dry locations. Where conduit crosses building expansion joints, provide suitable watertight expansion fitting that maintains conduit electrical continuity by bonding jumpers or other means.

3.1.7.3 Directional Changes in Conduit Runs: Make changes in direction of runs with symmetrical bends or cast-metal fittings. Make field-made bends and offsets with hickey or conduit-bending machine. Do not install crushed or deformed conduits. Avoid trapped conduits. Prevent plaster, dirt, or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of obstructions.

3.1.7.4 For field cut threaded conduit: Provide field applied anti-corrosion material to threads (Thomas & Betts KOPR-Shield or equal).

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CONDUIT

3.1.7.5 Fiber Optic System Conduits: Install in accordance with specified requirements for conduit and with additional requirement that no continuous length shall contain more than two 90-degree bends or equivalent. Provide pull or junction boxes where necessary to comply with these requirements. Inside radii of bends in conduits shall be minimum six times nominal diameter. Terminate conduit in terminal cabinet with two locknuts and plastic bushing.

3.1.7.6 Locknuts and Bushings: Fasten conduits to sheet metal boxes and cabinets with two locknuts where required by NFPA 70, where insulated bushings are used, and where bushings cannot be brought into firm contact with the box; otherwise, use minimum single locknut and bushing. Locknuts shall have sharp edges for digging into wall of metal enclosures. Install bushings on ends of conduits, and provide insulating type where required by NFPA 70.

3.1.7.7 Stub-ups: Provide conduits stubbed up through concrete floor for connection to free-standing equipment with adjustable top or coupling threaded inside for plugs, set flush with finished floor. Extend conductors to equipment in rigid steel conduit, except that flexible metal conduit may be used 6 inches above floor. Where no equipment connections are made, install screwdriver-operated threaded flush plugs in conduit end.

3.1.7.8 Roof Penetrations: Provide pitch pockets where conduits penetrate roof. Coordinate installation with representative of roofing material manufacturer to maintain any roof warranty.

3.1.7.9 Arrange conduit to maintain headroom and present neat appearance.

3.1.7.10 Cut conduit square using saw or pipe cutter; deburr cut ends.

3.1.7.11 Use conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

3.1.7.12 Install no more than equivalent of three 90 degree bends between boxes.

3.1.7.13 Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.

3.1.7.14 Provide suitable fittings to accommodate expansion and deflection where conduit crosses expansion joints.

3.1.7.15 Use suitable caps to protect installed conduit against entrance of dirt and moisture.

3.1.7.16 Ground and bond conduit under as per NEC 250.

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CONDUIT

3.2 INTERFACE WITH OTHER PRODUCTS:

3.2.1 Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT - CONDUIT:

4.1.1 Measurement for Conduit shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section.

4.2 PAYMENT - CONDUIT:

4.2.1 For Conduit, not included in other unit or lump sum price items, payment for Conduit will be made at the applicable price stated in the Bid.

END OF SECTION

SECTION 16740

COMMUNICATIONS CABLING STANDARDS

PART 1 – GENERAL

1.1 DESCRIPTION:

1.1.1 Under this Section, the Contractor shall furnish all labor, materials and equipment for Communications Cabling Standards, as indicated on the Plans, as specified and as required to obtain a functional and operational system.

1.2 RELATED SECTIONS:

1.2.1 The work under this section shall include the following: Section 16132 Conduit

1.3 REFERENCES: The publications listed below and their latest revisions form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

- a. UCS Telephone and Data Wiring Specifications
- b. Building Industry Consulting Services International (BICSI) – Telecommunications Distribution Methods Manual (TDMM)
- c. Institute of Electrical and Electronics Engineers (IEEE) Publications
- d. National Electric Safety Code (NESC)
- e. National Fire Protection Agency (NFPA)
- f. National Electrical Code (NEC)
- g. Any Applicable State and Local Codes
- h. Telecommunications Cabling Standard
- i. ANSI/TIA/EIA Standards:
 - i. ANSI/TIA/EIA - 568-B.1-- Commercial Building Telecommunications Cabling Standard, Part 1: General Requirements
 - ii. ANSI/TIA/EIA -568-B.2 -- Commercial Building Telecommunications

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COMMUNICATIONS CABLING STANDARDS

Cabling Standard, Part 2: Balanced Twisted Pair Cabling Component

- iii. ANSI/TIA/EIA - 568-B.3 -- Optical Fiber Cabling Components Standard
- iv. ANSI/TIA/EIA - 569A -- Commercial Building Standard for Telecommunications Pathways and Spaces
- v. ANSI/TIA/EIA - 606 (A) -- The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
- vi. ANSI/TIA/EIA - 607 (A) -- Commercial Building Grounding and Bonding Requirements for Telecommunications
- vii. ANSI/TIA/EIA - 526-7 -- Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant
- viii. ANSI/TIA/EIA - 526-14A -- Measurement of Optical Power Loss of Installed Multimode Fiber Cable Plant
- ix. ANSI/TIA/EIA - 758(A) -- Customer-Owned Outside Plant

1.3.1 If conflict exists between applicable documents, then the more stringent requirement shall apply. The Engineer shall resolve, or provide final determinations on any codes and standards interpretations.

1.4 SUBMITTALS

1.4.1 Provide vendor data sheets and two (2) 10" product sample from different production date to Engineer for review and approval of product a minimum of 10 days prior to placement of order. Submittal shall include vendor's installation guide & shall include details to installer regarding splicing. Vendors design guide shall also be submitted.

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COMMUNICATIONS CABLING STANDARDS

PART 2 – PRODUCTS

2.1 STANDARD CABLING SPECIFICATION:

2.1.1 Wiring and cabling shall be installed in a neat professional manner and shall be in compliance with the National Electrical Code, State and local electrical building and fire codes. Penetration through fire walls must include the appropriate sleeve and be fire stopped. Low voltage cables shall not be tie-wrapped or secured to other electrical mediums or conduit pipes.

2.1.2 The Vendor must provide cable certification, which will certify fiber runs according to current TIA/EIA industry standards. Upon completion of job, the vendor must provide the purchaser with five copies of documentation on certification results. Vendor is to provide a 15-year manufacturer's product warranty and a 15-year performance warranty. All (cabling) certification and documentation are to be included in the cost of cabling.

2.2 FIBER OPTIC CABLING: Single mode Fiber Optic Cable: Number of fibers as indicated on Drawings, each fiber in an individual gel filled loose tube, suitable for indoor use as OFNP plenum type cable and outdoors for aerial and underground applications. Provide as follows:

- a. Optical fibers.
 - i. As manufactured by Corning Glass or approved equal.
 - ii. Each fiber in an individual gel filled loose tube.
 - iii. Fiber diameter (core/clad): 9 micron/125 micron.
 - iv. Fiber type: Graded index single mode fiber.
 - v. Maximum Fiber Attenuation:
 - 1) 3.5 dB/km (@850nm)
 - 2) 1.0 dB/km(@1300nm)
 - vi. Minimum Fiber Bandwidth:
 - 1) 160 MHZ-km (@850nm)
 - 2) 500 MHZ-km (@1300nm)

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- b. Central strength member: Epoxy/fiber glass rod, or equal.
- c. Inner Jacket: Polyvinyl chloride (PVC) or polyethylene (PE).
- d. Outer strength member: Aramid yarn.
- e. Outer Jacket: Ultraviolet and moisture resistant black high-density polyethylene.
- f. Suitable for direct burial.

2.3 FIBER OPTIC SPLICING: Windsor 570 or Windsor 790 with ESB and WTH or equivalent. All splice trays shall be provided as required.

2.4 FIBER OPTIC ADAPTER PANELS: Cooper LANC,LANS, or CCH or approved equal. Provide loaded with housing as required for existing racks conforming to the following:

- a. Number of ports as required for each fiber. (Coordinate configuration as required, multiple adapter panels or housings may be required at each location).
- b. Housings shall have slide-out drawers.
- c. LC type connectors.
- d. Suitable for fiber type to be terminated at panel.

PART 3 – EXECUTION

3.1 FIBER OPTIC CABLING:

3.1.1 Patch Panels: Fiber optic patch panels required at fiber cable terminal ends are to be supplied Contractor for installation by Contractor with Owner's supervision

3.1.2 Fiber: All fiber strands terminated to meet standards. All fiber optic terminations to use LC connections unless otherwise specified by the Owner.

3.1.3 Bending Radius: Bends of Fiber Optic Cabling shall not have a radius less than recommended by the manufacturer. Contractor shall avoid handling of fiber cable that bends or crimps the cable during installation.

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3.1.4 Splicing: No splices are acceptable. Cable runs will be continuous unless splices approved in writing by Engineer or where required due to fiber split locations. Location of the splices shall be surveyed and location labeled on record drawings. All approved splices to be fusion type.

3.1.5 Provide fiber adapter patch panels in each building as shown on the Drawings. Provide termination of each fiber strand in patch panels.

3.1.6 Fiber Optic Testing Procedures: Based on BICSI TDM Standard and Manual Chapter 12 and includes, but is not limited to the remainder of this Article.

3.1.7 Test each fiber optic strand on reel with OTDR (Optical Time Domain Reflectometer) at 850Nm/1300 Nm (multi-mode) and 1310Nm/1550 Nm (single mode). Document point discontinuities greater than 0.20 dB and identify to Owner's representative prior to installation.

3.1.8 Check each fiber termination with optical power meter during termination procedure to verify attenuations within limits specified for products. Record connector loss for each termination and provide record of test results to Owner. Connection losses greater than 0.4 dB not acceptable; provide new terminations as required.

3.1.9 Measure attenuation values for each link and determine acceptance by following attenuation coefficient values:

- | | | |
|----|--|----------------|
| a. | 62.5/125 multi-mode fiber tested at 850 Nm | 3.75 db/km max |
| b. | 62.5/125 multi-mode fiber tested at 1300 Nm | 1.5 db/km max |
| c. | Single mode inside plant fiber tested at 1310 Nm | 1.0 db/km max |
| d. | Single mode inside plant fiber tested at 1550 Nm | 1.0 db/km max |

3.1.10 Check each splice with OTDR during splicing procedure to verify attenuations within limits specified for products. Provide record of these test results to Owner. Splices with losses greater than 0.3 dB UW are not acceptable; provide new splices as required.

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3.1.11 Upon completion of installation, provide complete documentation of OTDR signature traces (at 800Nm and 1300Nm for multi-mode and 1310Nm and 1550Nm for single mode), displaying entire length of cable runs. Provide complete termination and insertion loss test results including record of:

- a. Wavelength
- b. Fiber type
- c. Fiber and cable number
- d. Measurement direction
- e. Test equipment model and serial number and calibration history
- f. Date and operator

3.2 FINAL ACCPETANCE:

3.2.1 Owner will not accept communications cable until Contractor has demonstrated to the satisfaction of the Engineer of the following:

- a. Terminations are within specified values
- b. Splices are within specified values
- c. Demonstration during actual facility operations that data is being transmitted & received from origin & termination locations without loss or accuracy.

PART 4 - MEASUREMENT & PAYMENT

4.1 MEASUREMENT – COMMUNICATIONS CABLING STANDARDS:

4.1.1 Measurement for Communications Cabling Standards shall include the cost of all materials, equipment, labor, submittals and testing for the work indicated in this Section.

4.2 PAYMENT – COMMUNICATIONS CABLING STANDARDS:

4.2.1 For Communications Cabling Standards, not included in other unit or lump sum price items, payment for Communications Cabling Standards will be made at the applicable price stated in the Bid.

END OF SECTION