Project Manual

DFM Final Review Submission

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Cape Henlopen School District
Milton Elementary School
Building Demolition and Sitework

Milton, Delaware
200-81485-16004
06/27/19
Title Page/Consultants Directory

By

Owner’s Representative
Cape Henlopen School District
1270 Kings Highway
Lewes, Delaware 19958

Architects
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Project Contacts

Dean Johnson
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Public notice is hereby given that sealed bids for Project No. 200-81485-16004, will be received by the State of Delaware, Cape Henlopen School District, at the Office of Richard Y. Johnson & Son, Inc. located at 18404 Johnson Road, Lincoln DE 19960 until 2:00pm local time on September 10, 2019, at which time they will be publicly opened and read aloud in the Conference room. Bidder bears the risk of late delivery. Any bids received after the stated time will be returned unopened.

Project involves associated site improvements for a renovated and new additions for an elementary school that will be bid at a later date. Project also includes the demolition of portions of the existing Milton Elementary School. This is a construction management project. Bids are to be for the following contracts:

A-1: Site Work
A-2: Demolition

Attention is called to the construction schedule as detailed in the Bid Documents.

A NON-MANDATORY Pre-Bid Meeting will be held on August 13, 2019 at 10:00am at the Milton Elementary School located at 512 Federal Street Milton, Delaware 19968 in the cafeteria for the purpose of establishing the listing of subcontractors and to answer questions. All representatives must be employed by the company you are representing. Representatives of each party to any Joint Venture must attend this meeting.

Sealed bids shall be addressed to Cape Henlopen School District, Attn: Director of Administrative Services Brian Bassett. The outer envelope should clearly indicate: "Bid Pac A Milton Elementary School Demo – Sitework Project No. 200-81485-16004, Company Name, Contract you are bidding, SEALED BID - DO NOT OPEN."

Construction documents will be available for review at the following locations: Richard Y Johnson & Son Inc., and Delaware Contractors Association. Contract documents may be purchased at DiCarlo Printers, located at 2006 Northwood Drive, Salisbury MD, 21801 or RCI Printing and Graphics located at 298 Churchmans Road, New Castle DE, 19720. Electronic documents will be available on Richard Y. Johnson & Son’s website www.ryjson.com under plan room. It is the responsibility of each bidder to review and coordinate all project documents. This includes plans, specifications and addendums. All documents will be available on the day of the pre-bid.

Questions should be directed to the Construction Manager, Richard Y. Johnson & Son, Inc. in writing only. The fax number is (302) 422-4696. Email questions too Attn: Jesse Dixon (j Dixon@ryjson.com).

A bid security in the amount of 10% of the bid must accompany each bid. Bid Security shall specify the Owner as the obligee. Owner: Cape Henlopen School District, 1270 Kings Highway Lewes, Delaware 19958.

Minority Business Enterprises (MBE), Disadvantaged Business Enterprises (DBE) and Women-Owned Business Enterprises (WBE) will be afforded full opportunity to submit bids on this contract and will not be subject to discrimination on the basis of race, color, national origin or sex in consideration of this award. Each bid must be accompanied by a bid security equivalent to ten percent of the bid amount and all additive alternates. The successful bidder must post a performance bond and payment bond in a sum equal to 100 percent of the contract price upon execution of the contract. The Owner reserves the right to reject any or all bids and to waive any informality therein. The Owner may extend the time and place for the opening of the bids from that described in the advertisement, with not less than two calendar days notice by certified delivery, facsimile machine or other electronic means to those bidders receiving plans.
INSTRUCTIONS TO BIDDERS

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8. FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR
ARTICLE 1: GENERAL

1.1 DEFINITIONS

1.1.1 Whenever the following terms are used, their intent and meaning shall be interpreted as follows:

1.2 STATE: The State of Delaware.

1.3 AGENCY: Contracting State Agency as noted on cover sheet.

1.4 DESIGNATED OFFICIAL: The agent authorized to act for the Agency.

1.5 BIDDING DOCUMENTS: Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement for Bid, Invitation to Bid, Instructions to Bidders, Supplementary Instructions to Bidders (if any), General Conditions, Supplementary General Conditions, General Requirements, Special Provisions (if any), the Bid Form (including the Non-collusion Statement), and other sample bidding and contract forms. The proposed Contract Documents consist of the form of Agreement between the Owner and Contractor, as well as the Drawings, Specifications (Project Manual) and all Addenda issued prior to execution of the Contract.

1.6 CONTRACT DOCUMENTS: The Contract Documents consist of the, Instructions to Bidders, Supplementary Instructions to Bidders (if any), General Conditions, Supplementary General Conditions, General Requirements, Special Provisions (if any), the form of agreement between the Owner and the Contractor, Drawings (if any), Specifications (Project Manual), and all addenda.

1.7 AGREEMENT: The form of the Agreement shall be AIA Document A101, Standard Form of Agreement between Owner and Contractor where the basis of payment is a STIPULATED SUM. In the case of conflict between the instructions contained therein and the General Requirements herein, these General Requirements shall prevail.

1.8 GENERAL REQUIREMENTS (or CONDITIONS): General Requirements (or conditions) are instructions pertaining to the Bidding Documents and to contracts in general. They contain, in summary, requirements of laws of the State; policies of the Agency and instructions to bidders.

1.9 SPECIAL PROVISIONS: Special Provisions are specific conditions or requirements peculiar to the bidding documents and to the contract under consideration and are supplemental to the General Requirements. Should the Special Provisions conflict with the General Requirements, the Special Provisions shall prevail.

1.10 ADDENDA: Written or graphic instruments issued by the Owner/Architect prior to the execution of the contract which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

1.11 BIDDER OR VENDOR: A person or entity who formally submits a Bid for the material or Work contemplated, acting directly or through a duly authorized representative who meets the requirements set forth in the Bidding Documents.

1.12 SUB-BIDDER: A person or entity who submits a Bid to a Bidder for materials or labor, or both for a portion of the Work.
1.13 BID: A complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

1.14 BASE BID: The sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated in Alternate Bids (if any are required to be stated in the bid).

1.15 ALTERNATE BID (or ALTERNATE): An amount stated in the Bid, where applicable, to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents is accepted.

1.16 UNIT PRICE: An amount stated in the Bid, where applicable, as a price per unit of measurement for materials, equipment or services or a portion of the Work as described in the Bidding Documents.

1.17 SURETY: The corporate body which is bound with and for the Contract, or which is liable, and which engages to be responsible for the Contractor's payments of all debts pertaining to and for his acceptable performance of the Work for which he has contracted.

1.18 BIDDER'S DEPOSIT: The security designated in the Bid to be furnished by the Bidder as a guaranty of good faith to enter into a contract with the Agency if the Work to be performed or the material or equipment to be furnished is awarded to him.

1.19 CONTRACT: The written agreement covering the furnishing and delivery of material or work to be performed.

1.20 CONTRACTOR: Any individual, firm or corporation with whom a contract is made by the Agency.

1.21 SUBCONTRACTOR: An individual, partnership or corporation which has a direct contract with a contractor to furnish labor and materials at the job site, or to perform construction labor and furnish material in connection with such labor at the job site.

1.22 CONTRACT BOND: The approved form of security furnished by the contractor and his surety as a guaranty of good faith on the part of the contractor to execute the work in accordance with the terms of the contract.

ARTICLE 2: BIDDER'S REPRESENTATIONS

2.1 PRE-BID MEETING

2.1.1 A pre-bid meeting for this project will be held at the time and place designated. Attendance at this meeting is a pre-requisite for submitting a Bid, unless this requirement is specifically waived elsewhere in the Bid Documents.

2.2 By submitting a Bid, the Bidder represents that:

2.2.1 The Bidder has read and understands the Bidding Documents and that the Bid is made in accordance therewith.
2.2.2 The Bidder has visited the site, become familiar with existing conditions under which the Work is to be performed, and has correlated the Bidder's personal observations with the requirements of the proposed Contract Documents.

2.2.3 The Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception.

2.3 JOINT VENTURE REQUIREMENTS

2.3.1 For Public Works Contracts, each Joint Venturer shall be qualified and capable to complete the Work with their own forces.

2.3.2 Included with the Bid submission, and as a requirement to bid, a copy of the executed Joint Venture Agreement shall be submitted and signed by all Joint Venturers involved.

2.3.3 All required Bid Bonds, Performance Bonds, Material and Labor Payment Bonds must be executed by both Joint Venturers and be placed in both of their names.

2.3.4 All required insurance certificates shall name both Joint Venturers.

2.3.5 Both Joint Venturers shall sign the Bid Form and shall submit a valid Delaware Business License Number with their Bid or shall state that the process of application for a Delaware Business License has been initiated.

2.3.6 Both Joint Venturers shall include their Federal E.I. Number with the Bid.

2.3.7 In the event of a mandatory Pre-bid Meeting, each Joint Venturer shall have a representative in attendance.

2.3.8 Due to exceptional circumstances and for good cause shown, one or more of these provisions may be waived at the discretion of the State.

2.4 ASSIGNMENT OF ANTITRUST CLAIMS

2.4.1 As consideration for the award and execution by the Owner of this contract, the Contractor hereby grants, conveys, sells, assigns and transfers to the State of Delaware all of its right, title and interests in and to all known or unknown causes of action it presently has or may now or hereafter acquire under the antitrust laws of the United States and the State of Delaware, relating to the particular goods or services purchased or acquired by the Owner pursuant to this contract.

ARTICLE 3: BIDDING DOCUMENTS

3.1 COPIES OF BID DOCUMENTS

3.1.1 Bidders may obtain complete sets of the Bidding Documents from the Architectural/Engineering firm designated in the Advertisement or Invitation to Bid in the number and for the deposit sum, if any, stated therein.

3.1.2 Bidders shall use complete sets of Bidding Documents for preparation of Bids. The issuing Agency nor the Architect assumes no responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
3.1.3 Any errors, inconsistencies or omissions discovered shall be reported to the Architect immediately.

3.1.4 The Agency and Architect may make copies of the Bidding Documents available on the above terms for the purpose of obtaining Bids on the Work. No license or grant of use is conferred by issuance of copies of the Bidding Documents.

3.2 INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

3.2.1 The Bidder shall carefully study and compare the Bidding Documents with each other, and with other work being bid concurrently or presently under construction to the extent that it relates to the Work for which the Bid is submitted, shall examine the site and local conditions, and shall report any errors, inconsistencies, or ambiguities discovered to the Architect.

3.2.2 Bidders or Sub-bidders requiring clarification or interpretation of the Bidding Documents shall make a written request to the Architect at least seven days prior to the date for receipt of Bids. Interpretations, corrections and changes to the Bidding Documents will be made by written Addendum. Interpretations, corrections, or changes to the Bidding Documents made in any other manner shall not be binding.

3.2.3 The apparent silence of the specifications as to any detail, or the apparent omission from it of detailed description concerning any point, shall be regarded as meaning that only the best commercial practice is to prevail and only material and workmanship of the first quality are to be used. Proof of specification compliance will be the responsibility of the Bidder.

3.2.4 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all permits, labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work.

3.2.5 The Owner will bear the costs for all impact and user fees associated with the project.

3.3 SUBSTITUTIONS

3.3.1 The materials, products and equipment described in the Bidding Documents establish a standard of quality, required function, dimension, and appearance to be met by any proposed substitution. The specification of a particular manufacturer or model number is not intended to be proprietary in any way. Substitutions of products for those named will be considered, providing that the Vendor certifies that the function, quality, and performance characteristics of the material offered is equal or superior to that specified. It shall be the Bidder's responsibility to assure that the proposed substitution will not affect the intent of the design, and to make any installation modifications required to accommodate the substitution.

3.3.2 Requests for substitutions shall be made in writing to the Architect at least ten days prior to the date of the Bid Opening. Such requests shall include a complete description of the proposed substitution, drawings, performance and test data, explanation of required installation modifications due the substitution, and any other information necessary for an evaluation. The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval shall be final. The Architect is to notify Owner prior to any approvals.
If the Architect approves a substitution prior to the receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding.

The Architect shall have no obligation to consider any substitutions after the Contract award.

ADDENDA

Addenda will be mailed or delivered to all who are known by the Architect to have received a complete set of the Bidding Documents.

Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.

No Addenda will be issued later than 4 days prior to the date for receipt of Bids except an Addendum withdrawing the request for Bids or one which extends the time or changes the location for the opening of bids.

Each bidder shall ascertain prior to submitting his Bid that they have received all Addenda issued, and shall acknowledge their receipt in their Bid in the appropriate space. Not acknowledging an issued Addenda could be grounds for determining a bid to be non-responsive.

ARTICLE 4: BIDDING PROCEDURES

PREPARATION OF BIDS

Submit the bids on the Bid Forms included with the Bidding Documents.

Submit the original Bid Form for each bid. Bid Forms may be removed from the project manual for this purpose.

Execute all blanks on the Bid Form in a non-erasable medium (typewriter or manually in ink).

Where so indicated by the makeup on the Bid Form, express sums in both words and figures, in case of discrepancy between the two, the written amount shall govern.

Interlineations, alterations or erasures must be initialed by the signer of the Bid.

BID ALL REQUESTED ALTERNATES AND UNIT PRICES, IF ANY. If there is no change in the Base Bid for an Alternate, enter "No Change". The Contractor is responsible for verifying that they have received all addenda issued during the bidding period. Work required by Addenda shall automatically become part of the Contract.

Make no additional stipulations on the Bid Form and do not qualify the Bid in any other manner.

Each copy of the Bid shall include the legal name of the Bidder and a statement whether the Bidder is a sole proprietor, a partnership, a corporation, or any legal entity, and each copy shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further give the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current Power of Attorney attached, certifying agent's authority to bind the Bidder.
4.1.9 Bidder shall complete the Non-Collusion Statement form included with the Bid Forms and include it with their Bid.

4.1.10 In the construction of all Public Works projects for the State of Delaware or any agency thereof, preference in employment of laborers, workers or mechanics shall be given to bona fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State.

4.1.11 Each bidder shall include in their bid a copy of a valid Delaware Business License.

4.1.12 Each bidder shall include signed Affidavit(s) for the bidder and each listed Subcontractor certifying compliance with OMB Regulation 4104 “Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on ” Large Public Works Projects” “large Public Works” is based upon the current threshold required for bidding Public Works as set by the Purchasing and Contracting Advisory Council.

4.2 BID SECURITY

4.2.1 All bids shall be accompanied by a deposit of either a good and sufficient bond to the agency for the benefit of the agency, with corporate surety authorized to do business in this State, the form of the bond and the surety to be approved by the agency, or a security of the bidder assigned to the agency, for a sum equal to at least 10% of the bid plus all add alternates, or in lieu of the bid bond a security deposit in the form of a certified check, bank treasurer's check, cashier’s check, money order, or other prior approved secured deposit assigned to the State. The bid bond need not be for a specific sum, but may be stated to be for a sum equal to 10% of the bid plus all add alternates to which it relates and not to exceed a certain stated sum, if said sum is equal to at least 10% of the bid. The Bid Bond form used shall be the standard OMB form (attached).

4.2.2 The Agency has the right to retain the bid security of Bidders to whom an award is being considered until either a formal contract has been executed and bonds have been furnished or the specified time has elapsed so the Bids may be withdrawn or all Bids have been rejected.

4.2.3 In the event of any successful Bidder refusing or neglecting to execute a formal contract and bond within 20 days of the awarding of the contract, the bid bond or security deposited by the successful bidder shall be forfeited.

4.3 SUBCONTRACTOR LIST

4.3.1 As required by Delaware Code, Title 29, section 6962(d)(10)b, each Bidder shall submit with their Bid a completed List of Sub-Contractors included with the Bid Form. NAME ONLY ONE SUBCONTRACTOR FOR EACH TRADE. A Bid will be considered non-responsive unless the completed list is included.

4.3.2 Provide the Name and Address for each listed subcontractor. Addresses by City, Town or Locality, plus State, will be acceptable.

4.3.3 It is the responsibility of the Contractor to ensure that their Subcontractors are in compliance with the provisions of this law. Also, if a Contractor elects to list themselves as a Subcontractor for any category, they must specifically name themselves on the Bid Form and
be able to document their capability to act as Subcontractor in that category in accordance with this law.

4.4 EQUALITY OF EMPLOYMENT OPPORTUNITY ON PUBLIC WORKS

4.4.1 During the performance of this contract, the contractor agrees as follows:

A. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex or national origin. The Contractor will take affirmative action to ensure the applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, sex or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.

B. The Contractor 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 race, creed, color, sex or national origin."

4.5 PREVAILING WAGE REQUIREMENT

4.5.1 Wage Provisions: In accordance with Delaware Code, Title 29, Section 6960, renovation projects whose total cost shall exceed $15,000, and $100,000 for new construction, the minimum wage rates for various classes of laborers and mechanics shall be as determined by the Department of Labor, Division of Industrial Affairs of the State of Delaware.

4.5.2 The prevailing wage shall be the wage paid to a majority of employees performing similar work as reported in the Department's annual prevailing wage survey or in the absence of a majority, the average paid to all employees reported.

4.5.3 The employer shall pay all mechanics and labors employed directly upon the site of work, unconditionally and not less often than once a week and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment, computed at wage rates not less than those stated in the specifications, regardless of any contractual relationship which may be alleged to exist between the employer and such laborers and mechanics.

4.5.4 The scale of the wages to be paid shall be posted by the employer in a prominent and easily accessible place at the site of the work.

4.5.5 Every contract based upon these specifications shall contain a stipulation that sworn payroll information, as required by the Department of Labor, be furnished weekly. The Department of Labor shall keep and maintain the sworn payroll information for a period of 6 months from the last day of the work week covered by the payroll.

4.6 SUBMISSION OF BIDS
4.6.1 Enclose the Bid, the Bid Security, and any other documents required to be submitted with the Bid in a sealed opaque envelope. Address the envelope to the party receiving the Bids. Identify with the project name, project number, and the Bidder's name and address. If the Bid is sent by mail, enclose the sealed envelope in a separate mailing envelope with the notation "BID ENCLOSED" on the face thereof. The State is not responsible for the opening of bids prior to bid opening date and time that are not properly marked.

4.6.2 Deposit Bids at the designated location prior to the time and date for receipt of bids indicated in the Advertisement for Bids. Bids received after the time and date for receipt of bids will be marked "LATE BID" and returned.

4.6.3 Bidder assumes full responsibility for timely delivery at location designated for receipt of bids.

4.6.4 Oral, telephonic or telegraphic bids are invalid and will not receive consideration.

4.6.5 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids, provided that they are then fully in compliance with these Instructions to Bidders.

4.7 MODIFICATION OR WITHDRAW OF BIDS

4.7.1 Prior to the closing date for receipt of Bids, a Bidder may withdraw a Bid by personal request and by showing proper identification to the Architect. A request for withdraw by letter or fax, if the Architect is notified in writing prior to receipt of fax, is acceptable. A fax directing a modification in the bid price will render the Bid informal, causing it to be ineligible for consideration of award. Telephone directives for modification of the bid price shall not be permitted and will have no bearing on the submitted proposal in any manner.

4.7.2 Bidders submitting Bids that are late shall be notified as soon as practicable and the bid shall be returned.

4.7.3 A Bid may not be modified, withdrawn or canceled by the Bidder during a thirty (30) day period following the time and date designated for the receipt and opening of Bids, and Bidder so agrees in submitting their Bid. Bids shall be binding for 30 days after the date of the Bid opening.

ARTICLE 5: CONSIDERATION OF BIDS

5.1 OPENING/REJECTION OF BIDS

5.1.1 Unless otherwise stated, Bids received on time will be publicly opened and will be read aloud. An abstract of the Bids will be made available to Bidders.

5.1.2 The Agency shall have the right to reject any and all Bids. A Bid not accompanied by a required Bid Security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

5.1.3 If the Bids are rejected, it will be done within thirty (30) calendar day of the Bid opening.

5.2 COMPARISON OF BIDS

5.2.1 After the Bids have been opened and read, the bid prices will be compared and the result of such comparisons will be made available to the public. Comparisons of the Bids may be
based on the Base Bid plus desired Alternates. The Agency shall have the right to accept Alternates in any order or combination.

5.2.2 The Agency reserves the right to waive technicalities, to reject any or all Bids, or any portion thereof, to advertise for new Bids, to proceed to do the Work otherwise, or to abandon the Work, if in the judgment of the Agency or its agent(s), it is in the best interest of the State.

5.2.3 An increase or decrease in the quantity for any item is not sufficient grounds for an increase or decrease in the Unit Price.

5.2.4 The prices quoted are to be those for which the material will be furnished F.O.B. Job Site and include all charges that may be imposed during the period of the Contract.

5.2.5 No qualifying letter or statements in or attached to the Bid, or separate discounts will be considered in determining the low Bid except as may be otherwise herein noted. Cash or separate discounts should be computed and incorporated into Unit Bid Price(s).

5.3 DISQUALIFICATION OF BIDDERS

5.3.1 An agency shall determine that each Bidder on any Public Works Contract is responsible before awarding the Contract. Factors to be considered in determining the responsibility of a Bidder include:

A. The Bidder’s financial, physical, personnel or other resources including Subcontracts;

B. The Bidder’s record of performance on past public or private construction projects, including, but not limited to, defaults and/or final adjudication or admission of violations of the Prevailing Wage Laws in Delaware or any other state;

C. The Bidder’s written safety plan;

D. Whether the Bidder is qualified legally to contract with the State;

E. Whether the Bidder supplied all necessary information concerning its responsibility; and,

F. Any other specific criteria for a particular procurement, which an agency may establish; provided however, that, the criteria be set forth in the Invitation to Bid and is otherwise in conformity with State and/or Federal law.

5.3.2 If an agency determines that a Bidder is nonresponsive and/or nonresponsible, the determination shall be in writing and set forth the basis for the determination. A copy of the determination shall be sent to the affected Bidder within five (5) working days of said determination.

5.3.3 In addition, any one or more of the following causes may be considered as sufficient for the disqualification of a Bidder and the rejection of their Bid or Bids.

5.3.3.1 More than one Bid for the same Contract from an individual, firm or corporation under the same or different names.
5.3.3.2 Evidence of collusion among Bidders.

5.3.3.3 Unsatisfactory performance record as evidenced by past experience.

5.3.3.4 If the Unit Prices are obviously unbalanced either in excess or below reasonable cost analysis values.

5.3.3.5 If there are any unauthorized additions, interlineation, conditional or alternate bids or irregularities of any kind which may tend to make the Bid incomplete, indefinite or ambiguous as to its meaning.

5.3.3.6 If the Bid is not accompanied by the required Bid Security and other data required by the Bidding Documents.

5.3.3.7 If any exceptions or qualifications of the Bid are noted on the Bid Form.

5.4 ACCEPTANCE OF BID AND AWARD OF CONTRACT

5.4.1 A formal Contract shall be executed with the successful Bidder within twenty (20) calendar days after the award of the Contract.

5.4.2 Per Section 6962(d)(13) a., Title 29, Delaware Code, "The contracting agency shall award any public works contract within thirty (30) days of the bid opening to the lowest responsive and responsible Bidder, unless the Agency elects to award on the basis of best value, in which case the election to award on the basis of best value shall be stated in the Invitation To Bid."

5.4.3 Each Bid on any Public Works Contract must be deemed responsive by the Agency to be considered for award. A responsive Bid shall conform in all material respects to the requirements and criteria set forth in the Contract Documents and specifications.

5.4.4 The Agency shall have the right to accept Alternates in any order or combination, and to determine the low Bidder on the basis of the sum of the Base Bid, plus accepted Alternates.

5.4.5 The successful Bidder shall execute a formal contract, submit the required Insurance Certificate, and furnish good and sufficient bonds, unless specifically waived in the General Requirements, in accordance with the General Requirement, within twenty (20) days of official notice of contract award. Bonds shall be for the benefit of the Agency with surety in the amount of 100% of the total contract award. Said Bonds shall be conditioned upon the faithful performance of the contract. Bonds shall remain in affect for period of one year after the date of substantial completion.

5.4.6 If the successful Bidder fails to execute the required Contract and Bond, as aforesaid, within twenty (20) calendar days after the date of official Notice of the Award of the Contract, their Bid guaranty shall immediately be taken and become the property of the State for the benefit of the Agency as liquidated damages, and not as a forfeiture or as a penalty. Award will then be made to the next lowest qualified Bidder of the Work or readvertised, as the Agency may decide.

5.4.7 Each bidder shall supply with its bid its taxpayer identification number (i.e., federal employer identification number or social security number) and a copy of its Delaware
business license, and should the vendor be awarded a contract, such vendor shall provide to the agency the taxpayer identification license numbers of such subcontractors. Such numbers shall be provided on the later of the date on which such subcontractor is required to be identified or the time the contract is executed. The successful Bidder shall provide to the agency to which it is contracting, within 30 days of entering into such public works contract, copies of all Delaware Business licenses of subcontractors and/or independent contractors that will perform work for such public works contract. However, if a subcontractor or independent contractor is hired or contracted more than 20 days after the Bidder entered the public works contract the Delaware Business license of such subcontractor or independent contractor shall be provided to the agency within 10 days of being contracted or hired.

5.4.8 The Bid Security shall be returned to the successful Bidder upon the execution of the formal contract. The Bid Securities of unsuccessful bidders shall be returned within thirty (30) calendar days after the opening of the Bids.

ARTICLE 6: POST-BID INFORMATION

6.1 CONTRACTOR’S QUALIFICATION STATEMENT

6.1.1 Bidders to whom award of a Contract is under consideration shall, if requested by the Agency, submit a properly executed AIA Document A305, Contractor’s Qualification Statement, unless such a statement has been previously required and submitted.

6.2 BUSINESS DESIGNATION FORM

6.2.1 Successful bidder shall be required to accurately complete an Office of Management and Budget Business Designation Form for Subcontractors.

ARTICLE 7: PERFORMANCE BOND AND PAYMENT BOND

7.1 BOND REQUIREMENTS

7.1.1 The cost of furnishing the required Bonds, that are stipulated in the Bidding Documents, shall be included in the Bid.

7.1.2 If the Bidder is required by the Agency to secure a bond from other than the Bidder’s usual sources, changes in cost will be adjusted as provide in the Contract Documents.

7.1.3 The Performance and Payment Bond forms used shall be the standard OMB forms (attached).

7.2 TIME OF DELIVERY AND FORM OF BONDS

7.2.1 The bonds shall be dated on or after the date of the Contract.

7.2.2 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix a certified and current copy of the power of attorney.

ARTICLE 8: FORM OF AGREEMENT BETWEEN AGENCY AND CONTRACTOR
8.1 Unless otherwise required in the Bidding Documents, the Agreement for the Work will be written on AIA Document A101, Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment is a Stipulated Sum.

END OF INSTRUCTIONS TO BIDDERS
BID FORM

For Bids Due: September 10, 2019

To: Cape Henlopen School District
   Attn: Director of Administrative Services
   Brian Bassett

Contracts

Clearly Mark Contract you are bidding (Only 1 contract per bid form)

For Bid Package A:

___ Contract #1  Site Work
___ Contract #2  Demolition

Name of Bidder:

Delaware Business License No.: ________________  Taxpayer ID No.: __________________________

(A copy of Bidder’s Delaware Business License must be attached to this form.)

(Other License Nos.): ____________________________

Phone No.: ( ) ___________ - ___________  Fax No.: ( ) ___________ - ___________

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below: $ ______________________________


($  )
BID FORM

ALTERNATES

Alternate prices conform to applicable project specification section. Refer to specifications for a complete description of the following Alternates. An “ADD” or “DEDUCT” amount is indicated by the crossed out part that does not apply.

ADD ALTERNATE No. 1: LANDSCAPING PLANTING SCHEDULE
1. BASE BID: No not landscaping, only the removal of trees and shrubs as depicted on Sheet L-101
2. ALTERNATE: Provide specified landscaping as shown.

Add:__________________________________________

($ )

ADD ALTERNATE No. 2: REAR TREE LANDSCAPING
3. BASE BID: No not provide rear tree landscaping.
4. ALTERNATE: Provide specified rear tree landscaping as shown.

Add:__________________________________________

($ )

ADD ALTERNATE No. 3: REAR UNDERSTORY AND EVERGREEN TREE LANDSCAPING
1. BASE BID: No not provide rear understory and evergreen tree landscaping.
2. ALTERNATE: Provide specified rear understory and evergreen tree landscaping as shown.

Add:__________________________________________

($ )

ADD ALTERNATE No. 4: REAR SHRUB LANDSCAPING
1. BASE BID: No not provide rear shrub landscaping.
2. ALTERNATE: Provide specified rear shrub landscaping as shown.

Add:__________________________________________

($ )
ALLOWANCES

**Contract No. 1 Site Work**

I – Include the unit cost of liquid asphalt cement of **$510.00 per ton** as noted in the Delaware Posted Asphalt price for June of 2019 per Del DOT Program. At the time of production lay down of product, cost will be adjusted per current cost of Delaware Posted Asphalt price. Contractor to provide the amount of tons of liquid asphalt cement to perform the complete project based on the project documents. See attachment: Delaware Posted Asphalt Price Sheet.

_____________ total tons of liquid asphalt cement to be provided by Contract No.1 Site Work to complete the project scope.

UNIT PRICES

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

**ADD**

UNIT PRICE No. 1.01: **Satisfactory fill in Place:** Indicate cost to provide satisfactory fill in place, furnished, placed and compacted according to Section 310000, Earthwork. Unit of Measurement: cubic yards

Contract A-1.  $ ________________

UNIT PRICE No. 1.02: **Stone in place:** Indicate cost to provide stone in place and compacted according to Section 310000, Earthwork. Unit of Measurement: cubic yards

Contract A-1.  $ ________________

UNIT PRICE No. 1.03: **Geo-Fabric in place:** Indicate cost to provide Geo-Fabric in place according to Section 310000, Earthwork. Unit of Measurement: Square yards

Contract A-1.  $ ________________

UNIT PRICE No. 1.04: **Undercut & disposal (mass):** Indicate cost for mass excavation & disposal according to Section 312300, Excavation and Backfill for Pipeline and Structures. Unit of Measurement: Cubic yards

Contract A-1  $ ________________

UNIT PRICE No. 1.05: Undercut and disposal (trench) per cubic yard. **Undercut & disposal (trench):** Indicate cost for trench excavation & disposal according to Section 312300, Excavation and Backfill for Pipeline and Structures. Unit of Measurement: Cubic yards.

Contract A-1  $ ________________
UNIT PRICES (CON’T)

Unit prices conform to applicable project specification section. Refer to the specifications for a complete description of the following Unit Prices:

**ADD**

UNIT PRICE No. 1.06: **Select (trench) Backfill:** Indicate cost to provide satisfactory trench fill furnished, placed and compacted according to Section 312300, Excavation and Backfill for Pipeline and Structures. Unit of Measurement: cubic yards.

| Contract A-1 | $ ____________ |

UNIT PRICE No. 1.07: **Top soil:** Indicate cost to provide top soil in place and compacted according to Section 329200, Turf and Grasses. Unit of Measurement: cubic yards.

| Contract A-1 | $ ____________ |

UNIT PRICE No. 1.08: **Removal of unsuitable soil and replacement of suitable soil,** Indicate cost to remove, disposed of unsuitable unclassified materials, and to provide, place and compact suitable soil according to Section 310000, Earthwork. Unit of Measurement: cubic yards.

| Contracts A-1/A-2 | $ ____________ |

UNIT PRICE No. 1.09: **Removal of PCB contaminated ballasts** Indicate additional cost for removal and proper disposal of ballasts which are not labeled as PCB free. Unit of Measurement: Per ballast

| Contract A-2 | $ ____________ |
I/We acknowledge Addendums numbered ________________________________ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for 90 days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid (if required).

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

Should I/We be awarded this contract, I/We pledge to achieve substantial completion of all the work within ________________ calendar days of the Notice to Proceed.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By ______________________________ Trading as ________________________________

(Individual’s / General Partner’s / Corporate Name)

(State of Corporation)

Business Address: ________________________________________

_____________________________________________________

_____________________________________________________

Witness: _____________________________________________ By: __________________________

(SEAL) (Authorized Signature)

(Title)

Date: ________________________________

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Bid Security
(Others as Required by Project Manuals)
**BID FORM**

**SUBCONTRACTOR LIST**

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Owner, it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<table>
<thead>
<tr>
<th>Subcontractor Category</th>
<th>Subcontractor</th>
<th>Address (City &amp; State)</th>
<th>Subcontractors tax payer ID # or Delaware Business license #</th>
</tr>
</thead>
</table>
This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date (to the Office of Management and Budget, Division of Facilities Management).

All the terms and conditions of (Project or Contract Number) have been thoroughly examined and are understood.

NAME OF BIDDER: 

AUTHORIZED REPRESENTATIVE (TYPED): 

AUTHORIZED REPRESENTATIVE (SIGNATURE): 

TITLE: 

ADDRESS OF BIDDER: 

PHONE NUMBER: 

Sworn to and Subscribed before me this ___________________________ day of ______________________ 20____.

My Commission expires ___________________________. 

NOTARY PUBLIC ___________________________.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED,
4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite that complies with this regulation.

Contractor/Subcontractor Name: 

Contractor/Subcontractor Address: 

Authorized representative (typed or printed): 

Authorized representative (signature): 

TITLE: 

Sworn to and Subscribed before me this __________________________ day of ______________________ 20____.

My Commission expires _______________________.  NOTARY PUBLIC _______________________.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.
STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: ________________________________________

______________________________ of ___________________________ in the County of _____________

______________________________ and State of ___________________________ as Principal, and

______________________________ of ___________________________ in the County of _____________

______________________________ and State of ___________________________ as Surety, legally authorized to do business in the State of Delaware (“State”), are held and firmly unto the State in the sum of ___________________________ Dollars ($__________), or __________ percent not to exceed ___________________________ Dollars ($__________)
of amount of bid on Contract No. ___________________________ (insert State agency name) for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and

successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bonded Principal

who has submitted to the ___________________________ (insert State agency name) a
certain proposal to enter into this contract for the furnishing of certain material and/or services within the

State, shall be awarded this Contract, and if said Principal shall well and truly enter into and execute this

Contract as may be required by the terms of this Contract and approved by the ___________________________ (insert State agency name) this Contract to be entered into within twenty days after

the date of official notice of the award thereof in accordance with the terms of said proposal, then this

obligation shall be void or else to be and remain in full force and virtue.

Sealed with _______ seal and dated this ______ day of ______ in the year of our Lord two

thousand and ________________(20___).

SEALED, AND DELIVERED IN THE
Presence of

______________________________________________________________

Name of Bidder (Organization)

______________________________________________________________

Authorized Signature

Attest ___________________________

Title

______________________________________________________________

Name of Surety

______________________________________________________________

Witness: _______________________

By: _______________________

Tetra Tech

STATE OF DELAWARE BID BOND

004313-1
AGREEMENT made as of the day of ___ in the year (In words, indicate day, month and year.)

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

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

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

blank

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

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

The Owner and Contractor agree as follows.
TABLE OF ARTICLES

1 THE CONTRACT DOCUMENTS
2 THE WORK OF THIS CONTRACT
3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
4 CONTRACT SUM
5 PAYMENTS
6 DISPUTE RESOLUTION
7 TERMINATION OR SUSPENSION
8 MISCELLANEOUS PROVISIONS
9 ENUMERATION OF CONTRACT DOCUMENTS
10 INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS
The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT
The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.
(Insert the date of commencement, if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

If, prior to the commencement of the Work, the Owner requires time to file mortgages, mechanics’ liens and other security interests, the Owner’s time requirement shall be as follows:

§ 3.2 The Contract Time shall be measured from the date of commencement.

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than ( ) days from the date of commencement, or as follows:
(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)
Portion of the Work

Substantial Completion Date

, subject to adjustments of this Contract Time as provided in the Contract Documents.

(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor’s performance of the Contract. The Contract Sum shall be one of the following:

(Choose the appropriate box)

[ ] Stipulated Sum, in accordance with Section 4.2 below

[ ] Cost of the Work plus the Contractor’s Fee without a Guaranteed Maximum Price, in accordance with Section 4.3 below

[ ] Cost of the Work plus the Contractor’s Fee with a Guaranteed Maximum Price, in accordance with Section 4.4 below

(Based on the selection above, complete Section 4.2, 4.3 or 4.4 below. Based on the selection above, also complete either Section 5.1.4, 5.1.5 or 5.1.6 below.)

§ 4.2 Stipulated Sum

§ 4.2.1 The Stipulated Sum shall be ($ ), subject to additions and deletions as provided in the Contract Documents.

§ 4.2.2 The Stipulated Sum is based on the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 4.2.3 Unit prices, if any:

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

<table>
<thead>
<tr>
<th>Item</th>
<th>Units and Limitations</th>
<th>Price per Unit ($0.00)</th>
</tr>
</thead>
</table>

§ 4.2.4 Allowances included in the Stipulated Sum, if any:

(Identify allowance and state exclusions, if any, from the allowance price.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Allowance</th>
</tr>
</thead>
</table>

§ 4.3 Cost of the Work Plus Contractor’s Fee without a Guaranteed Maximum Price

§ 4.3.1 The Contract Sum is the Cost of the Work as defined in Exhibit A, Determination of the Cost of the Work, plus the Contractor’s Fee.

§ 4.3.2 The Contractor’s Fee:

(Stated a lump sum, percentage of Cost of the Work or other provision for determining the Contractor’s Fee.)
§ 4.3.3 The method of adjustment of the Contractor’s Fee for changes in the Work:

§ 4.3.4 Limitations, if any, on a Subcontractor’s overhead and profit for increases in the cost of its portion of the Work:

§ 4.3.5 Rental rates for Contractor-owned equipment shall not exceed percent (%) of the standard rate paid at the place of the Project.

§ 4.3.6 Unit prices, if any:
(Identify and state the unit price, state quantity limitations, if any, to which the unit price will be applicable.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Units and Limitations</th>
<th>Price per Unit ($0.00)</th>
</tr>
</thead>
</table>

§ 4.3.7 The Contractor shall prepare and submit to the Construction Manager for the Owner, in writing, a Control Estimate within 14 days of executing this Agreement. The Control Estimate shall include the items in Section A.1 of Exhibit A, Determination of the Cost of the Work.

§ 4.4 Cost of the Work Plus Contractor’s Fee with a Guaranteed Maximum Price

§ 4.4.1 The Contract Sum is the Cost of the Work as defined in Exhibit A, Determination of the Cost of the Work, plus the Contractor’s Fee.

§ 4.4.2 The Contractor’s Fee:
(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor’s Fee.)

§ 4.4.3 The method of adjustment of the Contractor’s Fee for changes in the Work:

§ 4.4.4 Limitations, if any, on a Subcontractor’s overhead and profit for increases in the cost of its portion of the Work:

§ 4.4.5 Rental rates for Contractor-owned equipment shall not exceed percent (%) of the standard rate paid at the place of the Project.

§ 4.4.6 Unit Prices, if any:
(Identify and state the unit price, and state the quantity limitations, if any, to which the unit price will be applicable.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Units and Limitations</th>
<th>Price per Unit ($0.00)</th>
</tr>
</thead>
</table>

§ 4.4.7 Guaranteed Maximum Price

§ 4.4.7.1 The sum of the Cost of the Work and the Contractor’s Fee is guaranteed by the Contractor not to exceed ($ ), subject to additions and deductions by changes in the Work as provided in the Contract Documents. Such maximum sum is referred to in the Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner. (Insert specific provisions if the Contractor is to participate in any savings.)
§ 4.4.7.2 The Guaranteed Maximum Price is based on the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

§ 4.4.7.3 Allowances included in the Guaranteed Maximum Price, if any:
(Identify and state the amounts of any allowances, and state whether they include labor, materials, or both.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Allowance</th>
</tr>
</thead>
</table>

§ 4.4.7.4 Assumptions, if any, on which the Guaranteed Maximum Price is based:

ARTICLE 5 PAYMENTS
§ 5.1 Progress Payments
§ 5.1.1 Based upon Applications for Payment submitted to the Construction Manager by the Contractor, and upon certification of the Project Application and Project Certificate for Payment or Application for Payment and Certificate for Payment by the Construction Manager and Architect and issuance by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

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

§ 5.1.3 Provided that an Application for Payment is received by the Construction Manager not later than the day of the month, the Owner shall make payment of the certified amount in the Application for Payment to the Contractor not later than the day of the month. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment shall be made by the Owner not later than ( ) days after the Construction Manager receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Progress Payments Where the Contract Sum is Based on a Stipulated Sum
§ 5.1.4.1 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work and be prepared in such form and be supported by such data to substantiate its accuracy as the Construction Manager and Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.4.2 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.4.3 Subject to the provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

1. Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the total Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of percent (%) of the sum determined as provided in Section 7.3.9 of the General Conditions;

2. Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of percent (%) of the sum determined as provided in Section 7.3.9 of the General Conditions;

3. Subtract the aggregate of previous payments made by the Owner; and
4 Subtract amounts, if any, for which the Construction Manager or Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of the General Conditions.

§ 5.1.4.4 The progress payment amount determined in accordance with Section 5.1.4.3 shall be further modified under the following circumstances:

1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to percent ( %) of the Contract Sum, less such amounts as the Construction Manager recommends and the Architect determines for incomplete Work and unsettled claims; and

2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of the General Conditions.

§ 5.1.4.5 Reduction or limitation of retainage, if any, shall be as follows:
(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.4.3.1 and 5.1.4.3.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

§ 5.1.5 Progress Payments Where the Contract Sum is Based on the Cost of the Work without a Guaranteed Maximum Price

§ 5.1.5.1 With each Application for Payment, the Contractor shall submit the cost control information required in Exhibit A, Determination of the Cost of the Work, along with payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that cash disbursements already made by the Contractor on account of the Cost of the Work equal or exceed (1) progress payments already received by the Contractor; less (2) that portion of those payments attributable to the Contractor’s Fee; plus (3) payrolls for the period covered by the present Application for Payment.

§ 5.1.5.2 Applications for Payment shall show the Cost of the Work actually incurred by the Contractor through the end of the period covered by the Application for Payment and for which the Contractor has made or intends to make actual payment prior to the next Application for Payment.

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

1 Take the Cost of the Work as described in Exhibit A, Determination of the Cost of the Work;

2 Add the Contractor’s Fee, less retainage of percent ( %). The Contractor’s Fee shall be computed upon the Cost of the Work described in that Section at the rate stated in that Section; or if the Contractor’s Fee is stated as a fixed sum, an amount which bears the same ratio to that fixed-sum Fee as the Cost of the Work bears to a reasonable estimate of the probable Cost of the Work upon its completion;

3 Subtract retainage of percent ( %) from that portion of the Work that the Contractor self-performs;

4 Subtract the aggregate of previous payments made by the Owner;

5 Subtract the shortfall, if any, indicated by the Contractor in the documentation required by Article 5 or resulting from errors subsequently discovered by the Owner’s auditors in such documentation; and

6 Subtract amounts, if any, for which the Construction Manager or Architect has withheld or withdrawn a Certificate for Payment as provided in Section 9.5 of AIA Document A232™-2009, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition.

§ 5.1.5.4 The Owner, Construction Manager and Contractor shall agree upon (1) a mutually acceptable procedure for review and approval of payments to Subcontractors and (2) the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 5.1.5.5 In taking action on the Contractor’s Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and shall not be deemed to represent that the Construction Manager and Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Article 5 or other supporting data; that the Construction Manager and Architect have made exhaustive or continuous on-site inspections; or that the Construction Manager and Architect have made examinations to ascertain how or for what purposes the Contractor has used

Init. I

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User Notes:

(1916030288)
§ 5.1.5.5 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.1.6 Progress Payments Where the Contract Sum is Based on the Cost of the Work with a Guaranteed Maximum Price
§ 5.1.6.1 With each Application for Payment, the Contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner or Architect to demonstrate that cash disbursements already made by the Contractor on account of the Cost of the Work equal or exceed (1) progress payments already received by the Contractor; less (2) that portion of these payments attributable to the Contractor’s Fee; plus (3) payrolls for the period covered by the present Application for Payment.

§ 5.1.6.2 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work and be prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor’s Applications for Payment.

§ 5.1.6.3 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed; or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Contractor on account of that portion of the Work for which the Contractor has made or intends to make actual payment prior to the next Application for Payment by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.

§ 5.1.6.4 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:
.1 Take that portion of the Guaranteed Maximum Price properly allocatable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values. Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.10 of AIA Document A232–2009;
.2 Add that portion of the Guaranteed Maximum Price properly allocatable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work, or if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing;
.3 Add the Contractor’s Fee, less retention of percent ( %). The Contractor’s Fee shall be computed upon the Cost of the Work at the rate stated in Section 4.4.2 or, if the Contractor’s Fee is stated as a fixed sum in that Section, shall be an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work bears to a reasonable estimate of the probable Cost of the Work upon its completion;
.4 Subtract retention of percent ( %) from that portion of the Work that the Contractor self-performs;
.5 Subtract the aggregate of previous payments made by the Owner;
.6 Subtract the shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.6.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner’s auditors in such documentation; and
.7 Subtract amounts, if any, for which the Construction Manager or Architect have withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A232–2009.

§ 5.1.6.5 The Owner and the Contractor shall agree upon a (1) mutually acceptable procedure for review and approval of payments to Subcontractors and (2) the percentage of retention held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 5.1.6.6 In taking action on the Contractor’s Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and shall not be deemed to represent that the Construction Manager or Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Section 5.1.6.1 or other supporting data; that the
Construction Manager or Architect have made exhaustive or continuous on-site inspections; or that the Construction Manager or Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner’s auditors acting in the sole interest of the Owner.

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

§ 5.2 Final Payment
§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Section 12.2 of AIA Document A232–2009, and to satisfy other requirements, if any, which extend beyond final payment;

.2 the Contractor has submitted a final accounting for the Cost of the Work, pursuant to Exhibit A, Determination of the Cost of the Work when payment is on the basis of the Cost of the Work, with or without a Guaranteed Maximum payment; and

.3 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect; such final payment shall be made by the Owner not more than 30 days after the issuance of the final Certificate for Payment or Project Certificate for Payment, or as follows:

ARTICLE 6 DISPUTE RESOLUTION
§ 6.1 Initial Decision Maker
The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A232–2009, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution
For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A232–2009, the method of binding dispute resolution shall be as follows:
(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)


[ ] Litigation in a court of competent jurisdiction.

[ ] Other: (Specify)

ARTICLE 7 TERMINATION OR SUSPENSION
§ 7.1 Where the Contract Sum is a Stipulated Sum
§ 7.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2009.

§ 7.1.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2009.
§ 7.2 Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price
§ 7.2.1 Subject to the provisions of Section 7.2.2 below, the Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232-2009.

§ 7.2.2 The Contract may be terminated by the Owner for cause as provided in Article 14 of AIA Document A232-2009; however, the Owner shall then only pay the Contractor an amount calculated as follows:
.1 Take the Cost of the Work incurred by the Contractor to the date of termination;
.2 Add the Contractor’s Fee computed upon the Cost of the Work to the date of termination at the rate stated in Sections 4.3.2 or 4.4.2, as applicable, or, if the Contractor’s Fee is stated as a fixed sum, an amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion; and
.3 Subtract the aggregate of previous payments made by the Owner.

§ 7.2.3 If the Owner terminates the Contract for cause when the Contract Sum is based on the Cost of the Work with a Guaranteed Maximum Price, and as provided in Article 14 of AIA Document A232-2009, the amount, if any, to be paid to the Contractor under Section 14.2.4 of AIA Document A232-2009 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed the amount calculated in Section 7.2.2.

§ 7.2.4 The Owner shall also pay the Contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Contractor that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 7.2.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Contractor shall, as a condition of receiving the payments referred to in this Article 7, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or purchase orders.

§ 7.2.5 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232-2009; in such case, the Contract Sum and Contract Time shall be increased as provided in Section 14.3.2 of AIA Document A232-2009, except that the term 'profit' shall be understood to mean the Contractor's Fee as described in Sections 4.3.2 and 4.4.2 of this Agreement.

ARTICLE 8 MISCELLANEOUS PROVISIONS
§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A232-2009 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

%  

§ 8.3 The Owner’s representative:
(Name, address and other information)

§ 8.4 The Contractor’s representative:
(Name, address and other information)
§ 8.5 Neither the Owner’s nor the Contractor’s representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

**ARTICLE 9  ENUMERATION OF CONTRACT DOCUMENTS**

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A132–2009, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition.


§ 9.1.3 The Supplementary and other Conditions of the Contract:

<table>
<thead>
<tr>
<th>Document</th>
<th>Title</th>
<th>Date</th>
<th>Pages</th>
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</table>

§ 9.1.4 The Specifications:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Date</th>
<th>Pages</th>
</tr>
</thead>
</table>

§ 9.1.5 The Drawings:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Date</th>
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§ 9.1.6 The Addenda, if any:

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<tr>
<th>Number</th>
<th>Date</th>
<th>Pages</th>
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</thead>
</table>

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents are:

2. AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed, or the following:

3. AIA Document E202™–2008, Building Information Modeling Protocol Exhibit, if completed, or the following:
4. Other documents, if any, listed below:
(List here any additional documents which are intended to form part of the Contract Documents. AIA Document A232-2009 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor’s bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

**ARTICLE 10 INSURANCE AND BONDS**
The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A232-2009.
(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A232-2009.)

<table>
<thead>
<tr>
<th>Type of Insurance or Bond</th>
<th>Limit of Liability or Bond Amount ($0.00)</th>
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</thead>
</table>

This Agreement is entered into as of the day and year first written above.

**OWNER (Signature)**

**CONTRACTOR (Signature)**

(Printed name and title)

(Printed name and title)
STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET

PERFORMANCE BOND

Bond Number: ___________________

KNOW ALL PERSONS BY THESE PRESENTS, that we, ______________________, as principal ("Principal"), and ______________________, a ______________________ corporation, legally authorized to do business in the State of Delaware, as surety ("Surety"), are held and firmly bound unto the ____________________________________________ ("Owner") (insert State agency name), in the amount of _________________ ($___________), to be paid to Owner, for which payment well and truly to be made, we do bind ourselves, our and each and every of our heirs, executors, administrations, successors and assigns, jointly and severally, for and in the whole, firmly by these presents.

Sealed with our seals and dated this __________ day of ____________, 20__. 

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, who has been awarded by Owner that certain contract known as Contract No. ___________ dated the __________ day of ____________, 20__ (the “Contract”), which Contract is incorporated herein by reference, shall well and truly provide and furnish all materials, appliances and tools and perform all the work required under and pursuant to the terms and conditions of the Contract and the Contract Documents (as defined in the Contract) or any changes or modifications thereto made as therein provided, shall make good and reimburse Owner sufficient funds to pay the costs of completing the Contract that Owner may sustain by reason of any failure or default on the part of Principal, and shall also indemnify and save harmless Owner from all costs, damages and expenses arising out of or by reason of the performance of the Contract and for as long as provided by the Contract; then this obligation shall be void, otherwise to be and remain in full force and effect.

Surety, for value received, hereby stipulates and agrees, if requested to do so by Owner, to fully perform and complete the work to be performed under the Contract pursuant to the terms, conditions and covenants thereof, if for any cause Principal fails or neglects to so fully perform and complete such work.

Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of Surety and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition or change in or to the Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any work to be performed or any monies due or to become due thereunder; and Surety hereby waives notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other

Tetra Tech  STATE OF DELAWARE PERFORMANCE BOND FORM 006113.13-1
transferees shall have the same effect as to **Surety** as though done or omitted to be done by or in relation to **Principal**.

**Surety** hereby stipulates and agrees that no modifications, omissions or additions in or to the terms of the Contract shall in any way whatsoever affect the obligation of **Surety** and its bond.

Any proceeding, legal or equitable, under this Bond may be brought in any court of competent jurisdiction in the State of Delaware. Notices to **Surety** or Contractor may be mailed or delivered to them at their respective addresses shown below.

IN WITNESS WHEREOF, **Principal** and **Surety** have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seal to be hereto affixed and these presents to be signed by their duly authorized officers, the day and year first above written.

**PRINCIPAL**

Name: _________________________________

Witness or Attest: Address: _________________________________

_______________________________        By: _________________________________ (SEAL)

Name: _________________________________

Name: _________________________________

Title: _________________________________

(Corporate Seal)

**SURETY**

Name: _________________________________

Witness or Attest: Address: _________________________________

_______________________________        By: _________________________________ (SEAL)

Name: _________________________________

Name: _________________________________

Title: _________________________________

(Corporate Seal)
KNOW ALL PERSONS BY THESE PRESENTS, that we, ____________________, as principal (“Principal”), and __________________, a ____________________ corporation, legally authorized to do business in the State of Delaware, as surety (“Surety”), are held and firmly bound unto the ______________________________________________ (“Owner”) (insert State agency name), in the amount of ____________________ ($___________), to be paid to Owner, for which payment well and truly to be made, we do bind ourselves, our and each and every of our heirs, executors, administrations, successors and assigns, jointly and severally, for and in the whole firmly by these presents.

Sealed with our seals and dated this _____________ day of____________, 20__.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, who has been awarded by Owner that certain contract known as Contract No. ____________dated the _______ day of _____________, 20__ (the “Contract”), which Contract is incorporated herein by reference, shall well and truly pay all and every person furnishing materials or performing labor or service in and about the performance of the work under the Contract, all and every sums of money due him, her, them or any of them, for all such materials, labor and service for which Principal is liable, shall make good and reimburse Owner sufficient funds to pay such costs in the completion of the Contract as Owner may sustain by reason of any failure or default on the part of Principal, and shall also indemnify and save harmless Owner from all costs, damages and expenses arising out of or by reason of the performance of the Contract and for as long as provided by the Contract; then this obligation shall be void, otherwise to be and remain in full force and effect.

Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligation of Surety and its bond shall be in no way impaired or affected by any extension of time, modification, omission, addition or change in or to the Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by any waiver of any provisions thereof, or by any assignment, subletting or other transfer thereof or of any work to be performed or any monies due or to become due thereunder; and Surety hereby waives notice of any and all such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers and hereby expressly stipulates and agrees that any and all things done and omitted to be done by and in relation to assignees, subcontractors, and other transferees shall have the same effect as to Surety as though done or omitted to be done by or in relation to Principal.

Surety hereby stipulates and agrees that no modifications, omission or additions in or to the terms of the Contract shall in any way whatsoever affect the obligation of Surety and its bond.
Any proceeding, legal or equitable, under this Bond may be brought in any court of competent jurisdiction in the State of Delaware. Notices to Surety or Contractor may be mailed or delivered to them at their respective addresses shown below.

IN WITNESS WHEREOF, Principal and Surety have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seal to be hereto affixed and these presents to be signed by their duly authorized officers, the day and year first above written.

PRINCIPAL

Name: ________________________________

Witness or Attest: Address: ________________________________

____________________________________ By: ________________________________ (SEAL)
Name: ________________________________
Name: ________________________________
Title: ________________________________

(Corporate Seal)

SURETY

Name: ________________________________

Witness or Attest: Address: ________________________________

____________________________________ By: ________________________________ (SEAL)
Name: ________________________________
Name: ________________________________
Title: ________________________________

(Corporate Seal)
CONSTRUCTION MANAGER  

CONTRACTOR  

ARCHITECT  

PERIOD TO:

OTHER

PROJECT NO:

CONTRACT.

ARCHITECT DATE

CONSTRUCTION MANAGER

OWNER:

APPLICATION NO:

001

APPLICATION:

Summary of Changes in the Work

$ 0.00

TO:"
SECTION 006300 - STANDARD FORMS CERTIFICATES AND MODIFICATION FORMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Standard Forms.

1.2 RELATED SECTIONS

A. General and Supplementary Conditions.

1.3 STANDARD FORMS

A. Following is a list of the standard Documents published by the American Institute of Architects which will be used during the performance of Work covered by the Contract Documents.

B. The Contractor shall familiarize himself with the contents of the Documents, as he will not only be required to execute certain Documents, but will be required to prepare certain others in performing his work in accordance with the Contract Documents.

C. The Contractor will be required to obtain for his own use, those Documents marked with an asterisk (*). The Documents can be obtained, at nominal cost, from the Documents Division, The American Institute of Architects, 1735 New York Avenue, NW, Washington, DC 20006, as well as other local sources.

D. FORMS

A232* General Conditions of the Contract for Construction
Change Order (Architect Form)
G732/CM* Application and Certificate for Payment
G703* Continuation Sheet
G704 Certificate of Substantial Completion
G705* Certificate of Insurance
G706* Contractor’s Affidavit of Payment of Debts and Claims
G706A* Contractor’s Affidavit of Release of Liens
G707* Consent of Surety Company to Final Payment
G707A* Consent of Surety to Reduction in or Partial Release of Retainage
G805* List of Subcontractors

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 006300
for the following PROJECT:
(Name, and location or address)

THE CONSTRUCTION MANAGER:
(Name, legal status and address)

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added or deleted from the original AIA text.

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

This document is intended to be used in conjunction with AIA Documents A132™—2009, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™—2009, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™—2009, Standard Form of Agreement Between Owner and Construction Manager as Adviser.
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ARTICLE 1  GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement), and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor’s bid or proposal, or portions of addenda relating to bidding requirements.

§ 1.1.2 The Contract. The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect’s consultants, (2) between the Owner and the Construction Manager or the Construction Manager’s consultants, (3) between the Owner and the Architect or the Architect’s consultants, (4) between the Contractor and the Construction Manager or the Construction Manager’s consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their duties.

§ 1.1.3 The Work. The term “Work” means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor’s obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by other Multiple Prime Contractors and by the Owner’s own forces, including persons or entities under separate contracts not administered by the Construction Manager.

§ 1.1.5 The Drawings. The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 The Specifications. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service. Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect’s consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker. The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.
§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization
Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation
In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications and Other Instruments of Service
§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect, or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

§ 1.6 Transmission of Data in Digital Form
If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER
§ 2.1 General
§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Article 4, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Information and Services Required of the Owner
§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the
portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the building permit.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner’s control and relevant to the Contractor’s performance of the Work with reasonable promptness after receiving the Contractor’s written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.2.6 The Owner shall endeavor to forward all communications to the Contractor through the Construction Manager and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents.

§ 2.3 Owner’s Right to Stop the Work
If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 Owner’s Right to Carry Out the Work
If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner’s expenses and compensation for the Construction Manager’s and Architect’s and their respective consultants’ additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect, after consultation with the Construction Manager. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor’s authorized representative.

§ 3.1.2 The plural term “Multiple Prime Contractors” refers to persons or entities who perform construction under contracts with the Owner that are administered by the Construction Manager. The term does not include the Owner’s own forces, including persons or entities under separate contracts not administered by the Construction Manager.
§ 3.1.3 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.4 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

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

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered or made known to the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require. It is recognized that the Contractor’s review is made in the Contractor’s capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered or made known to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor’s notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor’s best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instruction concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner, the Construction Manager, and the Architect and shall not proceed with that portion of the Work without further written instructions from the Architect, through the Construction Manager. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.
§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of the Project already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials
§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.

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

§ 3.5 Warranty
The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform with the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 Taxes
The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices, and Compliance with Laws
§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, through the Construction Manager, shall secure and pay for the building permit. The Contractor shall secure and pay for other permits, fees, licenses and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect and Construction
Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor in writing, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances
§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents:
  .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
  .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
  .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent
§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner and Architect through the Construction Manager, the name and qualifications of a proposed superintendent. The Construction Manager may reply within 14 days to the Contractor in writing stating (1) whether the Owner, the Construction Manager, or the Architect has reasonable objection to the proposed superintendent or (2) that any of them require additional time to review. Failure of the Construction Manager to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction Schedules
§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information and the Construction Manager's approval a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project schedule to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.
The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor’s Work to avoid conflict with, and as to cause no delay in, the work or activities of other Multiple Prime Contractors or the construction or operations of the Owner’s own forces.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter update it as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Construction Manager’s and Architect’s approval. The Architect and Construction Manager’s approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor’s construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager and Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

§ 3.10.4 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager and Architect and incorporated into the approved Project schedule.

§ 3.11 Documents and Samples at the Site
The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These documents shall be available to the Architect and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples
§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way in which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.9 through 4.2.11. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Construction Manager Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the Project submittal schedule approved by the Construction Manager and Architect, or in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Multiple Prime Contractors or the Owner’s own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor’s Shop Drawings, Product Data, Samples and similar submittals with related documents submitted by other Multiple Prime Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked
and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been reviewed and approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect’s approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Construction Manager and Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect’s approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or in resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals. In the absence of such written notice, the Architect’s approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor’s responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional’s written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 Use of Site
§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 The Contractor shall coordinate the Contractor’s operations with, and secure the approval of, the Construction Manager before using any portion of the site.

§ 3.14 Cutting and Patching
§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner’s own forces or of other Multiple Prime Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner’s own forces or by other Multiple Prime Contractors except with written consent of the Construction Manager,
Owner and such other Multiple Prime Contractors; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the other Multiple Prime Contractors or the Owner the Contractor’s consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up
§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove waste materials, rubbish, the Contractor’s tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner’s approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work
The Contractor shall provide the Owner, Construction Manager and Architect access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights
The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner, Construction Manager and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner, Architect, or Construction Manager. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect through the Construction Manager.

§ 3.18 Indemnification
§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager’s and Architect’s consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys’ fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers’ compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER
§ 4.1 General
§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 The Owner shall retain a construction manager lawfully licensed to practice construction management or an entity lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.
§ 4.1.3 Duties, responsibilities and limitations of authority of the Construction Manager and Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Construction Manager, Architect and Contractor. Consent shall not be unreasonably withheld.

§ 4.1.4 If the employment of the Construction Manager or Architect is terminated, the Owner shall employ a successor construction manager or architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

§ 4.2 Administration of the Contract

§ 4.2.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner’s representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner and Construction Manager (1) known deviations from the Contract Documents and from the most recent Project schedule prepared by the Construction Manager, and (2) defects and deficiencies observed in the Work.

§ 4.2.3 The Construction Manager shall provide a staffing plan to include one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner reasonably informed of the progress of the Work, and will report to the Owner and Architect (1) known deviations from the Contract Documents and the most recent Project schedule, and (2) defects and deficiencies observed in the Work.

§ 4.2.4 The Construction Manager will schedule and coordinate the activities of the Contractor and other Multiple Prime Contractors in accordance with the latest approved Project schedule.

§ 4.2.5 The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, or charge of, construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor’s rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1, and neither will be responsible for the Contractor’s failure to perform the Work in accordance with the requirements of the Contract Documents. Neither the Construction Manager nor the Architect will have control over or charge of or be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work.

§ 4.2.6 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Construction Manager, and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents. Communications by and with the Architect’s consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with other Multiple Prime Contractors shall be through the Construction Manager and shall be contemporaneously provided to the Architect if those communications are about matters arising out of or related to the Contract Documents. Communications by and with the Owner’s own forces shall be through the Owner.

§ 4.2.7 The Construction Manager and Architect will review and certify all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

§ 4.2.8 The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents and will notify each other about the rejection. The Construction Manager shall determine in general
whether the Work of the Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of defects and deficiencies in the Work. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require additional inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, upon written authorization of the Owner, whether or not such Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect’s nor the Construction Manager’s authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data and Samples. Where there are Multiple Prime Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from Contractor and other Multiple Prime Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager’s actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

§ 4.2.10 The Architect will review and approve or take other appropriate action upon the Contractor’s submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect’s action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect’s professional judgment to permit adequate review. Upon the Architect’s completed review, the Architect shall transmit its submittal review to the Construction Manager.

§ 4.2.11 Review of the Contractor’s submittals by the Construction Manager and Architect is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Construction Manager and Architect’s review of the Contractor’s submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Construction Manager and Architect review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Construction Manager and Architect, of any construction means, methods, techniques, sequences or procedures. The Architect’s approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.12 The Construction Manager will prepare Change Orders and Construction Change Directives.

§ 4.2.13 The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7, and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.14 Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.2.15 The Construction Manager will assist the Architect in conducting inspections to determine the dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related

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documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor’s compliance with the requirements of the Contract Documents.

§ 4.2.16 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect’s responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.17 The Architect will interpret and decide matters concerning performance under, and requirements of the Contract Documents on written request of the Construction Manager, Owner or Contractor through the Construction Manager. The Architect’s response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

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

§ 4.2.19 The Architect’s decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.20 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect, with the Construction Manager’s recommendation. The Architect will review and respond in writing to the Construction Manager to requests for information about the Contract Documents. The Construction Manager’s recommendation and the Architect’s response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS
§ 5.1 Definitions
§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include other Multiple Prime Contractors or subcontractors of other Multiple Prime Contractors.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work
§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Construction Manager for review by the Owner, Construction Manager and Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Construction Manager may reply within 14 days to the Contractor in writing stating (1) whether the Owner, the Construction Manager or the Architect has reasonable objection to any such proposed person or entity or, (2) that the Construction Manager, Architect or Owner requires additional time for review. Failure of the Construction Manager, Owner, or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change,
and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations
By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including responsibility for safety of the Subcontractor’s Work, which the Contractor, by these Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts
§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

1. assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and

2. assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor’s rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor’s compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity. If the Owner assigns the subcontract to a successor Contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor Contractor’s obligations under the subcontract.

ARTICLE  6    CONSTRUCTION BY OWNER OR BY OTHER CONTRACTORS
§ 6.1 Owner’s Right to Perform Construction with Own Forces and to Award Other Contracts
§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner’s own forces, which include persons or entities under separate contracts not administered by the Construction Manager, and to award other contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.2 When the Owner performs construction or operations with the Owner’s own forces including persons or entities under separate contracts not administered by the Construction Manager, the Owner shall provide for coordination of such forces with the Work of the Contractor, who shall cooperate with them.
§ 6.1.3 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11 and 12.

§ 6.2 Mutual Responsibility
§ 6.2.1 The Contractor shall afford the Owner's own forces, Construction Manager and other Multiple Prime Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces or other Multiple Prime Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Construction Manager and Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's own forces or other Multiple Prime Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a separate contractor or to other Multiple Prime Contractors because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces or other Multiple Prime Contractors.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner, separate contractors, or other Multiple Prime Contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and other Multiple Prime Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up
If a dispute arises among the Contractor, other Multiple Prime Contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Construction Manager, with notice to the Architect, will allocate the cost among those responsible.

ARTICLE 7   CHANGES IN THE WORK
§ 7.1 General
§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Construction Manager, Architect and Contractor; a Construction Change Directive requires agreement by the Owner, Construction Manager and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.2 Change Orders
A Change Order is a written instrument prepared by the Construction Manager and signed by the Owner, Construction Manager, Architect and Contractor, stating their agreement upon all of the following:

1. The change in the Work;
§ 7.3 Construction Change Directives
§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:
.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
.2 Unit prices stated in the Contract Documents or subsequently agreed upon;
.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
.4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager and Architect of the Contractor’s agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor’s agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:
.1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers compensation insurance;
.2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
.5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and Architect. When
both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Construction Manager and Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Construction Manager shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work
The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order issued through the Construction Manager and shall be binding on the Owner and Contractor.

ARTICLE 8 TIME
§ 8.1 Definitions
§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion
§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time
§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner, Owner's own forces, Construction Manager, Architect, any of the other Multiple Prime Contractors or an employee of any of them, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration, or by other causes that the Architect, based on the recommendation of the Construction Manager, determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.
ARTICLE 9  PAYMENTS AND COMPLETION
§ 9.1 Contract Sum
The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 Schedule of Values
Where the Contract is based on a Stipulated Sum or Guaranteed Maximum Price, the Contractor shall submit to the Construction Manager, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Construction Manager and Architect may require. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor’s Applications for Payment. In the event there is one Contractor, the Construction Manager shall forward to the Architect the Contractor’s schedule of values. If there are Multiple Prime Contractors responsible for performing different portions of the Project, the Construction Manager shall forward the Multiple Prime Contractors’ schedules of values only if requested by the Architect.

§ 9.3 Applications for Payment
§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor’s right to payment as the Owner, Construction Manager or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner’s title to such materials and equipment or otherwise protect the Owner’s interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor’s knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§ 9.4 Certificates for Payment
§ 9.4.1 Where there is only one Contractor, the Construction Manager will, within seven days after the Construction Manager’s receipt of the Contractor’s Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor’s Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor’s Application for Payment from the Construction Manager, the Architect will either issue to the Owner a Certificate for Payment, with a copy to the Construction Manager, for such amount as the Architect determines is properly due, or notify the Construction Manager and Owner in writing of the Architect’s reasons for withholding certification in whole or in part as provided
in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect’s notice of withholding certification.

§ 9.4.2 Where there are Multiple Prime Contractors performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives the Multiple Prime Contractors’ Applications for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each of the Multiple Prime Contractors; (2) prepare a Summary of Contractors’ Applications for Payment by combining information from each Multiple Prime Contractors’ application with information from similar applications for progress payments from other Multiple Prime Contractors; (3) prepare a Project Application and Certificate for Payment; (4) certify the amount the Construction Manager determines is due all Multiple Prime Contractors; and (5) forward the Summary of Contractors’ Applications for Payment and Project Application and Certificate for Payment to the Architect.

§ 9.4.3 Within seven days after the Architect receives the Project Application and Project Certificate for Payment and the Summary of Contractors’ Applications for Payment from the Construction Manager, the Architect will either issue to the Owner a Project Certificate for Payment, with a copy to the Construction Manager, for such amount as the Architect determines is properly due, or notify the Construction Manager and Owner in writing of the Architect’s reasons for withholding certification in whole or in part as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect’s notice of withholding certification to the Contractors.

§ 9.4.4 The Construction Manager’s certification of an Application for Payment or, in the case of Multiple Prime Contractors, a Project Application and Certificate for Payment shall be based upon the Construction Manager’s evaluation of the Work and the information provided as part of the Application for Payment. The Construction Manager’s certification will constitute a representation that, to the best of the Construction Manager’s knowledge, information and belief, the Work has progressed to the point indicated and the quality of the Work is in accordance with the Contract Documents. The certification will also constitute a recommendation to the Architect and Owner that the Contractor be paid the amount certified.

§ 9.4.5 The Architect’s issuance of a Certificate for Payment or in the case of Multiple Prime Contractors, Project Application and Certificate for Payment, shall be based upon the Architect’s evaluation of the Work, the recommendation of the Construction Manager, and information provided as part of the Application for Payment or Project Application for Payment. The Architect’s certification will constitute a representation that, to the best of the Architect’s knowledge, information and belief, the Work has progressed to the point indicated, that the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified.

§ 9.4.6 The representations made pursuant to Sections 9.4.4 and 9.4.5 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.7 The issuance of a separate Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed the Contractor’s construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor’s right to payment or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment or Project Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager’s or Architect’s opinion the representations to the Owner required by Section 9.4.4 and 9.4.5 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.3. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment or a Project Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of
subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager’s or Architect’s opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

- defective Work not remedied;
- third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- damage to the Owner or a separate contractor;
- reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager and both will reflect such payment on the next Certificate for Payment.

§ 9.6 Progress Payments
§ 9.6.1 After the Architect has issued a Certificate for Payment or Project Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor’s portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Construction Manager will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

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

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary
liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 Failure of Payment
If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager’s receipt of the Contractor’s Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days’ written notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor’s reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

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

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect’s inspection discloses any item, whether or not included on the list, which is not sufficiently complete in accordance with the requirements of the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work or designated portion thereof is substantially complete, the Construction Manager will prepare, and the Construction Manager and Architect shall execute a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retention applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use
§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whenever or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retention if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall
be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of
the Architect after consultation with the Construction Manager.

§ 9.8.2 Immediately prior to such partial occupancy or use, the Owner, Construction Manager, Contractor and
Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and
record the condition of the Work.

§ 9.8.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute
acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment
§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Construction Manager a written notice that
the Work is ready for final inspection and acceptance and shall also forward to the Construction Manager a final
Contractor’s Application for Payment. Upon receipt, the Construction Manager will evaluate the completion of Work
of the Contractor and then forward the notice and Application, with the Construction Manager’s recommendations, to
the Architect who will promptly make such inspection. When the Architect finds the Work acceptable under the
Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a
final Certificate for Payment or Project Certificate for Payment stating that to the best of their knowledge, information
and belief, and on the basis of their on-site visits and inspections, the Work has been completed in accordance with
terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted
in the final Certificate is due and payable. The Construction Manager’s and Architect’s final Certificate for Payment
or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as
precedent to the Contractor’s being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to
the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and
other indebtedness connected with the Work for which the Owner or the Owner’s property might be responsible or
cumbersome (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that
insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not
be canceled or allowed to expire until at least 30 days prior written notice has been given to the Owner, (3) a written
statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the
period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the
Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens,
claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be
designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the
Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien
remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may
be compelled to pay in discharging such lien, including all costs and reasonable attorneys’ fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault
of the Contractor or by issuance of Change Orders affecting final completion, and the Construction Manager and
Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction
Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the
Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than
retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to
payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the
Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment
shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of
Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from
1. liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
2. failure of the Work to comply with the requirements of the Contract Documents; or
3. terms of special warranties required by the Contract Documents.
§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY
§ 10.1 Safety Precautions and Programs
The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors.

The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 10.2 Safety of Persons and Property
§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- employees on the Work and other persons who may be affected thereby;
- the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors;
- other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction; and
- construction or operations by the Owner or other Contractors.

§ 10.2.2 The Contractor shall comply with and give notice required by applicable laws, statutes, ordinances, codes, rules and regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4, except damage or loss attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property
If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured,
shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials
§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to, asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner, Construction Manager and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor’s written notice, the Owner shall obtain the services of a licensed laboratory to verify a presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resumed upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor’s reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys’ fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is not due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor’s fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner’s fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies
In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor’s discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS
§ 11.1 Contractor’s Liability Insurance
§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set

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forth below which may arise out of or result from the Contractor’s operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers’ compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;
.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor’s employees;
.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor’s employees;
.4 Claims for damages insured by usual personal injury liability coverage;
.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and
.7 Claims for bodily injury or property damage arising out of completed operations; and
.8 Claims involving contractual liability insurance applicable to the Contractor’s obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment and, with respect to the Contractor’s completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be submitted to the Construction Manager for transmittal to the Owner with a copy to the Architect prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days’ prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Construction Manager, the Construction Manager’s consultants, the Owner, the Architect, and the Architect’s consultants as additional insureds for claims caused in whole or in part by the Contractor’s negligent acts or omissions during the Contractor’s operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor’s negligent acts or omissions during the Contractor’s completed operations.

§ 11.2 Owner’s Liability Insurance
The Owner shall be responsible for purchasing and maintaining the Owner’s usual liability insurance.

§ 11.3 Property Insurance
§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder’s risk “all risk” or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.
§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsehood, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for the Architect's, Contractor's, and Construction Manager's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 Boiler and Machinery Insurance. The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Construction Manager, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.3.7 Waivers of Subrogation. The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees each of the other, and (2) the Construction Manager,
Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as the Owner and Contractor may have to the proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, Owner's separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or distribution of insurance proceeds in accordance with the direction of the arbitrators.

§ 11.4 Performance Bond and Payment Bond
§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK
§ 12.1 Uncovering of Work
§ 12.1.1 If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by either, be uncovered for their observation and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered which the Construction Manager or Architect has not specifically requested to observe prior to its being covered, the Construction Manager or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or one of the other Contractors in which event the Owner shall be responsible for payment of such costs.
§ 12.2 Correction of Work
§ 12.2.1 Before or After Substantial Completion
The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager’s and Architect’s services and expenses made necessary thereby, shall be at the Contractor’s expense.

§ 12.2.2 After Substantial Completion
§ 12.2.2.1 In addition to the Contractor’s obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.
§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors or other Multiple Prime Contractors caused by the Contractor’s correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor’s liability with respect to the Contractor’s obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work
If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS
§ 13.1 Governing Law
The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns
§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in

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Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner’s rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

§ 13.3 Written Notice
Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity or to an officer of the corporation for which it was intended; or if delivered at or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 Rights and Remedies
§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Construction Manager, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

§ 13.5 Tests and Inspections
§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Construction Manager, Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs except as provided in Section 13.5.3, shall be at the Owner’s expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Construction Manager’s and Architect’s services and expenses shall be at the Contractor’s expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.5.5 If the Construction Manager or Architect is to observe tests, inspections or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.
§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 Interest
Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 Time Limits on Claims
The Owner and the Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and the Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT
§ 14.1 Termination by the Contractor
§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:
.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
.2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;
.3 Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
.4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor’s request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days’ written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work executed including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner’s obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days’ written notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause
§ 14.2.1 The Owner may terminate the Contract if the Contractor
.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.
§ 14.2.2 When any of the above reasons exist, the Owner, after consultation with the Construction Manager, and upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor’s surety, if any, seven days’ written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:
  .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
  .2 Accept assignment of subcontracts pursuant to Section 5.4; and
  .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager’s and Architect’s services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience
§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:
  .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
  .2 that an equitable adjustment is made or denied under another provision of this Contract.

§ 14.4 Termination by the Owner for Convenience
§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner’s convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner’s convenience, the Contractor shall
  .1 cease operations as directed by the Owner in the notice;
  .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
  .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner’s convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

ARTICLE 15 CLAIMS AND DISPUTES
§ 15.1 Claims
§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.
§ 15.1.2 Notice of Claims. Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Construction Manager and or Architect is not serving as the Initial Decision Maker. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognises the condition giving rise to the Claim, whichever is later.

§ 15.1.3 Continuing Contract Performance. Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Construction Manager will prepare Change Orders and the Architect will issue a Certificate for Payment or Project Certificate for Payment in accordance with the decisions of the Initial Decision Maker.

§ 15.1.4 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3.

§ 15.1.5 Claims for Additional Time
§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor’s Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.6 Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party’s termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision
§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker’s sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision
Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner’s expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect and Construction Manager, if the Architect or Construction Manager is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor’s default, the Owner may, but is not obligated to, notify the surety and request the surety’s assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic’s lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation
§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 The parties shall share the mediator’s fees and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration
§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a
notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.
The following supplements modify the “General Conditions of the Contract for Construction,” AIA Document A201-1997. Where a portion of the General Conditions is modified or deleted by the Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

TABLE OF ARTICLES

1. GENERAL PROVISIONS
2. OWNER
3. CONTRACTOR
4. ADMINISTRATION OF THE CONTRACT
5. SUBCONTRACTORS
6. CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
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11. INSURANCE AND BONDS
12. UNCOVERING AND CORRECTION OF WORK
13. MISCELLANEOUS PROVISIONS
14. TERMINATION OR SUSPENSION OF THE CONTRACT
15. ATTACHMENT A – CONSTRUCTION MANAGEMENT GENERAL CONDITIONS
ARTICLE 1: GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

Delete the last sentence in its entirety and replace with the following:

“The Contract Documents also include Advertisement for Bid, Instructions to Bidder, sample forms, the Bid Form, the Contractor’s completed Bid and the Award Letter.”

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

Add the following Paragraphs:

1.2.2 In the case of an inconsistency between the Drawings and the Specifications, or within either document not clarified by addendum, the better quality or greater quantity of work shall be provided in accordance with the Architect’s interpretation.

1.2.3 The word “PROVIDE” as used in the Contract Documents shall mean “FURNISH AND INSTALL” and shall include, without limitation, all labor, materials, equipment, transportation, services and other items required to complete the Work.

1.2.4 The word “PRODUCT” as used in the Contract Documents means all materials, systems and equipment.

1.5.3 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

Add the following paragraphs:

“All pre-design studies, drawings, specifications and other documents, including those in electronic form, prepared by the Architect under this Agreement are, and shall remain, the property of the Owner whether the Project for which they are made is executed or not. Such documents may be used by the Owner to construct one or more like Projects without the approval of, or additional compensation to, the Architect. The Contractor, Subcontractors, Sub-subcontractors and Material or Equipment Suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect and the Architect’s consultants appropriate to and for use in the execution of their Work under the Contract Documents. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or Material and Equipment Supplier on other Projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and Architect’s consultants.

The Architect shall not be liable for injury or damage resulting from the re-use of drawings and specifications if the Architect is not involved in the re-use Project. Prior to re-use of construction documents for a Project in which the Architect is not also involved, the Owner will remove from such documents all identification of the original Architect, including name, address and professional seal or stamp.”

ARTICLE 2: OWNER
2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

To Subparagraph 2.2.3 – Add the following sentence:

“The Contractor, at their expense shall bear the costs to accurately identify the location of all underground utilities in the area of their excavation and shall bear all cost for any repairs required, out of failure to accurately identify said utilities.”

Delete Subparagraph 2.2.5 in its entirety and substitute the following:

2.2.5 The Contractor shall be furnished free of charge up to one (1) set of the Drawings and Project Manuals. Additional sets will be furnished at the cost of reproduction, postage and handling.

ARTICLE 3: CONTRACTOR

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

Amend Paragraph 3.2.2 to state that any errors, inconsistencies or omissions discovered shall be reported to the Architect and Owner immediately.

3.2.5 The Contractor shall own all entities (products, materials, equipment and systems) identified in the Project Manual (Specifications) and drawings, regardless of whether said entities are only referenced in either the Project Manual or the drawings. Failure of the successful low bidder to identify all required quantities and locations of all project entities in the bidding period will not exempt the low bidder from the contractual responsibility for these items. In the event of a conflict between the Project Manual and the drawings, the Contractor shall own the more costly of the conflicting scenarios. The conflict, once identified and reported by the Contractor, will be resolved by the Architect.”

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

Add the following Paragraphs:

3.3.2.1 The Contractor shall immediately remove from the Work, whenever requested to do so by the Owner, any person who is considered by the Owner or Construction Manager to be incompetent or disposed to be so disorderly, or who for any reason is not satisfactory to the Owner, and that person shall not again be employed on the Work without the consent of the Owner or the Architect.

3.3.4 The Contractor must provide suitable storage facilities at the Site for the proper protection and safe storage of their materials. Consult the Owner and the Construction Manager before storing any materials.

3.3.5 When any room is used as a shop, storeroom, office, etc., by the Contractor or Subcontractor(s) during the construction of the Work, the Contractor making use of these areas will be held responsible for any repairs, patching or cleaning arising from such use.
3.4 LABOR AND MATERIALS

Add the Following Paragraphs:

3.4.4 Before starting the Work, each Contractor shall carefully examine all preparatory Work that has been executed to receive their Work. Check carefully, by whatever means are required, to insure that its Work and adjacent, related Work, will finish to proper contours, planes and levels. Promptly notify the Construction Manager of any defects or imperfections in preparatory Work which will in any way affect satisfactory completion of its Work. Absence of such notification will be construed as an acceptance of preparatory Work and later claims of defects will not be recognized.

3.4.5 Under no circumstances shall the Contractor’s Work proceed prior to preparatory Work having been completely cured, dried and/or otherwise made satisfactory to receive this Work. Responsibility for timely installation of all materials rests solely with the Contractor responsible for that Work, who shall maintain coordination at all times.

3.5 WARRANTY

Add the following Paragraphs:

3.5.1 The Contractor will guarantee all materials and workmanship against original defects, except injury from proper and usual wear when used for the purpose intended, for two (2) years after Acceptance by the Owner, and will maintain all items in perfect condition during the period of guarantee.

3.5.2 Defects appearing during the period of guarantee will be made good by the Contractor at his expense upon demand of the Owner, it being required that all work will be in perfect condition when the period of guarantee will have elapsed.

3.5.3 In addition to the General Guarantee there are other guarantees required for certain items for different periods of time than the two (2) years as above, and are particularly so stated in that part of the specifications referring to same. The said guarantees will commence at the same time as the General Guarantee.

3.5.4 If the Contractor fails to remedy any failure, defect or damage within a reasonable time after receipt of notice, the Owner will have the right to replace, repair, or otherwise remedy the failure, defect or damage at the Contractor’s expense.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

Add the following Paragraphs:

3.11.1 During the course of the Work, the Contractor shall maintain a record set of drawings on which the Contractor shall mark the actual physical location of all piping, valves, equipment, conduit, outlets, access panels, controls, actuators, including all appurtenances that will be concealed once construction is complete, etc., including all invert elevations.
3.11.2 At the completion of the project, the Contractor shall obtain a set of reproducible drawings from the Architect, and neatly transfer all information outlined in 3.11.1 to provide a complete record of the as-built conditions.

3.11.3 The Contractor shall provide two (2) prints of the as-built conditions, along with the reproducible drawings themselves, to the Owner and one (1) set to the Architect. In addition, attach one complete set to each of the Operating and Maintenance Instructions/Manuals.

ARTICLE 4: ADMINISTRATION OF THE CONTRACT

4.2

Add the following Paragraph:

4.2.16.1 There will be no full-time project representative provided by the Owner or Architect on this project. The construction manager will be the owner's representative.

ARTICLE 5: SUBCONTRACTORS

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

Delete Paragraph 5.2.3 in its entirety and replace with the following:

5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection, subject to the statutory requirements of 29 Delaware Code § 6962(d)(10)b.3, 4.

ARTICLE 7: CHANGES IN THE WORK

(SEE ARTICLE 7: CHANGES IN WORK OF THE GENERAL REQUIREMENTS )

ARTICLE 8: TIME

8.2 PROGRESS AND COMPLETION

Add the following Paragraphs:

8.2.1.1 Refer to Specification Section SUMMARY OF WORK for Contract time requirements.

8.2.4 If the Work falls behind the Progress Schedule as submitted by the Contractor, the Contractor shall employ additional labor and/or equipment necessary to bring the Work into compliance with the Progress Schedule at no additional cost to the Owner.

8.3 DELAYS AND EXTENSION OF TIME

Add the following Paragraph:
8.3.2.1 The Contractor shall update the status of the suspension, delay, or interruption of the Work with each Application for Payment. (The Contractor shall report the termination of such cause immediately upon the termination thereof.) Failure to comply with this procedure shall constitute a waiver for any claim for adjustment of time or price based upon said cause.

Delete Paragraph 8.3.3 in its entirety and replace with the following:

8.3.3 Except in the case of a suspension of the Work directed by the Owner, an extension of time under the provisions of Paragraph 8.3.1., shall be the Contractor’s sole remedy in the progress of the Work and there shall be no payment or compensation to the Contractor for any expense or damage resulting from the delay.

Add the following Paragraph:

8.3.4 By permitting the Contractor to work after the expired time for completion of the project, the Owner does not waive their rights under the Contract.

ARTICLE 9: PAYMENTS AND COMPLETION

9.2 SCHEDULE OF VALUES

Add the following Paragraphs:

9.2.1 The Schedule of Values shall be submitted using AIA Document G702, Continuation Sheet to G703.

9.2.2 The Schedule of Values is to include a line item for Project Closeout Document Submittal. The value of this item is to be no less than 1% of the initial contract amount.

9.3 APPLICATIONS FOR PAYMENT

Add the following Paragraph:

9.3.1.3 Application for Payment shall be submitted on AIA Document G702 “Application and Certificate for Payment”, supported by AIA Document G703 “Continuation Sheet”. Said Applications shall be fully executed and notarized.

Add the following Paragraphs:

9.3.4 Until Closeout Documents have been received and outstanding items completed the Owner will pay 95% (ninety-five percent) of the amount due the Contractor on account of progress payments.

9.3.5 The Contractor shall provide a current and updated Progress Schedule to the Architect with each Application for Payment. Failure to provide Schedule will be just cause for rejection of Application for Payment.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

Tetra Tech SUPPLEMENTARY GENERAL CONDITIONS 007300-6
Add the following to 9.5.1:

.8 failure to provide a current Progress Schedule;
.9 a lien or attachment is filed;
.10 failure to comply with mandatory requirements for maintaining Record Documents.

9.6 PROGRESS PAYMENTS

Delete Paragraph 9.6.1 in its entirety and replace with the following:

9.6.1 After the Architect has approved and issued a Certificate for Payment, payment shall be made by the Owner within 30 days after Owner’s receipt of the Certificate for Payment.

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

Add the following Paragraphs:

10.1.2 Each Contractor shall develop a safety program in accordance with the Occupational Safety and Health Act of 1970. A copy of said plan shall be furnished to the Owner and Architect prior to the commencement of that Contractor’s Work.

10.1.3 Each Contractor shall appoint a Safety Representative. Safety Representatives shall be someone who is on site on a full time basis. If deemed necessary by the Owner, Construction Manager or Architect, Contractor Safety meetings will be scheduled. The attendance of all Safety Representatives will be required. Minutes will be recorded of said meetings by the Contractor and will be distributed to all parties as well as posted in all job offices/trailers etc.

10.2 SAFETY OF PERSONS AND PROPERTY

Add the following Paragraph:

10.2.4.1 As required in the Hazardous Chemical Act of June 1984, all vendors supplying any material that may be defined as hazardous, must provide Material Safety Data Sheets for those products. Any chemical product should be considered hazardous if it has a caution warning on the label relating to a potential physical or health hazard, if it is known to be present in the work place, and if employees may be exposed under normal conditions or in foreseeable emergency situations. Material Safety Data Sheets shall be provided directly to the Owner, along with the shipping slips that include those products.
ARTICLE 11: INSURANCE AND BONDS

11.1  CONTRACTOR’S LIABILITY INSURANCE

11.1.4  Strike “the owner” immediately following “(1)” and strike “and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor’s negligent acts or omissions during the Contractor’s completed operations.”

11.2  OWNER’S LIABILITY INSURANCE

Delete Paragraph 11.2 in its entirety.

11.3  PROPERTY INSURANCE

Delete Paragraph 11.3 in its entirety and replace with the following:

11.3  The Owner will not provide Builder’s All Risk Insurance for the Project. The Contractor and all Subcontractors shall provide property coverage for their tools and equipment, as necessary. Any mandatory deductible required by the Contractor’s Insurance shall be the responsibility of the Contractor.

11.4  PERFORMANCE BOND AND PAYMENT BOND

Add the following sentence: “The bonds will conform to those forms approved by the Office of Management and Budget.”

ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

12.2.2  AFTER SUBSTANTIAL COMPLETION

Add the following Paragraph:

12.2.2.1.1  At any time during the progress of the Work, or in any case where the nature of the defects will be such that it is not expedient to have corrected, the Owner, at its option, will have the right to deduct such sum, or sums, of money from the amount of the Contract as it considers justified to adjust the difference in value between the defective work and that required under contract including any damage to the structure.

12.2.1  Strike “one” and insert “two”.

12.2.2  Strike “one” and insert “two”.

12.2.3  Strike “one” and insert “two”.

12.2.5  In second sentence, strike “one” and insert “two”.

ARTICLE 13: MISCELLANEOUS PROVISIONS

Add the following Paragraph:

Tetra Tech  SUPPLEMENTARY GENERAL CONDITIONS 007300-8
13.1 GOVERNING LAW

Strike “except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.”

13.6 INTEREST

Strike “the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.” Insert “30 days of presentment of the authorized Certificate of Payment at the annual rate of 12% or 1% per month.

13.8 CONFLICTS WITH FEDERAL STATUTES OR REGULATIONS

13.8.1 If any provision, specifications or requirement of the Contract Documents conflict or is inconsistent with any statute, law or regulation of the government of the United States of America, the Contractor shall notify the Architect and Owner immediately upon discovery.

ARTICLE 14: TERMINATION OR SUSPENSION OF THE CONTRACT

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

Delete Paragraph 14.4.3 in its entirety and replace with the following:

14.4.3 In case of such termination for the Owner’s convenience, the Contractor shall be entitled to receive payment for Work executed, and cost incurred by reason of such termination along with reasonable overhead.

END OF SUPPLEMENTARY GENERAL CONDITIONS
SECTION 007300 - ATTACHMENT A - CONSTRUCTION MANAGER GENERAL CONDITIONS

COORDINATION OF THE CONTRACT

1. The Construction Manager will provide general coordination of all contracts between the Owner and Contractors, including the functions hereinafter described.

2. Coordinator, and in addition, home office executive, technical and clerical support for management, communications, documentation, inspection, planning, scheduling, estimating and accounting. He will furnish, maintain and operate a temporary field office and telephone.

3. The Construction Manager will provide support for the Contractors by providing the following General Condition Construction Items: ceremonies construction work; temporary toilets; first aid stations; bulletin board; job signs; temporary fire extinguishers.

Temporary heat provided by Mechanical Contractor is space heat for certain finish trades unless otherwise specifically required by the trade specification. In no way should the contractor misconstrue this item to include weather protection for concrete or masonry.

4. The Construction Manager will establish a reference point and benchmark for layout and engineering. Further actual layout and engineering required on the site to accomplish this Bid Pac work shall be the responsibility of the Contractor.

5. The Construction Manager will:
   
   (a) Review all changes proposed by the Contractor, Architect or Owner and make recommendations to the Architect and Owner on the schedule and cost implications and may initiate requests for changes in its opinion required by field conditions or progress of the work.

   (b) Review the adequacy of each Contractor’s personnel and equipment and the availability of necessary materials and supplies. If, in the opinion of the Construction Manager, a Contractor’s personnel or equipment or the availability of necessary materials and supplies is inadequate, the Construction Manager shall give written notice to the Contractor specifying such inadequacy. If such inadequacy is not cured within five (5) working days after receipt of such notice, the Construction Manager shall have the right to order the Contractor and all of his subcontractors to stop work until the inadequacy is cured. Such a work stoppage shall not entitle the Contractor or any subcontractors to any extension of the schedule, and the Contractor shall remain responsible for completing its work on time.

   (c) Establish and maintain a complete onsite library of all Contract Documents, approved shop drawings and approved material samples. Maintain an onsite directory which includes contracts for all sources of materials, labor and services relating to the project, and maintain at the job site a current marked record set of the contract drawings and specifications.
(d) Conduct pre-construction conferences with successful bidders. Schedule and conduct job meetings to be attended by the Contractors and representatives of the Owner to discuss such matters as procedures, progress, problems and scheduling. Distribute minutes of such meetings to all parties.

6. Construction Manager’s Daily Inspection Review:

(a) The Construction Manager will make daily review of work. In the event the interpretation of the meaning and intent of the plans and specifications becomes necessary during construction, he will consult with the Architect, request the Architect’s interpretation in writing and transmit same to the appropriate Contractor. Pending receipt of such interpretation from the Architect, the Construction Manager shall have the right to stop the work of the Contractor. These reviews are intended to supplement but not replace those inspections that are the responsibility of the Architects and their consultants. These reviews do not relieve the Contractor from his responsibility to the Owner.

7. Construction Manager’s Review of Safety Program:

(a) The Construction Manager will review the safety program as developed by each Contractor. (The Performance of such services by the Construction Manager shall not relieve the Contractor of his responsibilities for the safety of persons or property, and compliance with statutes, rules regulations and orders applicable to the conduct of the work.)

8. Construction Manager – Submittals Expediting Schedule:

(a) The Construction Manager will prepare and maintain a separate Submittals Expediting Schedule which schedules construction items requiring submission to Architect or Owner for review and approval prior to ordering, fabrication or delivery, such as: shop drawings preparation, submission of shop drawings samples – color schedules, templates, coordination drawings, equipment and fixture schedules, manufacturer literature, review and approval of submittal items, fabrication of equipment and products, shipping and delivery.

9. Construction Manager – Contractor’s Progress Payments:

(a) The Construction Manager will review application for each Contractor’s Progress Payments for compliance with the value of work accomplished and submit recommendations to the Architect.

10. Construction Manager – Change Orders:

(a) The Construction Manager will review all change order requests and submit recommendations to the Architect.

11. Construction Manager – Expansion of the Construction Schedule:
The Construction Manager will meet with each Contractor who receives an award to expand the construction schedule to include: shop drawings preparation, samples, review and approvals, fabrication, equipment and product delivery and testing activities. He will monitor schedule periodically to identify slippage. He will recommend to each Contractor corrective action as required to maintain schedule compliance.

12. Construction Manager – Master Schedule Bar Chart:

(a) The Construction Manager will display a Master Schedule Bar Chart in the job office showing the duration and location of each activity and a summary bar chart depicting each major construction activity time scaled to a calendar. He will also furnish identical information to the Architect and Owner.

RECORD DRAWINGS

13. All Contractors shall report to the Construction Manager all changes, deviations, additions or deletions related to the contract documents along with dimensional locations of underground utilities and other items which will be hidden from view in the completed construction. The Construction Manager will maintain a complete set of sepia reproducible of the contract documents upon which these items shall be recorded. At the completion of the project their record drawings will be turned over to the Owner for his use in building maintenance.

COOPERATION OF PRIME CONTRACTORS

14. In as much as the completion of the building within the prescribed time is dependent very largely upon the close and active cooperation of all those engaged therein, it is, therefore, expressly understood and agreed that each Contractor will layout and install his work as such time or times and in such manner as consistent with the Master Schedule Bar Chart to permit the carrying forward of the work of other Contractors.

JOB MEETINGS

15. A meeting shall be conducted bi-weekly by the Construction Manager for the purpose of coordinating and expediting the work. It shall be mandatory that each Contractor and/or his Superintendent be in attendance. Also, from time to time, the Construction Manager will designate certain subcontractors to attend. Additional mandatory meetings may be called by the Construction Manager. Such as weekly progress meetings on Mondays with the onsite Superintendent or others needed to attend for all trades working on the site to discuss job problems.

CONTRACTOR’S PLANT AND PERSONNEL

16. Each Contractor shall provide for his own forces the following as necessary:

(a) Job Site Office with telephone.

(b) Personnel/Tool Locker.

(c) Equipment and Material Storage Facilities.
(d) Onsite supervision of personnel and plant acceptable to the Construction Manager. Supervisions shall not be changed during the project duration without approval of the Construction Manager. If required by the Construction Manager, the Contractor shall immediately remove any personnel from the project and replace same with approved personnel.

(e) The Contractor shall provide drinking water in accordance with Public Health requirements.

(f) Provide any additional temporary lighting as required and protection for new or existing finishes.

(g) Extension cords and light bulbs.

(h) The Contractor shall at the completion of his work remove all such temporary utilities.

(i) Pay for all power consumed.

SAFETY

17. The Construction Manager will have the right to correct any unsafe project conditions that exist due to the negligence of any Contractor and may reduce the Contractor’s payments in the amount required to make necessary safe project conditions. In no way does this mean that the Construction Manager has the responsibility for any safety requirements that are specifically that of the Contractor.

17.1 Prime Contractor acknowledges that it is solely responsible for the health and safety of its employees, agents, subcontractors, and other persons on the adjacent to the Work Site. Prime contractor agrees that it shall be liable for any violation of any law, regulation, statute or ordinance applicable to Prime Contractor’s work. The Prime Contractor shall be liable to the Owner and Construction Manager for all loss, cost and expense attributable to any act or omission by the Prime Contractor, or anyone acting on its behalf, including but not limited to any fines, penalties or assessments levied against the Owner and/or Construction Manager, and agrees that any such amounts may be deducted from any payment due to the Prime Contractor.

18. The Carpentry and General Work Contract will provide and install temporary safety rails for guarding any floor and wall openings during construction.

SCHEDULE

19. If the project progresses well and the project is ahead of schedule, the Contractor must take this point into consideration. At no time shall a Contractor use the Schedule Advancement as a reason for not completing work.

CONSTRUCTION MANAGER’S AUTHORITY REGARDING CLEANUP

20. The site and all portions of the work in progress shall be cleaned up daily.
21. In the event that any contractor fails to properly do his cleanup work during the construction period (as noted in subparagraph 4.15.1), the Construction Manager shall, after giving the contractor a 48 hour written notice, hire a clean up crew to do the necessary cleanup and then back-charge the contractor for doing this cleanup work. Note that when performing his required cleanup, the contractor shall deposit all debris at a place designated by the Construction Manager, or remove debris from the site. No burning will be permitted on this site.

22. The contractor shall furnish, at the construction manager’s discretion, one (1) man for two (2) hours per week to police the construction site clean up of miscellaneous debris.

END CM GENERAL CONDITIONS
PREVAILING WAGES FOR **BUILDING CONSTRUCTION** EFFECTIVE MARCH 15, 2019

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CERTIFIED: 06/24/2019  BY:  
ADMINISTRATOR, OFFICE OF LABOR LAW ENFORCEMENT


CLASSIFICATIONS OF WORKERS ARE DETERMINED BY THE DEPARTMENT OF LABOR. FOR ASSISTANCE IN CLASSIFYING WORKERS, OR FOR A COPY OF THE REGULATIONS OR CLASSIFICATIONS, PHONE 302-761-8200.

NON-REGISTERED APPRENTICES MUST BE PAID THE MECHANIC’S RATE.

PROJECT: CN1717B Milton Elementary Demo and Site Work, Sussex County
# Certificate of Liability Insurance

**Producer:**

**Insured:**

**Insurers Affording Coverage**

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## Coverages

The policies of insurance listed below have been issued to the named insured above for the policy period indicated. Notwithstanding any provisions, terms, exclusions, limitations or conditions of any of the policies described herein, this certificate may be subject to all terms, exclusions, limitations and conditions of such policies, and any applicable limits shown may have been reduced by paid claims.

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**General Liability**

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**Auto Liability**

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**Workers Compensation and Employers Liability**

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## Certificate Holder

**Cancellation**

If any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will endeavour to mail notice to the certificate holder named herein, but failure to do so shall impose no obligation or liability of any kind upon the insurer, its agents or representatives.

**Authorized Representative:**

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SECTION 008000 - GENERAL REQUIREMENTS

TABLE OF ARTICLES

1. GENERAL PROVISIONS
2. OWNER
3. CONTRACTOR
4. ADMINISTRATION OF THE CONTRACT
5. SUBCONTRACTORS
6. CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7. CHANGES IN THE WORK
8. TIME
9. PAYMENTS AND COMPLETION
10. PROTECTION OF PERSONS AND PROPERTY
11. INSURANCE AND BONDS
12. UNCOVERING AND CORRECTION OF WORK
13. MISCELLANEOUS PROVISIONS
14. TERMINATION OR SUSPENSION OF THE CONTRACT
ARTICLE 1: GENERAL

1.1 CONTRACT DOCUMENTS

1.1.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required to an extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results. In the case of conflict, the most expensive combination of quality and quantity shall govern.

1.1.2 Work shall not begin until the Contractor is in receipt of a bonafide Contract.

1.2 EQUALITY OF EMPLOYMENT

1.2.1 For Public Works Projects financed in whole or in part by state appropriation the Contractor agrees that during the performance of this contract.

1. The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex or national origin. The Contractor will take positive steps to ensure that applicants are employed and that employees are treated during employment without regard to their race, creed, color, sex or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.

2. The Contractor 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 race, creed, color, sex or national origin.

ARTICLE 2: OWNER (NOT ADDENDED)

ARTICLE 3: CONTRACTOR

3.1 Schedule of Values: The successful Bidder shall within twenty (20) days after receiving notice to proceed with the work, furnish to the Owner a complete schedule of values on the various items comprising the work.

3.2 Subcontracts: Upon approval of Subcontractors, the Contractor shall award their Subcontracts as soon as possible after the signing of their own contract and see that all material, their own and those of their Subcontractors, are promptly ordered so that the work will not be delayed by failure of materials to arrive on time.

3.3 Before commencing any work or construction, the Trade Contractor is to consult with the Construction Manager as to matters in connection with access to the site and the allocation of Ground Areas for the various features of hauling, storage, etc.
3.4 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions.

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

3.6 The Contractor warrants to the Owner that materials and equipment furnished will be new and of good quality, unless otherwise permitted, and that the work will be free from defects and in conformance with the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved, may be considered defective. If required by the Owner, the Contractor shall furnish evidence as to the kind and quality of materials and equipment provided.

3.7 Unless otherwise provided, the Contractor shall pay all sales, consumer, use and other similar taxes, and shall secure and pay for required permits, fees, licenses, and inspections necessary for proper execution of the Work.

3.8 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work. The Contractor shall promptly notify the Construction Manager if the Drawings and Specifications are observed to be at variance therewith.

3.9 The Contractor shall be responsible to the Owner for the acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons performing portions of the Work under contract with the Contractor.

3.10 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project all waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials. The Contractor shall be responsible for returning all damaged areas to their original conditions.

3.11 STATE LICENSE AND TAX REQUIREMENTS

3.11.1 Each Contractor and Subcontractor shall be licensed to do business in the State of Delaware and shall pay all fees and taxes due under State laws. In conformance with Section 2503, Chapter 25, Title 30, Delaware Code, "the Contractor shall furnish the State Tax Department within ten (10) days after award of the Contract, a statement of the total values of each contract and Subcontract, together with the names and addresses of the contracting parties .... "

3.12 PREFERENCE FOR DELAWARE LABOR

3.12.1 The Contractor shall comply with all requirements set forth in Section 6962, Chapter 69, Title 29 of the Delaware Code.

3.13 During the contract Work, the Contractor and each listed Subcontractor, shall implement an Employee Drug Testing Program in accordance with OMB Regulation 4104 'Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on “Large Public Works Projects”. “Large Public Works” is based upon the current
threshold required for bidding Public Works as set by the Purchasing and Contracting Advisory Council.

ARTICLE 4: ADMINISTRATION OF THE CONTRACT

4.1 CONTRACT SURETY

4.1.1 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

4.1.2 All bonds will be required as follows unless specifically waived elsewhere in the Bidding Documents.

4.1.3 Contents of Performance Bonds – The bond shall be conditioned upon the faithful compliance and performance by the successful bidder of each and every term and condition of the contract and the proposal, plans, specifications, and bid documents thereof. Each term and condition shall be met at the time and in the manner prescribed by the Contract, Bid documents and the specifications, including the payment in full to every person furnishing materiel or performing labor in the performance of the Contract, of all sums of money due the person for such labor and materiel. (The bond shall also contain the successful bidder’s guarantee to indemnify and save harmless the Owner from all costs, damages and expenses growing out of or by reason of the Contract in accordance with the Contract.)

4.1.4 Invoking a Performance Bond – The owner may, when it considers that the interest of the Owner so require, cause judgement to be confessed upon the bond.

4.1.5 Within twenty (20) days after the date of notice of award of contract, the Bidder to whom the award is made shall furnish a Performance Bond and Labor and Material Payment Bond, each equal to the full amount of the Contract price to guarantee the faithful performance of all terms, covenants and conditions of the same. The bonds are to be issued by an acceptable Bonding Company licensed to do business in the State of Delaware and shall be issued in duplicate.

4.1.6 Performance and Payment Bonds shall be maintained in full force (warranty bond) for a period of two (2) years after the date of the Certificate for Final Payment. The Performance Bond shall guarantee the satisfactory completion of the Project and that the Contractor will make good any faults or defects in his work which may develop during the period of said guarantees as a result of improper or defective workmanship, material or apparatus, whether furnished by themselves or their Sub-Contractors. The Payment Bond shall guarantee that the Contractor shall pay in full all persons, firms or corporations who furnish labor or material or both labor and material for, or on account of, the work included herein. The bonds shall be paid for by this Contractor. The Owner shall have the right to demand that the proof parties signing the bonds are duly authorized to do so.

4.2 FAILURE TO COMPLY WITH CONTRACT

4.2.1 If any firm entering into a contract with the Owner that neglects or refuses to perform or fails to comply with the terms thereof, the Owner which signed the Contract may terminate the Contract and proceed to award a new contract in accordance with this Chapter 69, Title 29 of the Delaware Code or may require the Surety on the Performance Bond to complete the Contract in accordance with the terms of the Performance Bond. Nothing herein shall preclude the Agency from pursing additional remedies as otherwise provided by law.
4.3 CONSTRUCTION INSURANCE AND CONTRACT LIABILITY

4.3.1 In addition to the bond requirements stated in the Bid Documents, each successful Bidder shall purchase adequate insurance for the performance of the Contract and, by submission of a Bid, agrees to indemnify and save harmless and to defend all legal or equitable actions brought against the Owner, officer and/or employee of the Owner, for and from all claims of liability which is or may be the result of the successful Bidder’s actions during the performance of the Contract.

4.3.2 The purchase or nonpurchase of such insurance or the involvement of the successful Bidder in any legal or equitable defense of any action brought against the successful Bidder based upon work performed pursuant to the Contract will not waive any defense which the Owner, its agencies and their respective officers, employees and agents might otherwise have against such claims, specifically including the defense of sovereign immunity, where applicable, and by the terms of this section, the Owner and all agencies, officers and employees thereof shall not be financially responsible for the consequences of work performed, pursuant to said contract.

4.4 RIGHT TO AUDIT RECORDS

4.4.1 The Owner shall have the right to audit the books and records of a Contractor or any Subcontractor under any Contract or Subcontract to the extent that the books and records relate to the performance of the Contract or Subcontract.

4.4.2 Said books and records shall be maintained by the Contractor for a period of seven (7) years from the date of final payment under the Prime Contract and by the Subcontractor for a period of seven (7) years from the date of final payment under the Subcontract.

ARTICLE 5: SUBCONTRACTORS

5.1 SUBCONTRACTING REQUIREMENTS

5.1.1 All contracts for the construction, reconstruction, alteration or repair of any public building (not a road, street or highway) shall be subject to the following provisions:

1. A contract shall be awarded only to a Bidder whose Bid is accompanied by a statement containing, for each Subcontractor category, the name and address (city or town and State only – street number and P.O. Box addresses not required) of the subcontractor whose services the Bidder intends to use in performing the Work and providing the material for such Subcontractor category.

2. A Bid will not be accepted nor will an award of any Contract be made to any Bidder which, as the Prime Contractor, has listed itself as the Subcontractor for any Subcontractor unless:

   A. It has been established to the satisfaction of the awarding Agency that the Bidder has customarily performed the specialty work of such Subcontractor category by artisans regularly employed by the Bidder’s firm;

   B. That the Bidder is duly licensed by the State to engage in such specialty work, if the State requires licenses; and
C. That the Bidder is recognized in the industry as a bona fide Subcontractor or Contractor in such specialty work and Subcontractor category.

5.1.2 The decision of the awarding Agency as to whether a Bidder who list itself as the Subcontractor for a Subcontractor category shall be final and binding upon all Bidders, and no action of any nature shall lie against any awarding agency or its employees or officers because of its decision in this regard.

5.1.3 After such a Contract has been awarded, the successful Bidder shall not substitute another Subcontractor for any Subcontractor whose name was set forth in the statement which accompanied the Bid without the written consent of the awarding Agency.

5.1.4 No Agency shall consent to any substitution of Subcontractors unless the Agency is satisfied that the Subcontractor whose name is on the Bidders accompanying statement:

A. Is unqualified to perform the work required;

B. Has failed to execute a timely reasonable Subcontract;

C. Has defaulted in the performance on the portion of the work covered by the Subcontract; or

D. Is no longer engaged in such business.

5.1.5 Should a Bidder be awarded a contract, such successful Bidder shall provide to the agency the taxpayer identification license numbers of such subcontractors. Such numbers shall be provided on the later of the date on which such subcontractor is required to be identified or the time the contract is executed. The successful Bidder shall provide to the agency to which it is contracting, within 30 days of entering into such public works contract, copies of all Delaware Business licenses of subcontractors and/or independent contractors that will perform work for such public works contract. However, if a subcontractor or independent contractor is hired or contracted more than 20 days after the Bidder entered the public works contract the Delaware Business license of such subcontractor or independent contractor shall be provided to the agency within 10 days of being contracted or hired.

5.2 PENALITY FOR SUBSTITUTION OF SUBCONTRACTORS

5.2.1 Should the Contractor fail to utilize any or all of the Subcontractors in the Contractor’s Bid statement in the performance of the Work on the public bidding, the Contractor shall be penalized in the amount of (project specific amount*). The Owner may determine to deduct payments of the penalty from the Contractor or have the amount paid directly to the Owner. Any penalty amount assessed against the Contractor may be remitted or refunded, in whole or in part, by the Agency awarding the Contract, only if it is established to the satisfaction of the Agency that the Subcontractor in question has defaulted or is no longer engaged in such business. No claim for the remission or refund of any penalty shall be granted unless an application is filed within one year after the liability of the successful Bidder accrues. All penalty amounts assessed and not refunded or remitted to the contractor shall be reverted to the State.

*one (1) percent of contract amount not to exceed $10,000

5.3 ASBESTOS ABATEMENT
5.3.1 The selection of any Contractor to perform asbestos abatement for the State-funded projects shall be approved by the Office of Management and Budget, Division of Facilities Management pursuant to Chapter 78 of Title 16.

5.4 STANDARDS OF CONSTRUCTION FOR THE PROTECTION OF THE PHYSICALLY HANDICAPPED

5.4.1 All Contracts shall conform with the standard established by the Delaware Architectural Accessibility Board unless otherwise exempted by the Board.

5.5 CONTRACT PERFORMANCE

5.5.1 Any firm entering into a Contract that neglects or refuses to perform or fails to comply with its terms, the Agency may terminate the Contract and proceed to award a new Contract or may require the Surety on the Performance Bond to complete the Contract in accordance with the terms of the performance Bond.

ARTICLE 6: CONSTRUCTION BY OWNER OR SEPARATE CONTRACTORS

6.1 The Owner reserves the right to simultaneously perform other construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other Projects at the same site.

6.2 The Contractor shall afford the Owner and other Contractors reasonable opportunity for access and storage of materials and equipment, and for the performance of their activities, and shall connect and coordinate their activities with other forces as required by the Contract Documents.

ARTICLE 7: CHANGES IN THE WORK

7.1 The Owner, without invalidating the Contract, may order changes in the Work consisting of Additions, Deletions, Modifications or Substitutions, with the Contract Sum and Contract completion date being adjusted accordingly. Such changes in the Work shall be authorized by written Change Order signed by the Professional, as the duly authorized agent, the Contractor and the Owner.

7.2 The Contract Sum and Contract Completion Date shall be adjusted only by a fully executed Change Order.

7.3 The additional cost, or credit to the Owner resulting from a change in the Work shall be by mutual agreement of the Owner, Contractor and the Architect. In all cases, this cost or credit shall be based on the "DPE" wages required and the "invoice price" of the materials/equipment needed.

7.3.1 "DPE" shall be defined to mean "direct personnel expense". Direct payroll expense includes direct salary plus customary fringe benefits (prevailing wage rates) and documented statutory costs such as workman’s compensation insurance, Social Security/Medicare, and unemployment insurance (a maximum multiplier of 1.35 times DPE).
7.3.2 “Invoice price” of materials/equipment shall be defined to mean the actual cost of materials and/or equipment that is paid by the Contractor, (or subcontractor), to a material distributor, direct factory vendor, store, material provider, or equipment leasing entity. Rates for equipment that is leased and/or owned by the Contractor or subcontractor(s) shall not exceed those listed in the latest version of the “Means Building Construction Cost Data” publication.

7.3.3 In addition to the above, the Prime Contractor is allowed a fifteen percent (15%) markup for overhead and profit for additional work performed by the Prime Contractor's own forces. For additional subcontractor work, the Subcontractor is allowed a fifteen percent overhead and profit on change order work above and beyond the direct costs stated previously. To this amount, the Prime Contractor will be allowed a mark-up not exceeding seven point five percent (7.5%) on the subcontractors work. These mark-ups shall include all costs including, but not limited to: overhead, profit, bonds, insurance, supervision, etc. No additional costs shall be allowed for changes related to the Contractor’s onsite superintendent/staff, or project manager, unless a change in the work changes the project duration and is identified by the CPM schedule. There will be no other costs associated with the change order.

ARTICLE 8: TIME

8.1 Time limits, if any, are as stated in the Project Manual. By executing the Agreement, the Contractor confirms that the stipulated limits are reasonable, and that the Work will be completed within the anticipated time frame.

8.2 If progress of the Work is delayed at any time by changes ordered by the Owner, by labor disputes, fire, unusual delay in deliveries, abnormal adverse weather conditions, unavoidable casualties or other causes beyond the Contractor's control, the Contract Time shall be extended for such reasonable time as the Owner may determine.

8.3 Any extension of time beyond the date fixed for completion of the construction and acceptance of any part of the Work called for by the Contract, or the occupancy of the building by the Owner, in whole or in part, previous to the completion shall not be deemed a waiver by the Owner of his right to annul or terminate the Contract for abandonment or delay in the matter provided for, nor relieve the Contractor of full responsibility.

8.4 SUSPENSION AND DEBARMENT

8.4.1 Per Section 6962(d)(14), Title 29, Delaware Code, “Any Contractor who fails to perform a public works contract or complete a public works project within the time schedule established by the Agency in the Invitation To Bid, may be subject to Suspension or Debarment for one or more of the following reasons: a) failure to supply the adequate labor supply ratio for the project; b) inadequate financial resources; or, c) poor performance on the Project.”

8.4.2 "Upon such failure for any of the above stated reasons, the Agency that contracted for the public works project may petition the Director of the Office of Management and Budget for Suspension or Debarment of the Contractor. The Agency shall send a copy of the petition to the Contractor within three (3) working days of filing with the Director. If the Director concludes that the petition has merit, the Director shall schedule and hold a hearing to determine whether to suspend the Contractor, debar the Contractor or deny the petition. The Agency shall have the burden of proving, by a preponderance of the evidence, that
the Contractor failed to perform or complete the public works project within the time schedule established by the Agency and failed to do so for one or more of the following reasons: a) failure to supply the adequate labor supply ratio for the project; b) inadequate financial resources; or, c) poor performance on the project. Upon a finding in favor of the Agency, the Director may suspend a Contractor from Bidding on any project funded, in whole or in part, with public funds for up to 1 year for a first offense, up to 3 years for a second offense and permanently debar the Contractor for a third offense. The Director shall issue a written decision and shall send a copy to the Contractor and the Agency. Such decision may be appealed to the Superior Court within thirty (30) days for a review on the record.”

8.5 RETAINAGE

8.5.1 Per Section 6962(d)(5) a.3, Title 29, Delaware Code: The Agency may at the beginning of each public works project establish a time schedule for the completion of the project. If the project is delayed beyond the completion date due to the Contractor’s failure to meet their responsibilities, the Agency may forfeit, at its discretion, all or part of the Contractor’s retainage.

8.5.2 This forfeiture of retainage also applies to the timely completion of the punchlist. A punchlist will only be prepared upon the mutual agreement of the Owner, Architect and Contractor. Once the punchlist is prepared, all three parties will by mutual agreement establish a schedule for its completion. Should completion of the punchlist be delayed beyond the established date due to the Contractor’s failure to meet their responsibilities, the Agency may hold permanently, at its discretion, all or part of the Contractor’s retainage.

ARTICLE 9: PAYMENTS AND COMPLETION

9.1 APPLICATION FOR PAYMENT

9.1.1 Applications for payment shall be made upon AIA Document G702. There will be a five percent (5%) retainage on all Contractor’s monthly invoices until completion of the project. This retainage will become payable upon receipt of all required closeout documentation, provided all other requirements of the Contract Documents have been met.

9.1.2 A date will be fixed for the taking of the monthly account of work done. Upon receipt of Contractor’s itemized application for payment, such application will be audited, modified, if found necessary, and approved for the amount. Statement shall be submitted to the Owner.

9.1.3 “Article 6516, Chapter 65, Title 29 of the Delaware Code stipulates annualized interest not to exceed 12% per annum beginning thirty (30) days after the “presentment” (as opposed to the date) of the invoice.”

9.2 PARTIAL PAYMENTS

9.2.1 Any Contract executed by the Owner may provide for partial payments at the option of the Owner with respect to materials placed along or upon the sites or stored at secured locations, which are suitable for use in the performance of the contract.

9.2.2 When approved by the owner, partial payment may include the values of tested and acceptable materials of a nonperishable or noncontaminative nature which have been
produced or furnished for incorporation as a permanent part of the work yet to be completed, provided acceptable provisions have been made for storage.

9.2.2.1 Any allowance made for materials on hand will not exceed the delivered cost of the materials as verified by invoices furnished by the Contractor, nor will it exceed the contract bid price for the material complete in place.

9.2.3 If requested by the Owner, receipted bills from all Contractors, Subcontractors, and material, men, etc., for the previous payment must accompany each application for payment. Following such a request, no payment will be made until these receipted bills have been received by the Owner.

9.3 SUBSTANTIAL COMPLETION

9.3.1 When the building has been made suitable for occupancy, but still requires small items of miscellaneous work, the Owner will determine the date when the project has been substantially completed.

9.3.2 If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor, and without terminating the Contract, the Owner may make payment of the balance due for the portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment that it shall not constitute a waiver of claims.

9.3.3 On projects where commissioning is included, the commissioning work as defined in the specifications must be complete prior to the issuance of substantial completion.

9.4 FINAL PAYMENT

9.4.1 Final payment, including the five percent (5%) retainage, shall be made within thirty (30) days after the Work is fully completed and the Contract fully performed and provided that the Contractor has submitted the following closeout documentation (in addition to any other documentation required elsewhere in the Contract Documents):

9.4.1.1 Evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the work have been paid,

9.4.1.2 An acceptable RELEASE OF LIENS,

9.4.1.3 Copies of all applicable warranties,

9.4.1.4 As-built drawings,

9.4.1.5 Operations and Maintenance Manuals,

9.4.1.6 Instruction Manuals,

9.4.1.7 Consent of Surety to final payment.

9.4.1.8 The Owner reserves the right to retain payments, or parts thereof, for its protection until the foregoing conditions have been complied with, defective work corrected and all unsatisfactory conditions remedied.

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY
10.1 The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall take all reasonable precautions to prevent damage, injury or loss to: workers, persons nearby who may be affected, the Work, materials and equipment to be incorporated, and existing property at the site or adjacent thereto. The Contractor shall give notices and comply with applicable laws ordinances, rules regulations, and lawful orders of public authorities bearing on the safety of persons and property and their protection from injury, damage, or loss. The Contractor shall promptly remedy damage and loss to property at the site caused in whole or in part by the Contractor, a Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable.

10.2 The Contractor shall notify the Owner in the event any existing hazardous material such as lead, PCBs, asbestos, etc. is encountered on the project. The Owner will arrange with a qualified specialist for the identification, testing, removal, handling and protection against exposure or environmental pollution, to comply with applicable regulation laws and ordinances. The Contractor and Architect will not be required to participate in or to perform this operation. Upon completion of this work, the Owner will notify the Contractor and Architect in writing the area has been cleared and approved by the authorities in order for the work to proceed. The Contractor shall attach documentation from the authorities of said approval.

10.3 As required in the Hazardous Chemical Information Act of June 1984, all vendors supplying any materials that may be defined as hazardous, must provide Material Safety Data Sheets for those products. Any chemical product should be considered hazardous if it has a warning caution on the label relating to a potential physical or health hazard, if it is known to be present in the work place, and if employees may be exposed under normal conditions or in any foreseeable emergency situation. Material Safety Data Sheets must be provided directly to the Owner along with the shipping slips that include those products.

10.4 The Contractor shall certify to the Owner that materials incorporated into the Work are free of all asbestos. This certification may be in the form of Material Safety Data Sheet (MSDS) provided by the product manufacturer for the materials used in construction, as specified or as provided by the Contractor.

ARTICLE 11: INSURANCE AND BONDS

11.1 The Contractor shall carry all insurance required by law, such as Unemployment Insurance, etc. The Contractor shall carry such insurance coverage as they desire on their own property such as a field office, storage sheds or other structures erected upon the project site that belong to them and for their own use. The Subcontractors involved with this project shall carry whatever insurance protection they consider necessary to cover the loss of any of their personal property, etc.

11.2 Upon being awarded the Contract, the Contractor shall obtain a minimum of two (2) copies of all required insurance certificates called for herein, and submit one (1) copy of each certificate, to the Owner, within 20 days of contract award.

11.3 Bodily Injury Liability and Property Damage Liability Insurance shall, in addition to the coverage included herein, include coverage for injury to or destruction of any property arising out of the collapse of or structural injury to any building or structure due to demolition work and evidence of these coverages shall be filed with and approved by the Owner.
11.4 The Contractor's Property Damage Liability Insurance shall, in addition to the coverage noted herein, include coverage on all real and personal property in their care, custody and control damaged in any way by the Contractor or their Subcontractors during the entire construction period on this project.

11.5 Builders Risk (including Standard Extended Coverage Insurance) on the existing building during the entire construction period, shall not be provided by the Contractor under this contract. The Owner shall insure the existing building and all of its contents and all this new alteration work under this contract during entire construction period for the full insurable value of the entire work at the site. Note, however, that the Contractor and their Subcontractors shall be responsible for insuring building materials (not yet installed and stored) and their tools and equipment whenever in use on the project, against fire damage, theft, vandalism, etc.

11.6 Certificates of the insurance company or companies stating the amount and type of coverage, terms of policies, etc., shall be furnished to the Owner, within 20 days of contract award.

11.7 The Contractor shall, at their own expense, (in addition to the above) carry the following forms of insurance:

11.7.1 Contractor's Contractual Liability Insurance

Minimum coverage to be:

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<th>Bodily Injury</th>
<th>Property Damage</th>
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11.7.2 Contractor's Protective Liability Insurance

Minimum coverage to be:

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<th>Bodily Injury</th>
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11.7.3 Automobile Liability Insurance

Minimum coverage to be:

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<th>Bodily Injury</th>
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<tr>
<td>for each occurrence</td>
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11.7.4 Prime Contractor's and Subcontractors' policies shall include contingent and contractual liability coverage in the same minimum amounts as 11.7.1 above.
11.7.5  Workmen’s Compensation (including Employer’s Liability):

11.7.5.1  Minimum Limit on employer’s liability to be as required by law.

11.7.5.2  Minimum Limit for all employees working at one site.

11.7.6  Certificates of Insurance must be filed with the Owner guaranteeing fifteen (15) days prior notice of cancellation, non-renewal, or any change in coverages and limits of liability shown as included on certificates. A certificate of insurance with the job name specified in the description, Cape Henlopen School District is the certificate holder. Also state that Cape Henlopen School District and Richard Y. Johnson & Son, Inc. are additional insured.

11.7.7  Social Security Liability

11.7.7.1  With respect to all persons at any time employed by or on the payroll of the Contractor or performing any work for or on their behalf, or in connection with or arising out of the Contractor’s business, the Contractor shall accept full and exclusive liability for the payment of any and all contributions or taxes or unemployment insurance, or old age retirement benefits, pensions or annuities now or hereafter imposed by the Government of the United States and the State or political subdivision thereof, whether the same be measured by wages, salaries or other remuneration paid to such persons or otherwise.

11.7.7.2  Upon request, the Contractor shall furnish Owner such information on payrolls or employment records as may be necessary to enable it to fully comply with the law imposing the aforesaid contributions or taxes.

11.7.7.3  If the Owner is required by law to and does pay any and/or all of the aforesaid contributions or taxes, the Contractor shall forthwith reimburse the Owner for the entire amount so paid by the Owner.

ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

12.1  The Contractor shall promptly correct Work rejected by the Owner or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed, and shall correct any Work found to be not in accordance with the requirements of the Contract Documents within a period of one year from the date of Substantial Completion, or by terms of an applicable special warranty required by the Contract Documents. The provisions of this Article apply to work done by Subcontractors as well as to Work done by direct employees of the Contractor.

12.2  At any time during the progress of the work, or in any case where the nature of the defects shall be such that it is not expedient to have them corrected, the Owner, at their option, shall have the right to deduct such sum, or sums, of money from the amount of the contract as they consider justified to adjust the difference in value between the defective work and that required under contract including any damage to the structure.

ARTICLE 13: MISCELLANEOUS PROVISIONS

13.1  CUTTING AND PATCHING

13.1.1  The Contractor shall be responsible for all cutting and patching. The Contractor shall coordinate the work of the various trades involved.
13.2 DIMENSIONS

13.2.1 All dimensions shown shall be verified by the Contractor by actual measurements at the project site. Any discrepancies between the drawings and specifications and the existing conditions shall be referred to the Owner for adjustment before any work affected thereby has been performed.

13.3 LABORATORY TESTS

13.3.1 Any specified laboratory tests of material and finished articles to be incorporated in the work shall be made by bureaus, laboratories or agencies approved by the Owner and reports of such tests shall be submitted to the Owner. The cost of the testing shall be paid for by the Contractor.

13.3.2 The Contractor shall furnish all sample materials required for these tests and shall deliver same without charge to the testing laboratory or other designated agency when and where directed by the Owner.

13.4 ARCHAEOLOGICAL EVIDENCE

13.4.1 Whenever, in the course of construction, any archaeological evidence is encountered on the surface or below the surface of the ground, the Contractor shall notify the authorities of the Delaware Archaeological Board and suspend work in the immediate area for a reasonable time to permit those authorities, or persons designated by them, to examine the area and ensure the proper removal of the archaeological evidence for suitable preservation in the State Museum.

13.5 GLASS REPLACEMENT AND CLEANING

13.5.1 The Aluminum storefront, window, glass and glazing Contractor shall replace without expense to the Owner all glass broken during the construction of the project. If job conditions warrant, at completion of the job the Aluminum Storefront Contractor shall have all glass cleaned and polished.

13.6 WARRANTY

13.6.1 For a period of two (2) years from the date of substantial completion, as evidenced by the date of final acceptance of the work, the contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect of equipment, material or workmanship performed by the contractor or any of his subcontractors or suppliers. However, manufacturer's warranties and guarantees, if for a period longer than two (2) years, shall take precedence over the above warranties. The contractor shall remedy, at his own expense, any such failure to conform or any such defect. The protection of this warranty shall be included in the Contractor's Performance Bond.

ARTICLE 14: TERMINATION OF CONTRACT

14.1 If the Contractor defaults or persistently fails or neglects to carry out the Work in accordance with the Contract Documents or fails to perform a provision of the Contract, the Owner, after seven days written notice to the Contractor, may make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor. Alternatively, at the Owner's option, and the Owner may terminate the Contract and take possession of the site and of all materials, equipment, tools, and machinery thereon owned.
by the Contractor and may finish the Work by whatever method the Owner may deem expedient. If the costs of finishing the Work exceed any unpaid compensation due the Contractor, the Contractor shall pay the difference to the Owner.

14.2 “If the continuation of this Agreement is contingent upon the appropriation of adequate state, or federal funds, this Agreement may be terminated on the date beginning on the first fiscal year for which funds are not appropriated or at the exhaustion of the appropriation. The Owner may terminate this Agreement by providing written notice to the parties of such non-appropriation. All payment obligations of the Owner will cease upon the date of termination. Notwithstanding the foregoing, the Owner agrees that it will use its best efforts to obtain approval of necessary funds to continue the Agreement by taking appropriate action to request adequate funds to continue the Agreement.”

ARTICLE 15: PERERENCE FOR DELAWARE LABOR

15.1 In the construction of all public works for the State or any political subdivision thereof or by firms contracting with the State or any political subdivision thereof, preference in employment of laborers, workers or mechanics shall be given to bono fide legal citizens of the State who have established citizenship by residence of at least 90 days in the State. Each public works contract for the construction of public works for the State or any political subdivision thereof shall contain a stipulation that any person, company or corporation who violates this section shall pay a penalty to the Secretary of Finance equal to the amount of compensation paid to any person in violation of this section.

END SECTION 008000 - GENERAL REQUIREMENTS
EMPLOYEE DRUG TESTING REPORT FORM

Period Ending: ____________________

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors who work on Large Public Works Contracts funded all or in part with public funds submit Testing Report Forms to the Owner no less than quarterly.

Project Number: ____________________

Project Name: ____________________

Contractor/Subcontractor Name: ____________________

Contractor/Subcontractor Address: ____________________

_____________________________________________

Number of employees who worked on the jobsite during the report period: ____________

Number of employees subject to random testing during the report period: ____________

Number of Negative Results ____________ Number of Positive Results ____________

Action taken on employee(s) in response to a failed or positive random test:

_____________________________________________

_____________________________________________

Authorized Representative of Contractor/Subcontractor: ____________________

(typed or printed)

Authorized Representative of Contractor/Subcontractor: ____________________

(signature)

Date: ________________
EMPLOYEE DRUG TESTING
REPORT OF POSITIVE RESULTS

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors who work on Large Public Works Contracts funded all or in part with public funds to notify the Owner in writing of a positive random drug test.

Project Number: __________________________________________

Project Name: ___________________________________________

Contractor/Subcontractor Name: _____________________________

Contractor/Subcontractor Address: ___________________________

Name of employee with positive test result: ____________________

Last 4 digits of employee SSN: _____________________________

Date test results received: _________________________________

Action taken on employee in response to a positive test result:

________________________________________________________________

________________________________________________________________

Authorized Representative of Contractor/Subcontractor: ________
(typed or printed)

Authorized Representative of Contractor/Subcontractor: ________
(signature)

Date: __________________

This form shall be sent by mail to the Owner within 24 hours of receipt of test results.

Enclose this test results form in a sealed envelope with the notation "Drug Testing Form – DO NOT OPEN" on the face thereof and place in a separate mailing envelope.

Tetra Tech

DRUG TESTING FORMS
008114-2
SECTION 009300 - REFERENCE MATERIAL

The information described herein is believed to be accurate and representative, but no guarantee can be made that actual conditions encountered during construction will not vary or be changed.

1. GEOTECHNICAL REPORT (Boring Logs):

2. ASBESTOS REPORT:

3. SURVEY:

These property surveys are included in the drawings as reference information.

Survey and their interpretation are to serve as the Contractor's basis in bidding excavation, grading requirements and other site related work. Contractors shall field verify all existing conditions and immediately report any discrepancies to the Owner’s representative. Removal of unsuitable soils, if any, will be done under the direction of the Owner's Soils Engineer Consultant.

4. CADD FILES

Electronic Media (CADD files) drawings will be provided for contractors’ reference subject to the terms and conditions outlined in Tetra Tech’s “Release Form for Electronic Files” in Section 013301.

Upon request contractor shall sign a release form provided by the Architect and payment of $200 processing fee for each consultant drawings requested.

CADD files shall be provided for use as background plans only. Contractors shall be responsible verifications of all dimensions and revisions. Contractor shall not copy or reproduce details, elevations, sections, schedules or other similar data.

Electronic Media (CADD files) drawings will be provided for contractors’ reference subject to the terms and conditions outlined in Tetra Tech’s “Release Form for Electronic Files”.

5. WAGE DETERMINATION

Wage Rates and Payroll Reporting: Contractors shall comply with all requirements of the State of Delaware regarding wage rates and payroll reporting. These requirements include, but are not limited to, the following:

a. Wage Rates: The wage rates that shall be used for this project are attached to this Section. This scale of wages shall be posted in a prominent and easily accessible location on the job site. All employees shall be paid directly upon the site of the work, not less often than once a week.

b. Payroll Reporting: Per Section 6912 of Title 29, payroll information shall be reported weekly to the Owner (refer to Section 01311 "Schedules and Reports"). Contractors shall retain copies Payroll Reports for inspection upon request by Delaware Department of Labor.

END OF SECTION
COMPLIANCE ENVIRONMENTAL, INC.

SECTION 01013 - SUMMARY OF THE WORK - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of interior and exterior asbestos abatement at the Milton Elementary School building and Maintenance Shop building as follows:

1. Project Name: 2019 Asbestos Abatement at the Milton Elementary School.
3. Owner: Cape Henlopen School District, 1270 Kings Highway, Lewes, Delaware 19958.
4. Work Period: All required activities must be started on or about July 15, 2019 and substantial completion of the project must be achieved within seventy (70) calendar days starting from the Notice to Proceed date.
5. Work Schedule: The Owner desires that all work be completed as soon as possible without the addition of overtime hours. The Contractor shall start and complete all exterior work as the last task on the project. Prior to performing this work, a 72-hour notification from the Contractor must be provided so that the Construction Manager can coordinate replacement of building components.
6. Prevailing Wage Rates: Current State of Delaware Prevailing Wage Rates are in effect. Wage rates are provided in the specification. The project is in Sussex County. (Part II., General Specifications)
7. Liquidated Damages: The Contractor shall pay liquidated damages at the rate of $2,000.00 per calendar day if substantial completion is not achieved within time specified.
8. Owner's Representative: Compliance Environmental, Inc. will represent the Owner on this project.
9. USEPA/DNREC Asbestos Notification: The Contractor shall submit the required asbestos notification to the USEPA and DNREC within the time constraints of those notifications and provide all required information as needed. The Contractor shall provide a copy of the notification to the Owner’s Representative prior to physically starting the work.

B. Contract Documents, dated February 21, 2019 were prepared for the Project by Compliance Environmental, Inc., 150 South Bradford Street, Dover, Delaware 19904, CEI Project Number CEI-022119. Conditions and requirements are indicated on the Contract Documents including, but not limited to, this specification, drawings, and any addenda to the specifications.

C. The Work consists of the removal of interior and exterior confirmed positive and assumed positive asbestos-containing materials. The Contractor shall complete all of the work listed in Tables 1 and 2, the drawings and all other required included in this specification. Work areas are shown on the drawings for work described in this specification. Assumed asbestos-containing materials which were inaccessible during the time of the asbestos building inspection. This work is being performed in preparation of renovation of the building. Therefore, all asbestos materials must be removed on this project. The Contractor must take care not to damage any building materials that are not scheduled for abatement.
1. **Work to be Performed Under This Contract:** includes complete removal and proper disposal of all asbestos-containing and asbestos-contaminated materials at the Milton Elementary School building and Maintenance Shop building shown on the drawings and Table 1 and Table 2. Asbestos locations and assumed asbestos locations are shown on Contract Documents prepared by Compliance Environmental, Inc. The bulk sampling information is provided for reference.

The total estimated asbestos-containing materials to be abated and location is shown on the attached Table 1 and Table 2. Table 1. shows the location and estimated quantity of positive asbestos-containing building materials that require abatement. Table 2. shows the location and estimated quantity of assumed asbestos-containing materials. **The Contractor shall provide in its lump sum cost for the project, all of the work included on Table 1 and Table 2, and all other requirements in the Contract Documents.**

2. **Work to be Performed Prior to Work Under This Contact:** The Owner shall remove desired non-fixed articles (e.g., furniture, computers, boxes) from work area(s) that are not contaminated. All non-fixed articles remaining in work areas shall be moved to non-work areas prior to the start of any asbestos abatement work by the Contractor at no additional cost to the Owner.

3. **Project Site Notices:** The Contractor shall provide, as a minimum and at all times, at a visible location at the project site, the following:

   (i). Equal Employment Opportunity and Minimum Wage Information
   (ii). U.S. EPA 10-Day Notification
   (iii). State of Delaware DNREC 10-Day Notification
   (iv). State of Delaware Prevailing Wage Determination
   (v). Site Supervisor and Worker Badges
   (vi). Air Sampling Results (if any)
   (vii). Emergency Planning Procedures
   (viii). Subcontractor List
   (ix). Material Safety Data Sheets

4. **Submittals Prior to Site Work:** The Contractor shall provide the following items to the Owner’s Representative prior to asbestos abatement:

   (i). Signed Contracts.
   (ii). Signed Payment and Performance Bonds.
   (iii). Certificate of Liability Insurance.
   (v). Copy of the State of Delaware DNREC 10-Day Notification.
   (vi). Project Schedule.
   (vii). Completed Initial Exposure Assessment Form (Appendix C, Section 01562)
   (viii). Completed Certificates of Site Worker’s Acknowledgment Forms (Appendix C, Section 01560).
   (ix). Complete list of Project Supervisors and Workers including names and addresses.
   (x). Fit test results, medical results, and certifications for Project Supervisors and Workers.
5. **Assumed Asbestos Materials:** The project contains assumed asbestos-containing materials as shown in the specification. The Contractor shall include in its bid the cost of complete abatement and proper disposal of all assumed asbestos-containing materials. Some locations require that the Contractor "break-in" into wall, floor and ceiling for inspection by the Owner's Representative. The size, number and shape of the break-in shall be adequate as determined by the Owner's Representative to perform a proper inspection. Some locations shown on the drawing will require multiple break-ins. The Contractor shall include in its bid all costs associated with break-in activities and complete abatement of all of the quantities of assumed materials listed in the specifications at no additional cost to the Owner.

6. **Unit Prices:** The unit prices listed on the bid form could be used to adjust the Contractor's base bid and alternates, add or deduct, for changes in quantities on the project. However, the Owner reserves the right to accept or reject these listed unit prices and to ask the Contractor to provide other pricing based upon project conditions.

7. **Measurements and Dimensions:** It is the Contractor's responsibility to verify all measurements prior to the openings of the bids. Any discrepancies in the measurements or work site conditions must be made prior to the opening of the bids.

8. **Work Area Security & Protection:** In performing the work, the Contractor is responsible for the security of the work area and protection of any and all equipment, materials, and surfaces not scheduled for work activities. The Contractor shall not be provided with a key to building(s) where work is to be performed. It is the Contractor's responsibility to adequately barricade, sign and control access to work areas in such a way to prevent accidental access to work areas.

9. **Damage Repair & Missing Item Replacement:** The Contractor shall repair or replace, at his own expense, any damage occurring during his activities to any building component not scheduled for asbestos abatement or movement. Any damaged or missing items will be replaced or paid for by the Contractor prior to receipt of final contract payment.

10. **Payment Requests:** The Owner's Representative shall review and recommend payment of all invoices from the Contractor. Invoices shall be submitted by the Contractor in a form acceptable to both the Owner's Representative and Owner.

11. **Critical Barriers:** Critical barriers consisting of two (2) single layers of 6-mil polyethylene sheeting applied separately by the Contractor with varying tape lines shall be installed, as a minimum, at ventilation systems, doors, windows, electrical wall switches and receptacle, and other openings in the work area. See Section 01526 for more information.

12. **Ventilation Systems:** The Contractor shall completely immobilize any ventilation systems in work areas by, as a minimum, by sealing supply and return ducts with critical barriers, locking and tagging the system "off," notifying building operators, and providing proper labeling. See Section 01513 for more information.

13. **Toilet Facilities:** The Contractor shall provide, at his own expense, toilet facilities for his use during the project.
14. **Floor Tile Machines:** The use of floor tile machines are allowed on this project at the discretion of the Contractor and if the Contractor can demonstrate after bidding and prior to the start of the work, that proper usage and effective decontamination procedures will be used by the Contractor. If the Contractor elects to use a floor tile machine for any portion of the work herein, prior to its usage, the Contractor shall submit a written Work Plan for review and have the Work Plan approved. The Work Plan shall contain, at a minimum, the following elements:

(i). The floor tile machine(s) will be visually inspection by the Owner's Representative prior to use on this Project to verify that the machine is clean and containing no viable debris or contamination. If not acceptable, the floor tile machine(s) cannot be used on this Project.

(ii). The Contractor shall be responsible for any damage caused by the machine(s).

(iii). Detailed description of the method(s) which will be used by the Contractor to decontaminate the equipment and verify using AHERA visual and air testing clearance protocols, that the equipment was effectively decontaminated. All visual and air testing required will be at no additional cost to the Owner. The Contractor shall provide documentation to the Owner's Representative that it has passed all AHERA visual and air testing clearance protocols prior removal of any floor tile machines from its decontamination area.

(iv). Decontamination shall be performed prior to moving of the machine(s) out of any Work Area to effectively remove any asbestos residue. Decontamination shall be performed in a dedicated containment (the equipment decontamination/bag-out area can be used provided it can accommodate all of the required activities). After decontamination, the Contractor shall provide documentation to the Owner's Representative that the machine was properly decontaminated prior to removal of the machine out of any Work Area including all air testing results.

The Contractor acknowledges by submission of it’s bid, that there are no guarantees made by the Owner that approval of floor tile machines will be granted and the Contractor reaffirms that if floor tile machines are not approved for use on this project, that manual scrapping methods will be used to complete the project in accordance with the Specifications at no additional cost to the Owner.

15. **Removal Procedures:**

(i). **Floor Tile, Felt Paper and Associated Mastics:**
Some work areas contain multiple layers of floor tiles with carpeting and stair treads at some locations. All asbestos floor tile layers including all non-asbestos floor tile layers on top of or below asbestos floor tiles (and felt paper and associated mastics as applicable) must be removed and disposed by the Contractor. Install a three-stage decontamination unit, with shower, at the entrance to the work area containments. The decontamination units shall be installed in such a manner as to allow for separate equipment room/bag-out off to the side. **In No Instance Will the Personal Decontamination Unit Be Used for Bag-out or Equipment Passage.** Install and operate HEPA filtered air filtration devices. Pre-clean any areas needing critical barriers, and install critical barriers. The work area shall consist of two (2) layers
of 6-mil plastic sheeting as critical barriers at all openings. Establish and maintain at all times a pressure differential of minus 0.02 inches of water measured on a strip chart recorder or other approved method. The pressure differential recorder shall be checked several times daily by the Contractor. The contractor shall supply a calibrated differential pressure manometer capable of monitoring and recording on a strip chart and measuring differential pressure of 0.005 inches of water. The manometer shall be equipped with an automatically activated alarm system which will sound a warning if the pressure rises above the minimum value. All strips charts will be submitted to the Owner’s Representative at the completion of the project. **Work will not begin or continue until an adequate differential pressure is achieved and maintained.** Once negative air is established, the Contractor may start removing the carpet and/or stair treads (if applicable) and other non-asbestos and asbestos-containing materials. If the carpet and/or stair treads covering comes up without disturbing the floor tile, it may be disposed by the Contractor as a general debris. However, if the floor tile is disturbed while removing the carpeting (and padding if applicable) and/or stair treads, the carpeting (and padding if applicable) and stair treads shall be disposed by the Contractor of as contaminated waste. The Contractor is responsible for proper handling, storage, transporting and disposal of all wastes.

**The use of floor tile machines are allowed on this project at the discretion of the Contractor and if the Contractor can demonstrate after bidding and prior to the start of the work, that proper usage and effective decontamination procedures will be used by the Contractor in accordance with this Section.** Remove floor heater covers in work area (if applicable) to inspect interior of units for asbestos. If asbestos floor tile is found, follow specified removal and disposal procedure. Remove and dispose of any floor tile under window and/or wall mounted HVAC units. All floor tile shall be thoroughly wetted and double-bagged in 6-mil poly bags and goose-necked or thoroughly wetted and wrapped in double-layers of 6-mil poly for proper disposal. All waste shall be properly handled and labeled for disposal by the Contractor. All asbestos-containing and contaminated materials shall be properly handled, stored, transported and disposed by the Contractor in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Fiber and/or metal drums may be used. All daily air sampling will be laboratory analyzed by Phase Contrast Microscopy (PCM) methods unless the Owner or State Agency requires other methods. Final air clearance samples will be by TEM. See Sections 01529, 02081, 02087 and this specification for more information.

(ii). **Pipe Coverings (Insulation & Fittings):**
Asbestos pipe coverings (insulation and fittings) are friable and shall be properly removed, bagged, transported and disposed by the Contractor. **Prior to removal, the Contractor shall verify that all utilities have been shut-off and purged.** The Contractor shall then install a three-stage decontamination unit, with shower, at the entrance to the work area containment. The decontamination unit shall be installed in such a manner as to allow for a combined equipment room/bag-out off to the side. Don personal protective equipment prior to entering the containment area. Personal Protective Equipment shall include as a minimum, full-body coveralls, head and foot covers, and full-faced PAPRs. The Contractor shall use gross removal methods or wrap and cut methods for complete removal of all pipe coverings. For removal or should the fiber counts reach the Permissible Exposure Limit (PEL) at any time, Type C, Grade D respirators operating in the pressure demand mode will be required.
Install and operate HEPA filtered air filtration devices. Pre-clean any areas needing critical barriers, and install critical barriers. The work area shall consist of two (2) layers of 6-mil plastic sheeting as critical barriers and one (1) layer of 6-mil plastic sheeting on ceilings and walls. Establish and maintain at all times a pressure differential of minus 0.02 inches of water measured on a strip chart recorder or other approved method. The pressure differential recorder shall be checked several times daily by the Contractor. The contractor shall supply a calibrated differential pressure manometer capable of monitoring and recording on a strip chart and measuring differential pressure of 0.005 inches of water. The manometer shall be equipped with an automatically activated alarm system which will sound a warning if the pressure rises above the minimum value. All strips charts will be submitted to the Owner’s Representative at the completion of the project. The Contractor shall place a fire extinguisher and have a first aid kit at each containment. An additional fire extinguisher shall be provided by the Contractor where containments exceed 1,000 square feet. Temporary ground fault electrical panels shall be installed outside of containment areas and used by the Contractor for all electrical connections. The Contractor shall use water-proof lights inside of all work areas. Work will not begin or continue until an adequate differential pressure is achieved and maintained.

Once negative air is established, the Contractor shall begin abatement of the pipe coverings. The Contractor can use glove bagging means and methods to perform the abatement. The Contractor shall completely remove the pipe coverings in a manner which prevents damage to building materials and components. Pipe coverings shall be double bagged in a manner to prevent the contents of the bag from escaping. The pipe coverings shall be properly wetted and labeled for disposal. Care shall be taken by the Contractor considering the right amount of water required not to create leaking conditions or hazards to the work area or surrounding area, including the ceiling of the first floor. The Building Owner shall provide water for the Contractor’s use during the work. The Contractor shall ensure that proper back-flow protection at all sources of water are installed and maintained. The Contractor is responsible for proper disposal of all wastes. A remote three-stage decontamination unit with shower shall be provided and used by the Contractor during the work. As a minimum, all workers shall shower at the end of each shift. The Contractor shall ensure the integrity of all decontamination facilities. All decontamination procedures shall be strictly implemented by the Contractor. Shower wastewater shall be either filtered or jelled. All filters and/or jelled water shall be disposed by the Contractor as contaminated waste. All pipe coverings and fragments shall be thoroughly wetted and double-bagged in 6-mil poly bags and goose-necked for proper disposal. All waste shall be properly handled and labeled by the Contractor for disposal. All asbestos-containing and contaminated materials shall be properly handled, stored, transported and disposed by the Contractor in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Fiber and/or metal drums may be used. Final inspection shall consist of a visual inspection and air sampling. All daily air sampling will be laboratory analyzed by Phase Contrast Microscopy (PCM) methods unless the Owner or State Agency requires other methods. Final air clearance samples will be by TEM. See Sections 01529, 02081, 02087 and this specification for more information.
(iii). Sink Undercoatings:
The sinks shall be removed, bagged, and properly disposed as asbestos-containing waste. Prior to removal, the Contractor shall verify that water to the sink has been shut-off and purged. The Contractor shall then install a three-stage decontamination unit, with shower, at the entrance to the work area containment. The decontamination unit shall be installed in such a manner as to allow for a combined equipment room/bag-out off to the side. Don personal protective equipment prior to entering the containment area. Personal Protective Equipment shall include as a minimum, full-body coveralls, head and foot covers, and full-faced PAPRs. For gross removal or should the fiber counts reach the Permissible Exposure Limit (PEL) at any time, Type C, Grade D respirators operating in the pressure demand mode will be required. Install and operate HEPA filtered air filtration devices. Pre-clean any areas needing critical barriers, and install critical barriers. The work area shall consist of two (2) layers of 6-mil plastic sheeting as critical barriers. Establish and maintain at all times a pressure differential of minus 0.02 inches of water measured on a strip chart recorder or other approved method. The pressure differential recorder shall be checked several times daily by the Contractor. The contractor shall supply a calibrated differential pressure manometer capable of monitoring and recording on a strip chart and measuring differential pressure of 0.005 inches of water. The manometer shall be equipped with an automatically activated alarm system which will sound a warning if the pressure drops below the preset value. All strip charts will be submitted to the Owner’s Representative at the completion of the project. The Contractor shall place a fire extinguisher and have a first aid kit at each containment. An additional fire extinguisher shall be provided by the Contractor where containments exceed 1,000 square feet. Temporary ground fault electrical panels shall be installed outside of containment areas and used by the Contractor for all electrical connections. The Contractor shall use water-proof lights inside of all work areas. Work will not begin or continue until an adequate differential pressure is achieved and maintained. Once negative air is established, the Contractor shall completely remove the sink without damage and wrapping the sink in two (2) layers of polyethylene sheeting in a manner to prevent the contents of the sink from escaping the wrapping. The sink shall be properly wetted and labeled for disposal. Care shall be taken by the Contractor considering the right amount of water required not to create leaking conditions or hazards to the work area or surrounding area, including the ceiling of the first floor. The Building Owner shall provide water for the Contractor’s use during the work. The Contractor shall ensure that proper back-flow protection at all sources of water are installed and maintained. The Contractor is responsible for proper disposal of all wastes. A remote three-stage decontamination unit with shower shall be provided and used by the Contractor during the work. As a minimum, all workers shall shower at the end of each shift. The Contractor shall ensure the integrity of all decontamination facilities. All decontamination procedures shall be strictly implemented by the Contractor. Shower wastewater shall be either filtered or jelled. All filters and/or jelled water shall be disposed by the Contractor as contaminated waste. All asbestos-containing materials shall be properly disposed by the Contractor as contaminated waste in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Fiber and/or metal drums may be used. Final inspection shall consist of a visual inspection and air sampling. Daily air samples will be by Phase Contrast Microscopy (PCM). Final air clearance samples will be by PCM for containments less than NESHAP quantities. Final air clearance will be performed using TEM for
containments greater than NESHAP quantities. See Section 01529 and 02081 and this specification for more information.

(iv). **Ceiling and Wall Glue Dots:**
Prior to the removal of ceiling adhesive (glue dots), the Contractor shall remove all drop ceiling tiles necessary to access the glue dots. The Contractor shall remove all chalkboard to access the glue dots. If the glue dots remain on the chalkboard, the chalkboard must be disposed as an asbestos containing waste. The Contractor shall also install a three-stage decontamination unit, with shower, at the entrance to the work area containments. The Contractor shall remove all drop ceiling tiles required to access the glue dots. If glue dots remain on the any ceiling tiles, the ceiling tiles must be disposed as asbestos-containing waste. The decontamination units shall be installed in such a manner as to allow for separate equipment room/bag-out off to the side. **In No Instance Will the Personal Decontamination Unit Be Used for Bag-out or Equipment Passage.** Don personal protective equipment prior to entering the containment area. Personal Protective Equipment shall include as a minimum, full-body coveralls, head and foot covers, and full-faced PAPRs. For gross removal or should the fiber counts reach the Permissible Exposure Limit (PEL) at any time, Type C, Grade D respirators operating in the pressure demand mode will be required. Install and operate HEPA filtered air filtration devices. Pre-clean any areas needing critical barriers, and install critical barriers. The work area shall consist of two (2) layers of 6-mil plastic sheeting as critical barriers. Establish and maintain at all times a pressure differential of minus 0.02 inches of water measured on a strip chart recorder or other approved method. The pressure differential recorder shall be checked several times daily by the Contractor. The contractor shall supply a calibrated differential pressure manometer capable of monitoring and recording on a strip chart and measuring differential pressure of 0.005 inches of water. The manometer shall be equipped with an automatically activated alarm system which will sound a warning if the pressure drops below the preset value. All strips charts will be submitted to the Owner’s Representative at the completion of the project. The Contractor shall place a fire extinguisher and have a first aid kit at each containment. An additional fire extinguisher shall be provided by the Contractor where containments exceed 1,000 square feet. Temporary ground fault electrical panels shall be installed outside of containment areas and used by the Contractor for all electrical connections. The Contractor shall use water-proof lights inside of all work areas. **Work will not begin or continue until an adequate differential pressure is achieved and maintained.** Once negative air is established, the Contractor may start removing the adhesive located behind the ceiling tiles and behind chalkboards. All ceiling tiles containing glue dots shall be disposed as contaminated waste. The Contractor is responsible for proper disposal of all wastes. The Contractor shall protect, at all times, walls, floors, and moldings. Care shall be taken by the Contractor considering the right amount of water required not to create leaking conditions or hazards to the work area or surrounding area. The Building Owner shall provide limited water service for the Contractor’s use during the work. The Contractor shall ensure that proper back-flow protection at all sources of water are installed and maintained. All materials shall be thoroughly wetted and double-bagged in 6-mil poly bags, goose-necked, and properly labeled for disposal. A remote three-stage decontamination unit with shower shall be provided and used by the Contractor during the work. As a minimum, all workers shall shower at the end of each shift. The Contractor shall ensure the integrity of all decontamination facilities. All
decontamination procedures shall be strictly implemented by the Contractor. Shower wastewater shall be either filtered or jelled. All filters and/or jelled water shall be disposed by the Contractor as contaminated waste. All asbestos-containing materials shall be properly disposed by the Contractor as contaminated waste in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Fiber and/or metal drums may be used. Final inspection shall consist of a visual inspection and air sampling. All daily air sampling will be laboratory analyzed by Phase Contrast Microscopy (PCM) methods unless the Owner or State Agency requires other methods. Final air clearance samples will be by TEM. See Sections 01529, 02081, 02087 and this specification for more information.

(v). Roofing, Wall Parapet Cap Tar and Flashing Tar Sealant:
Roof areas contain multiple layers and varying types of roof tar sealant materials. The Contractor shall use proper means, methods and work practices to prevent asbestos fragments and contaminated dusts from falling below work areas into interior spaces. Asbestos-containing materials shall be removed from building materials to the best extent possible. All asbestos-containing materials shall be removed from all roof vents. In lieu of manual scraping roof vents, the Contractor may wrap, cut, remove and dispose of roof vents as asbestos-containing material. Safety of project workers, building occupants, and property users must be given priority for all activities. The Contractor shall observe at all times that the condition of work areas and access to work areas do not contain hazards. The Contractor shall comply with all Federal, State and local laws, regulations, ordinances, and guidelines including, but not limited to, EPA, OSHA, and the State of Delaware. It is the Contractor’s responsibility to ensure that all appropriate laws, regulations, ordinances, and guidelines are implemented at all times during the work. Prior and during removal of exterior roof materials, the Contractor shall deploy and maintain a suitable drop cloth at ground elevation next to all work areas extending at least 10 linear feet outward to collect fallen materials during removal. Additionally, the Contractor shall deploy and maintain barrier tape and signage at the perimeter of all work areas. Barrier tape shall extend at least 10 linear feet outward and be deployed and maintained in a condition sufficient to restrict access. Signs shall state “Caution, Overhead Work” and shall extend at least 15 linear feet outward. The Contractor shall remove all asbestos-containing roofing materials to a condition whereby the final substrate is smooth and free of any roofing material. The Contractor is responsible for any or all damages caused by him. During the abatement, the Contractor shall protect all building features in and around the work area. Materials shall be adequately wetted with amended water by the Contractor during all removal work to prevent visible emissions. Dry removal of asbestos-containing materials is not allowed. Care shall be taken by the Contractor considering the right amount of water required not to create leaking conditions or hazards to the work area or surrounding area. The Building Owner shall provide limited water service for the Contractor’s use during the work. The Contractor shall ensure that proper back-flow protection at all sources of water are installed and maintained. The Contractor shall place a fire extinguisher and have a first aid kit at each work area. The minimum respiratory protection shall be full-face PAPR’s for all workers. Additionally, as a minimum, all workers shall don double personal protective suits. Respiratory protection and personal protective equipment shall be worn by all workers during all steps of the work including, but not limited to, setup, removal, placing of waste into dumpsters.
or containers, final cleaning and tear down. A remote three-stage decontamination unit with shower shall be provided and used by the Contractor during the work. As a minimum, all workers shall shower at the end of each shift. The Contractor shall ensure the integrity of all decontamination facilities. All decontamination procedures shall be strictly implemented by the Contractor. Shower wastewater shall be either filtered or jelled. All filters and/or jelled water shall be disposed by the Contractor as contaminated waste. All roofing materials shall be thoroughly wetted and double-bagged in 6-mil poly bags and goose-necked or thoroughly wetted and wrapped in double-layers of 6-mil poly for proper disposal. All waste shall be properly handled and labeled for disposal by the Contractor. All asbestos-containing and contaminated materials shall be properly handled, stored, transported and disposed by the Contractor in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Final inspection shall consist of a visual inspection. No final air clearance samples will be required in work areas. See Section 02081 and this specification for more information.

(vi). **Door, Heater Vent, Building Caulks and Window Glazing:**
Window glazing includes glazing materials and caulks. Certain doors and louvers have asbestos-containing caulk. Also, asbestos-containing building caulk requires abatement. All locations shown on the drawings and included in this specification shall be completely removed and disposed by the Contractor. The Contractor may wrap and remove any windows, louvers and/or doors containing asbestos glazing or caulks or use gross removal methods. The Contractor is not required to replace window, louver or door openings with temporary materials. Safety of project workers, general public and property users must be given priority for all activities. The Contractor shall ensure at all times that the condition of work areas and access to work areas do not contain hazards. The Contractor shall comply with all Federal, State and local laws, regulations, ordinances, and guidelines including, but not limited to, EPA, OSHA, and the State of Delaware. It is the Contractor’s responsibility to ensure that all appropriate laws, regulations, ordinances, and guidelines are implemented at all times during the work. Prior to beginning the work, the Contractor shall deploy and maintain a suitable drop cloth at ground elevation consisting of a double layer of polyethylene sheeting inside of the building and at least 10 linear feet outside of the building extending outward along the perimeter at all work areas to collect fallen materials during removal. Additionally, the Contractor shall deploy and maintain barrier tape and signage at the perimeter of all work areas. Barrier tape shall extend at least 10 linear feet outward and be deployed and maintained in a condition sufficient to restrict access. Signs shall state “Caution, Overhead Work” and shall extend at least 15 linear feet outward. All abated material must be properly wetted and bagged in a manner to provide a leak-free condition. The Contractor is responsible for any or all damages caused by him. During the abatement, the Contractor shall protect all building features in and around the work area. Dry removal of asbestos-containing materials are not allowed. Care shall be taken by the Contractor considering the right amount of water required not to create leaking conditions or hazards to the work area or surrounding area. The Building Owner shall provide limited water service for the Contractor’s use during the work. The Contractor shall ensure that proper back-flow protection at all sources of water are installed and maintained. The Contractor shall place a fire extinguisher and have a first aid kit at each work area. The minimum respiratory protection shall be full-face PAPRs for all workers. Additionally, as a minimum, all workers shall don double
personal protective suits. Respiratory protection and personal protective equipment shall be worn by all workers during all steps of the work including, but not limited to, setup, removal, placing of waste into dumpsters or containers, final cleaning and tear down. A remote three-stage decontamination unit with shower shall be provided and used by the Contractor during the work. As a minimum, all workers shall shower at the end of each shift. The Contractor shall ensure the integrity of all decontamination facilities. All decontamination procedures shall be strictly implemented by the Contractor. Shower wastewater shall be either filtered or jelled. All filters and/or jelled water shall be disposed by the Contractor as contaminated waste. All window glazing and caulks shall be thoroughly wetted and double-bagged in 6-mil poly bags and goose-necked for proper disposal. All waste shall be properly handled and labeled by the Contractor for disposal. All asbestos-containing and contaminated materials shall be properly handled, stored, transported and disposed by the Contractor in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Final inspection shall consist of a visual inspection. No final air clearance samples will be required in work areas. See Section 02081 and this specification for more information.

(vii). **Cement Transite Panels**

The Contractor shall safely remove, handle, transport and dispose of all cement transite panels. The Contractor is not required to install temporary plywood at removal locations. Safety of project workers and the building occupants must be given priority for all activities. The Contractor shall ensure at all times that the condition of work areas and access to work areas do not contain hazards. The Contractor shall comply with all Federal, State and local laws, regulations, ordinances, and guidelines including, but not limited to, EPA, OSHA, and the State of Delaware. It is the Contractor’s responsibility to ensure that all appropriate laws, regulations, ordinances, and guidelines are implemented at all times during the work. Prior and during removal of transite panel materials, the Contractor shall deploy and maintain a suitable drop cloth at ground elevation next to all work areas extending at least 10 linear feet outward to collect fallen materials during removal. Additionally, the Contractor shall deploy and maintain barrier tape and signage at the perimeter of all work areas. Barrier tape shall extend at least 10 linear feet outward and be deployed and maintained in a condition sufficient to restrict access. Signs shall state “Caution, Overhead Work” and shall extend at least 15 linear feet outward. The Contractor shall remove all asbestos-containing transite panels to a condition whereby the final substrate is smooth and free of any material. Any loose transite must be properly removed and disposed. The Contractor is responsible for any or all damages caused by him. During the abatement, the Contractor shall protect all building features in and around the work area. Materials shall be adequately wetted with amended water by the Contractor during all removal work to prevent visible emissions. Dry removal of asbestos-containing materials are not allowed. Care shall be taken by the Contractor considering the right amount of water required not to create leaking conditions or hazards to the work area or surrounding area. The Building Owner shall provide limited water service for the Contractor’s use during the work. The Contractor shall ensure that proper back-flow protection at all sources of water are installed and maintained. The Contractor shall place a fire extinguisher and have a first aid kit at each work area. The minimum respiratory protection shall be full-face PAPRs for all workers. Additionally, as a minimum, all workers shall don double personal protective suits. Respiratory protection and personal protective
equipment shall be worn by all workers during all steps of the work including, but not limited to, setup, removal, placing of waste into dumpsters or containers, final cleaning and tear down. A remote three-stage decontamination unit with shower shall be provided and used by the Contractor during the work. As a minimum, all workers shall shower at the end of each shift. The Contractor shall ensure the integrity of all decontamination facilities. All decontamination procedures shall be strictly implemented by the Contractor. Shower wastewater shall be either filtered or jelled. All filters and/or jelled water shall be disposed by the Contractor as contaminated waste. All transite panels shall be thoroughly wetted and double-bagged in 6-mil poly bags and goose-necked or thoroughly wetted and wrapped in double-layers of 6-mil poly for proper disposal. All waste shall be properly handled and labeled for disposal by the Contractor. All asbestos-containing and contaminated materials shall be properly handled, stored, transported and disposed by the Contractor in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Final inspection shall consist of a visual inspection. No final air clearance samples will be required in work areas. See Section 02081 and this specification for more information.

(viii). Fire Doors:
All fire doors showing on the drawings shall be removed. Fire doors shall be bagged, wetted, labeled and properly disposed. The Contractor shall install a three-stage decontamination unit, with shower, at the entrance to the work area containment. The decontamination unit shall be installed in such a manner as to allow for a combined equipment room/bag-out off to the side. Don personal protective equipment prior to entering the containment area. Personal Protective Equipment shall include as a minimum, full-body coveralls, head and foot covers, and full-faced PAPRs. For gross removal or should the fiber counts reach the Permissible Exposure Limit (PEL) at any time, Type C, Grade D respirators operating in the pressure demand mode will be required. Install and operate HEPA filtered air filtration devices. Pre-clean any areas needing critical barriers, and install critical barriers. The work area shall consist of two (2) layers of 6-mil plastic sheeting as critical barriers. Establish and maintain at all times a pressure differential of minus 0.02 inches of water measured on a strip chart recorder or other approved method. The pressure differential recorder shall be checked several times daily by the Contractor. The contractor shall supply a calibrated differential pressure manometer capable of monitoring and recording on a strip chart and measuring differential pressure of 0.005 inches of water. The manometer shall be equipped with an automatically activated alarm system which will sound a warning if the pressure drops below the preset value. All strips charts will be submitted to the Owner’s Representative at the completion of the project. The Contractor shall place a fire extinguisher and have a first aid kit at each containment.
An additional fire extinguisher shall be provided by the Contractor where containments exceed 1,000 square feet. Temporary ground fault electrical panels shall be installed outside of containment areas and used by the Contractor for all electrical connections. The Contractor shall use water-proof lights inside of all work areas. Work will not begin or continue until an adequate differential pressure is achieved and maintained. Once negative air is established, the Contractor shall completely removal all single and double asbestos-containing doors by removing of the doors from its hinges without damage and wrapping the door in two (2) layers of polyethylene sheeting in a manner to prevent the contents of the door from escaping the wrapping. The door shall be properly wetted and labeled for disposal. Care shall
be taken by the Contractor considering the right amount of water required not to create leaking conditions or hazards to the work area or surrounding area, including the ceiling of the first floor. The Building Owner shall provide water for the Contractor’s use during the work. The Contractor shall ensure that proper back-flow protection at all sources of water are installed and maintained. The Contractor is responsible for proper disposal of all wastes. A remote three-stage decontamination unit with shower shall be provided and used by the Contractor during the work. As a minimum, all workers shall shower at the end of each shift. The Contractor shall ensure the integrity of all decontamination facilities. All decontamination procedures shall be strictly implemented by the Contractor. Shower wastewater shall be either filtered or jelled. All filters and/or jelled water shall be disposed by the Contractor as contaminated waste. All asbestos-containing materials shall be properly disposed by the Contractor as contaminated waste in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Fiber and/or metal drums may be used. Final inspection shall consist of a visual inspection and air sampling. All daily air sampling will be laboratory analyzed by Phase Contrast Microscopy (PCM) methods unless the Owner or State Agency requires other methods. Final air clearance samples will be by TEM. See Sections 01529, 02081, 02087 and this specification for more information.

(ix). **Asbestos Heat Shields:**
Wall mounted heating units exist at various locations throughout the school building. The heating units vary in model, size and shape. The heating units may be located at floor elevation or at near ceiling elevation. The Contractor shall open all wall heating units throughout the project for inspection. After opening of wall heating units, if suspected asbestos-containing materials are present the Contractor shall prepare for asbestos abatement activities. Prior to disturbing these materials, the Contractor shall install a three-stage decontamination unit, with shower, at the entrance to the work area containments. The decontamination units shall be installed in such a manner as to allow for separate equipment room/bag-out off to the side. **In No Instance Will the Personal Decontamination Unit Be Used for Bag-out or Equipment Passage.** Don personal protective equipment prior to entering the containment area. Personal Protective Equipment shall include as a minimum, full-body coveralls, head and foot covers, and full-faced PAPRs for glove bag operations. For gross removal or should the fiber counts reach the Permissible Exposure Limit (PEL) at any time, Type C, Grade D respirators operating in the pressure demand mode will be required. Install and operate HEPA filtered air filtration devices. Pre-clean any areas needing critical barriers, and install critical barriers. The work area shall consist of two (2) layers of 6-mil plastic sheeting as critical barriers. Establish and maintain at all times a pressure differential of minus 0.02 inches of water measured on a strip chart recorder or other approved method. The pressure differential recorder shall be checked several times daily by the Contractor. The contractor shall supply a calibrated differential pressure manometer capable of monitoring and recording on a strip chart and measuring differential pressure of 0.005 inches of water. The manometer shall be equipped with an automatically activated alarm system which will sound a warning if the pressure drops below the preset value. All strips charts will be submitted to the Owner’s Representative at the completion of the project. The Contractor shall place a fire extinguisher and have a first aid kit at each containment. An additional fire extinguisher shall be provided by the Contractor where containments exceed 1,000 square feet. Temporary ground
fault electrical panels shall be installed outside of containment areas and used by the Contractor for all electrical connections. The Contractor shall use water-proof lights inside of all work areas. **Work will not begin or continue until an adequate differential pressure is achieved and maintained.** Once negative air is established, the Contractor may start removal of the heat shield after covering with plastic sheeting. The Contractor is responsible for proper disposal of all wastes. Care shall be taken by the Contractor considering the right amount of water required not to create leaking conditions or hazards to the work area or surrounding area. The Building Owner shall provide limited water service for the Contractor’s use during the work. The Contractor shall ensure that proper back-flow protection at all sources of water are installed and maintained. The heat shield shall be thoroughly wetted and double-bagged in 6-mil poly bags, goose-necked, and properly labeled for disposal. A remote three-stage decontamination unit with shower shall be provided and used by the Contractor during the work. As a minimum, all workers shall shower at the end of each shift. The Contractor shall ensure the integrity of all decontamination facilities. All decontamination procedures shall be strictly implemented by the Contractor. Shower wastewater shall be either filtered or jelled. All filters and/or jelled water shall be disposed by the Contractor as contaminated waste. All asbestos-containing materials shall be properly disposed by the Contractor as contaminated waste in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Fiber and/or metal drums may be used. Final inspection shall consist of a visual inspection and air sampling. All daily air sampling will be laboratory analyzed by Phase Contrast Microscopy (PCM) methods unless the Owner or State Agency requires other methods. Final air clearance samples will be by TEM. See Sections 01529, 02081, 02087 and this specification for more information.

(x). **Vibration Dampening Cloths:**

Prior to vibration dampening cloth removal, the Contractor shall install a three-stage decontamination unit, with shower, at the entrance to the work area containments. The decontamination units shall be installed in such a manner as to allow for separate equipment room/bag-out off to the side. In No Instance Will the Personal Decontamination Unit Be Used for Bag-out or Equipment Passage. Don personal protective equipment prior to entering the containment area. Personal Protective Equipment shall include as a minimum, full-body covers, head and foot covers, and full-faced PAPRs. For gross removal or should the fiber counts reach the Permissible Exposure Limit (PEL) at any time, Type C, Grade D respirators operating in the pressure demand mode will be required. Install and operate HEPA filtered air filtration devices. Pre-clean any areas needing critical barriers, and install critical barriers. The work area shall consist of two (2) layers of 6-mil plastic sheeting as critical barriers. Establish and maintain at all times a pressure differential of minus 0.02 inches of water measured on a strip chart recorder or other approved method. The pressure differential recorder shall be checked several times daily by the Contractor. The contractor shall supply a calibrated differential pressure manometer capable of monitoring and recording on a strip chart and measuring differential pressure of 0.005 inches of water. The manometer shall be equipped with an automatically activated alarm system which will sound a warning if the pressure drops below the preset value. All strips charts will be submitted to the Owner’s Representative at the completion of the project. The Contractor shall place a fire extinguisher and have a first aid kit at each containment. An additional fire
extinguisher shall be provided by the Contractor where containments exceed 1,000 square feet. Temporary ground fault electrical panels shall be installed outside of containment areas and used by the Contractor for all electrical connections. The Contractor shall use water-proof lights inside of all work areas. Work will not begin or continue until an adequate differential pressure is achieved and maintained.

Once negative air is established, the Contractor may start removal of vibration dampening cloths. During removal, the Contractor shall not damage equipment containing the cloths. Care shall be taken by the Contractor considering the right amount of water required not to create leaking conditions or hazards to the work area or surrounding area. The Building Owner shall provide limited water service for the Contractor’s use during the work. The Contractor shall ensure that proper back-flow protection at all sources of water are installed and maintained. The Contractor is responsible for proper disposal of all wastes. All pipe coverings shall be thoroughly wetted and double-bagged in 6-mil poly bags, goose-necked, and properly labeled for disposal. A remote three-stage decontamination unit with shower shall be provided and used by the Contractor during the work. As a minimum, all workers shall shower at the end of each shift. The Contractor shall ensure the integrity of all decontamination facilities. All decontamination procedures shall be strictly implemented by the Contractor. Shower wastewater shall be either filtered or jelled. All filters and/or jelled water shall be disposed by the Contractor as contaminated waste. All asbestos-containing materials shall be properly disposed by the Contractor as contaminated waste in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Fiber and/or metal drums may be used. Final inspection shall consist of a visual inspection and air sampling. All daily air sampling will be laboratory analyzed by Phase Contrast Microscopy (PCM) methods unless the Owner or State Agency requires other methods. Final air clearance samples will be by TEM. See Sections 01529, 02081, 02087 and this specification for more information.

(xi). Break-In Locations:
Break in points require opening up floors, walls, and ceilings at each location. Plumbing pipe insulation and/or fittings may be located inside floors and walls. Wall substrate varies throughout building. Each location may require multiple break in points and may contain multiple insulation and/or fittings. Prior to any break-in, the Contractor shall construct a mini-containment and be prepared to abate any asbestos-containing pipe coverings (insulation and fittings) found at each location. If asbestos-containing pipe coverings are found, the Contractor shall immediately abate the material. The Contractor shall include in its bid the cost of this work for the number of break-in locations and assumed pipe covings estimate provided in the Bid Documents.

(xii). Valve, Fitting and Equipment Gaskets:
Asbestos-containing piping valve, fitting and equipment gaskets shall be removed, bagged, and properly dispose, including, but not limited to the Boiler Rooms. Prior to removal, the Contractor shall verify that all utilities have been shut-off and purged. The Contractor shall then install a three-stage decontamination unit, with shower, at the entrance to the work area containment. The decontamination unit shall be installed in such a manner as to allow for a combined equipment room/bag-out off to the side. Don personal protective equipment prior to entering the containment area. Personal Protective Equipment shall include as a minimum, full-body coveralls, head
and foot covers, and full-faced PAPRs. The Contractor shall use gross removal methods or wrap and cut methods for complete removal of all piping valve and fitting gaskets. For removal or should the fiber counts reach the Permissible Exposure Limit (PEL) at any time, Type C, Grade D respirators operating in the pressure demand mode will be required. Install and operate HEPA filtered air filtration devices. Pre-clean any areas needing critical barriers, and install critical barriers. The work area shall consist of two (2) layers of 6-mil plastic sheeting as critical barriers and one (1) layer of 6-mil plastic sheeting on ceilings and walls. Establish and maintain at all times a pressure differential of minus 0.02 inches of water measured on a strip chart recorder or other approved method. The pressure differential recorder shall be checked several times daily by the Contractor. The contractor shall supply a calibrated differential pressure manometer capable of monitoring and recording on a strip chart and measuring differential pressure of 0.005 inches of water. The manometer shall be equipped with an automatically activated alarm system which will sound a warning if the pressure drops below the preset value. All strip charts will be submitted to the Owner’s Representative at the completion of the project. The Contractor shall place a fire extinguisher and have a first aid kit at each containment. An additional fire extinguisher shall be provided by the Contractor where containments exceed 1,000 square feet. Temporary ground fault electrical panels shall be installed outside of containment areas and used by the Contractor for all electrical connections. The Contractor shall use water-proof lights inside of all work areas. **Work will not begin or continue until an adequate differential pressure is achieved and maintained.** Once negative air is established, the Contractor shall completely remove the gaskets from fittings, valves and equipment. Gaskets shall be double bagged in a manner to prevent the contents of the bag from escaping. The gaskets shall be properly wetted and labeled for disposal. Care shall be taken by the Contractor considering the right amount of water required not to create leaking conditions or hazards to the work area or surrounding area, including the ceiling of the first floor. The Building Owner shall provide water for the Contractor’s use during the work. The Contractor shall ensure that proper back-flow protection at all sources of water are installed and maintained. The Contractor is responsible for proper disposal of all wastes. A remote three-stage decontamination unit with shower shall be provided and used by the Contractor during the work. As a minimum, all workers shall shower at the end of each shift. The Contractor shall ensure the integrity of all decontamination facilities. All decontamination procedures shall be strictly implemented by the Contractor. Shower wastewater shall be either filtered or jelled. All filters and/or jelled water shall be disposed by the Contractor as contaminated waste. All asbestos-containing materials shall be properly disposed by the Contractor as contaminated waste in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification. Fiber and/or metal drums may be used. Final inspection shall consist of a visual inspection and air sampling. All daily air sampling will be laboratory analyzed by Phase Contrast Microscopy (PCM) methods unless the Owner or State Agency requires other methods. Final air clearance samples will be by TEM. See Sections 01529, 02081, 02087 and this specification for more information.
(xiii). Boilers and Components:
The Contractor shall remove and dispose of all asbestos-containing materials from the boilers. After completely disassembling the boilers, the Contractor shall leave all non-asbestos-containing materials within the work area for safe disposal as non-contaminated debris by Others. During the boiler disassembly process, the Contractor shall remove, as a minimum, all packing, gaskets, rope, insulating boards, asbestos-containing cements, asbestos baffle tiles, and asbestos-containing castable refractory. The Contractor shall also remove all asbestos-contaminated debris from the boiler room. The Contractor shall determine the proper sequence of asbestos abatement activities at the boiler. The following items shall be considered by the Contractor and are not provided in sequential order:

1. Install a three stage decontamination unit, with shower, at the entrance to the boiler room containment area. The decontamination unit will be installed in such a manner as to allow for a separate equipment room/bag-out off to the side. In no instance will the personal decontamination be used as a bag-out/equipment passage. No Pop-Up decontamination units will be allowed on site. Install and run HEPA filtered negative air machines throughout containment preparation. Pre-clean any areas needing critical barriers. Install critical barriers and seal all penetrations with two (2) layers of 6-mil polyethylene.

2. The work area containment shall consist of two layers of critical barriers and two layers of fire retardant 6-mil poly on the walls and floors, and one layer of poly on the ceiling. The contractor will ensure all floor drains are sealed.

3. Establish and maintain a pressure differential of -0.02 inches of water measured on a strip chart recorder or other approved method. The pressure differential recording device will be checked several times daily by the Owner's Representative. The Contractor shall supply a differential pressure manometer that is capable of monitoring and recording on a strip chart, differential pressure of 0.005 inches of water. The manometer shall be equipped with an automatically activated alarm system, which will sound a warning if the pressure drops below the preset value. All strip charts will be turned in to the Owner's Representative at the completion of the project. Work will not begin or continue until an adequate differential pressure is achieved and maintained. Windows used to exhaust the negative air will be protected with plywood if the windows are located at ground level or below. The pressure differential recorder shall be checked several times daily by the Contractor. HEPA filtered local exhaust systems will be used to establish air flow through the contained work areas and maintained until final analytical clearance has been determined. The systems will be vented to the exterior of the buildings through the use of non-collapsible venting attachments.

4. All electric power shall be shut down in the work area that is possible. Provide temporary power to the work area in accordance with section 01503. Temporary electrical utilities will be supplied by the Owner.

5. All water sources for this project shall be supplied by the Building Owner. The Contractor shall ensure proper back-flow protection at hook-ups from
source(s) of water. Hot water heater will be supplied by the Contractor (see Section 01513).

6. Contractor must ensure the integrity of the enclosures and decontamination facilities. Inspection windows are required for each enclosure (see Section 01526).

7. All asbestos-containing material shall be wetted with amended water during abatement. Dry removal of asbestos will not be allowed.

8. All workers must have their current State of Delaware Asbestos Worker Badge as well as a copy of their current medical information in order to work at the project site (this includes set up and tear down, no exceptions).

9. The Contractor shall place a fire extinguisher and have a first aid kit at each containment. An additional fire extinguisher shall be provided by the Contractor where containments exceed 1,000 square feet.

10. Contractor will provide extra, new respirators, disposable overalls, head covers, and footwear covers for use by authorized visitors. All decontamination procedures are to be strictly adhered to. A signed copy of the Workers Acknowledgment must be obtained from each worker (see Section 01560).

11. Three stage decontamination units are required for each work area except for those areas approved for "glove-bag" work. An equipment decontamination unit consisting of the following arrangement of rooms, Clean Room, Holding Room, Wash Room for the removal of equipment and material from the Work Area, is required. Personnel are not to enter or exit the Work Area through the Equipment Decontamination Unit (see Section 01563). Shower water will be either filtered or jelled. All filters and/or jelled water will be disposed of as contaminated waste.

12. Remove all interior and exterior insulations, if applicable. Follow proper gross removal procedures. Once all removal is complete, fine clean the area prior to encapsulation and final clearances.

13. PAPRs may be used for set up, removal, final cleaning and tear down. If any friable materials are discovered during boiler demolition, the Contractor shall upgrade to Type C, Grade D respirators operated in pressure demand mode at no additional charge to the Owner. Type C will also be required if the fiber counts reach the Permissible Exposure Limit (PEL) at any time.

14. Final inspection shall consist of a visual inspection and air sampling. Daily air samples will be by Phase Contrast Microscopy (PCM). Final air clearance samples will be by TEM.

15. The Contractor shall be responsible for the proper disposal of all asbestos and non-asbestos boiler materials associated with the abatement project. All asbestos-containing materials shall be properly disposed by the Contractor as
contaminated waste in accordance with all Federal, State, and local laws, regulations, ordinances, guidelines, and the requirements of this Specification.

16. **Abatement Activities:** All abatement of asbestos containing materials shall be performed in a proper wetted condition using amended water. Dry removal of asbestos containing materials is not permitted. See Section 01527 and 02081 for more information. The Contractor shall take the necessary precautions to protect all computer, fiber optic and electronic equipment including building sensors from damage during the Contractor’s activities and also including, but not limited to, walls, ceilings, floors outside work areas, doors, thresholds, and fixed objects within work area(s). Any damaged painted surfaces shall be repaired at the Contractor’s expense.

17. **Decontamination Units:** Three (3) stage decontamination stations (units) will be erected, operated, maintained, and removed by the Contractor. The decontamination stations will be erected in such a manner to allow for a secured entrance during non-working hours. At no time will workers move around outside of the work area without clothing. At no time will equipment be moved out of containment decontamination. The equipment/bag-out room must be used for equipment movements. No “pop-up” portable decontamination units will be allowed unless approved in writing. See Section 01563 for more information.

18. **Bag-Out:** Bag-out activities shall be performed by the Contractor prior to the end of the work day. All waste must be removed from work areas prior to the end of the work day. At no time will the workers be allowed to move around outside of the building in abatement coveralls with exception to bag-out activities, which will occur during approved hours each day. All bags shall be leak-proof and have a “goose-neck” seal and labeling. See Section 01527 for more information.

19. **Air Sampling:** All daily air sampling will be laboratory analyzed by Phase Contrast Microscopy (PCM) methods unless the Owner or State Agency requires other methods. Final air clearance samples will be by visual inspection and/or PCM. See Section 02081 and this specification for more information.

20. **Aggressive Air Sampling:** The Contractor shall provide, at no additional cost to the Owner, the leaf blower(s) and fan(s) required by the Owner’s Representative to perform proper aggressive air sampling.

21. **Waste Disposal:** All asbestos-containing materials and contaminated asbestos-containing materials shall be properly handled, stored and disposed by the Contractor at a licensed and permitted landfill. The Contractor shall utilize the landfill written on the bid form for this project. All non-asbestos-containing or non-asbestos-contaminated wastes shall be properly and safely stored by the Contractor inside of the building. Waste shall be stored in a manner which does not block ingress or egress of the building, rooms, closets, doors or windows and does not pose a fire or safety concern as determined by the Owner or the Owner’s Representative.

22. **Lock-Down:** All non-visible asbestos residue shall be encapsulated with a coating of penetrating encapsulant applied in strict accordance with the manufacturer’s directions. The Contractor shall schedule the application of lock-down with the Owner’s Representative prior to application. See Section 01527 for more information.
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23. **Use of Drawings:** All drawings provided in the Specification are diagrammatic, not to proportion and are not to scale. Drawings are provided to the Contractor for reference purposes. The Contractor shall develop and verify the actual quantities and locations required for all of the work and consider these actual quantities when preparing its bid.

24. **Work Areas adjacent to Occupied Areas (if applicable):** When asbestos abatement work areas are adjacent to occupied areas, the Contractor shall install and maintain wooden partitions which extend from floor to ceiling with lockable access doors to prevent occupants from entering into work areas.

25. **Scaffolding, Lifts and Ladders:** If scaffolding is used, the Contractor must erect, use, and disassemble the scaffolding in accordance with OSHA Standards. Additionally, all lifts and ladders shall meet and be used in accordance with OSHA Standards. The Contractor shall insure that floors and all other building components are protected during the use of scaffolding, lifts and ladders. The Contractor shall use only trained personnel when using scaffolding, lifts and ladders.

26. **Exhaust from Negative Air Machines (if applicable):** Windows, doors or other building openings used to exhaust negative air shall be protected by the Contractor by installing plywood and bracing if the opening is located on the first floor or below. The plywood and bracing shall be installed in a manner by the Contractor that prevents damage to the building components and prevents unauthorized access into the building.

27. **Permanent Objects in the Work Area (if applicable):** Where permanently mounted objects are present in the work area, that Contractor shall protect these objects from contamination and damage from their activities. However, window and/or wall mounted HVAC units could contain asbestos-containing materials. The Contractor shall remove covering on HVAC units to inspect, remove and dispose of all asbestos-containing materials included, but not limited to, floor tiles, floor covering, pipe insulation and heat shields.

28. **Electric Power:** All electric power shall be shut down in each work area where possible. The Owner shall provide limited low voltage temporary electric service (single phase, 120-volt, 100 amp circuit source). The Contractor shall provide the Owner with their specifications within five (5) calendar days prior to scheduling the start of work. The Owner shall provide a plug type outlet within 300 feet of work locations. Adequate extension cords shall be provided by the Contractor. Temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in each work area shall be provided by the Contractor. If required by the Contractor, a licensed electrician shall be provided, at no additional cost, for making electrical connections and disconnections.

29. **Water Service:** The Owner shall provide limited cold water service for small connections (3/4-inch hose maximum). The Contractor shall provide, at no additional cost to the Owner, all necessary connections and ensure proper back-flow protection. Hot water heaters shall be supplied and operated by the Contractor at no additional cost to the Owner. The Contractor shall be responsible for turning on and off valves at their point of connection.

30. **Visitor Personal Protective Equipment:** The Contractor shall provide, at no additional cost to the Owner, respirators, disposable coveralls, head covers, and foot covers all at new condition.
31. **Contractor Project Staffing:** A minimum of three (3) asbestos personnel are required to be present at the project site at all times. The Contractor’s on-site supervisor must be able to make timely decisions for this company. **Prior to any site activity, the Contractor shall submit the name and address of each supervisor, worker and any other person he intends to use at the project site for informational screening (e.g. registered sex offenders list and other lists) by the Owner. The Contractor shall be notified by the Owner if their personnel will be allowed to work at the project site based upon the results of the screening. The Cape Henlopen School District reserves the right to reject any proposed Contractor personnel for this project.** (Section 01043)

32. **Project Supervisor:** During all asbestos abatement work, a State of Delaware licensed Supervisor, employed by the Contractor, shall be on site at all times. The licensed Supervisor shall maintain all daily records as required.

33. **Project Monitor Must Be On-Site:** The Contractor shall not begin or continue work for any asbestos abatement related activities until a certified Project Monitor is resident on site. The Project Monitor must be on site at all times during asbestos abatement related activities. The Contractor shall provide adequate notice to the Professional Service Firm providing the Project Monitor. Adequate notice is the period of time agreed to by the Contractor and Professional Service Firm.

34. **Damage Repair:** The Contractor shall repair or replace, at his own expense, any damage occurring from his activities for items the Owner desires to save prior to demolition or any building component. Any damaged items will be replaced or paid for by the Contractor prior to receipt of final contract payment.

35. **Stop Work:** If the Owner, or the Owner’s Representative presents a written stop work order to the Contractor, the Contractor shall immediately stop all work in a fashion not to create an asbestos exposure hazard to workers, building occupants, or others. See this Section for more information.

36. **Building and Property Usage:** The contractor shall not unreasonably encumber the site with materials or equipment and may be required to share the project site with others. Stockpile of materials at locations after approved by the Owner’s Representative. If additional off-site storage is need by the Contractor, the off-site storage will be provided by the Contractor at no additional cost to the Owner. Smoking or open fires will not be permitted within the building. Alcoholic beverages and non-prescription drugs use is prohibited within buildings or on the property. No permanent modifications shall be made to any building component, sidewalk, parking area, signage, or any other appurtenances without expressed written permission from the Owner. See this Section for more information.

**D. Single Prime Contract:** The Work will be constructed under a single prime contract. The Contractor shall not sublet this contract without expressed written permission from the Owner.

**E. Pre-abatement assessment:** A comprehensive pre-abatement assessment will be completed by the Contractor, Owner’s Representative, and any other individual authorized by the Owner. An agreed list of damage to structures, surfaces, equipment shall be developed and agreed upon prior to the commencement of work by the Contractor.
F. **Contaminated Areas:** Any areas found to be contaminated in the opinion of the Owner’s Representative or Owner after the removal of asbestos containing material shall be decontaminated using a combination of HEPA vacuum and wet cleaning techniques by the Contractor at no additional expense to the Owner.

G. **Plan of Action:** The Contractor shall submit a detailed plan of action which details proposed procedures used for complying with all of the requirements of this specification. Included in the plan shall be the location and layout of decontamination areas, the sequence of asbestos work, the interface of all trades, methods used to ensure safety of the workers, building occupants, and visitors to the site, and a detailed description of methods that will be used to control pollution.

H. **Potential Asbestos Hazard:** The disturbance of asbestos-containing materials may cause asbestos fibers to be released into the building and/or exterior atmosphere thereby creating a potential health hazard to workers, building occupants, and others. The Contractor shall inform all workers, supervisors, subcontractors, and Owner’s Representatives who will be at the project site of the seriousness of the hazard and of proper work procedures which must be followed. The Contractor shall, continuously and at all times, take the measures necessary including, but not limited to, procedures, work practices, and methods, to ensure complete compliance with federal, state, and local regulations and eliminate the potential for asbestos exposure.

I. **Site Safety:** The Contractor shall at all times comply with all applicable federal, state and local, laws and regulations, including environmental, health and safety laws and regulations, pertaining to its services. The Contractor represents it is familiar with all aspects of the job site (including but not limited to site conditions and site access limitations) and hazards associated with asbestos removal and abatement. The Contractor shall be solely responsible for the safety of its personnel, subcontractors or any third party in its work areas or common areas and Contractor hereby releases and indemnifies Client and Owner’s Representative from any and all claims brought by, or on behalf of itself, its employees or its subcontractors arising out of or in connection with its Contractor’s services or presence at the job site. Prior to the start of daily work, and at the conclusion of each day, the Contractor shall visually inspect his work areas and all areas required to access his work areas. Any unsafe conditions found during any inspection shall be reported to the Owner’s Representative immediately in writing subsequent to each inspection. The report provided by the Contractor to the Owner’s Representative shall adequately describe the unsafe condition and the procedures the Contractor has immediately taken to correct the unsafe condition. The Contractor shall promptly report any and all accidents to the Owner’s Representative in writing, and shall include sufficient details regarding the accident and procedures implemented by the Contractor to prevent similar accidents. The Contractor shall be responsible for reporting accidents to the appropriate regulating agency as may be required by applicable law or regulation.

J. **Specification Sections:** The work includes the removal of asbestos-containing materials according to the requirements provided in the following specification sections:

1. **General and Administrative Requirements:**
   01013: Summary of the Work–Asbestos Abatement
   01043: Project Coordination–Asbestos Abatement
   01097: Reference Standards and Definitions–Asbestos Abatement
   01098: Codes, Regulations and Standards–Asbestos Abatement
   01301: Submittals–Asbestos Abatement
   01601: Materials and Equipment–Asbestos Abatement
   01632: Product Substitutions–Asbestos Abatement
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01701: Contract Closeout-Asbestos Abatement

2. **Abatement Work:**
   - 01503: Construction Facilities and Temporary Controls-Asbestos Abatement
   - 01513: Temporary Pressure Differential & Air Circulation System
   - 01526: Temporary Enclosures
   - 01527: Regulated Areas
   - 01529: Mini Enclosures and Glovebags
   - 01560: Worker Protection-Asbestos Abatement
   - 01562: Respiratory Protection
   - 01563: Decontamination Units

3. **Asbestos Removal Work Procedures:**
   - 02081: Removal of Asbestos-Containing Materials
   - 02084: Disposal of Regulated Asbestos Containing Material
   - 02085: Resilient Flooring Removal-Resilient Floor Covering Manufacturers
   - 02087: Resilient Flooring Removal-Aggressive Asbestos Abatement

4. **Decontamination of Work Areas:**
   - 01711: Project Decontamination
   - 01712: Cleaning and Decontamination Procedures

1.3 **WORK SEQUENCE**

A. **The Work** will be conducted in distinct phases at each abatement location.

1. Each work phase shall consist of pre-cleaning, establishing of work areas, installation of engineering controls, abatement, post abatement inspection and sampling.

2. The following inspections will be performed by the Contractor and Owner’s Representative simultaneously for project activities:
   a. **Pre-Cleaning:** A visual inspection of all pre-cleaned surface areas. This inspection will occur prior to the installation of polyethylene sheeting on walls, floors, and other surfaces. Decontamination units must be operable and critical barriers installed prior to pre-cleaning activities.
   b. **Work Area:** Work areas will be visually inspected each day prior to the start of work activities and upon work completion each day to ensure that the integrity of the containment is in compliance with these specifications. This inspection does not relieve the Contractor of their responsibilities of performing the work in accordance with these specifications.
   c. **Post Abatement:** A visual inspection of each work area will be performed following successful clearance air sampling and prior to commencing containment tear-down.
   d. **Substantial Completion:** After completion of all applicable demolition, reinstallation, cleaning, and all other asbestos abatement activities, a final inspection will be performed after final cleaning of all work areas prior to re-occupancy of said areas by the Owner.
1.4 ASBESTOS-CONTAINING MATERIALS:

A. The Work of this contract involves activities that will disturb asbestos-containing materials (ACM). The location and type of ACM known to be present at the worksite is set forth in the “Schedule of Asbestos-Containing Materials” at the end of this section. If any other ACM or PACM is found, notify the Owner’s Representative, other employers and employees about the location and quantity of the ACM or PACM immediately upon discovery.

B. Asbestos containing building materials are known to be present at the project site. If the Contractor finds any other material which are suspected of containing asbestos, the Contractor shall immediately notify the Owner’s Representative. See the attached Table 1. for a summary of confirmed asbestos-containing materials at the site.

1.5 ASBESTOS HEALTH RISK:

A. The disturbance or dislocation of ACM may cause asbestos fibers to be released into the building’s atmosphere, thereby creating a potential health risk to workers and building occupants. The Contractor shall inform all workers, supervisory personnel, subcontractors and Owner’s Representatives who will be at the job site of the seriousness of the risk and of proper work procedures which must and will be followed.

B. Where in the performance of the work, workers, supervisory personnel, subcontractors, or Owner’s Representatives may encounter, disturb, or otherwise function in the immediate vicinity of any identified ACM, take appropriate continuous measures as necessary to protect all building occupants from the risk of exposure to airborne asbestos. Such measures shall include the procedures and methods described herein, and compliance with regulations of applicable federal, state and local agencies.

1.6 CONTRACTOR USE OF PREMISES

A. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

1. Owner Occupancy: Allow for Owner occupancy and use by the public.

2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner’s employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

B. Use of the Existing Building: Maintain the existing building in a weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1. Use of Existing Elevators (if applicable): Except for the Freight Elevator, use of elevators by the Contractor will not be permitted. The Contractor will be permitted to use the freight elevator for temporary freight service and the transportation of construction personnel during the construction period. This elevator must also be available to the Owner at all times; coordinate freight elevator usage with the Owner or Owner’s Representative. Provide
protective pads for the elevator car and other appropriate protective measures for the car and entrance doors and frames. During asbestos abatement activities the car is to be protected as set forth in the Division 1 Section on Temporary Enclosures.

2. **Smoking**: Smoking or open fires will not be permitted within the building enclosure or on the premises.

3. **Toilet Rooms (if applicable)**: Except for toilet rooms designated for use by the Contractor’s personnel, use of existing toilets within the building, by the Contractor’s personnel, will not be permitted.

### 1.7 OCCUPANCY REQUIREMENTS

A. **Partial Owner Occupancy**: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building prior to Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. The Owner or Owner’s Representative will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner occupancy.

### 1.8 AIR MONITORING BY THE OWNER

A. **The Owner has contracted for air monitoring**: Air monitoring may be conducted both outside and inside of the work area during the work, and for clearance sampling at the end of the project.

1. **Outside of the Work Area**: The Owner’s air monitoring firm may sample air outside of the work area to detect faults in the work area isolation such as:
   
   a. Contamination of the building outside of the work area with airborne asbestos fibers,
   b. Failure of filtration or rupture in the differential pressure system,
   c. Contamination of air outside the building envelop with airborne asbestos fibers.

2. **Inside the Work Area**: The Owner’s air monitoring firm may monitor airborne fiber counts in the Work Area. The purpose of this air monitoring is to detect airborne asbestos concentrations which may challenge the ability of the Work Area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.

B. **Work area clearance**: Clearance air sampling by the Owner’s air monitor at the completion of asbestos abatement work is described in Section 01711 Project Decontamination.

C. **Air monitoring** required by OSHA is work of the Contractor and is not covered in this section.

### 1.9 SCHEDULE OF AIR SAMPLES BY OWNER

A. **Sample cassettes**: Samples will be collected on 25 mm. cassettes as follows:

1. **PCM**: 0.8 micrometer mixed cellulose ester.
2. **TEM (if required)**: 0.45 micrometer mixed cellulose ester or 0.40 micrometer.
polycarbonate, with 5.0 micron mixed cellulose ester backing filter.

B. **Number and Volume of Samples:** The number and volume of air samples given in the schedules is approximate. The exact number and volume of samples collected by the Owner may vary depending upon job conditions and the analytical method used.

C. **Sample Volume and Sensitivity:**

1. **PCM:** The sample volumes collected by the Owner’s air monitor will be determined by the following formula:

\[
\text{Volume} = \frac{\left( \frac{\text{Number of Fibers}}{\text{Area of 100 fields}} \right) \times \text{Total Filter Area}}{\text{Limit Value}}
\]

   Where:
   - Number of fibers = 5 fibers/100 fields, based on a limit of detection (LOD) of 7 fibers/mm² on the filter
   - Area of 100 fields = 0.785mm²
   - Total Filter Area = 385mm²
   - Limit Value = as specified in the schedules of samples below

   a. For purposes of this specification, the sample volume calculated above will be considered to be of sufficient size so that there is a 95% level of confidence that the value measured by each individual sample at the limit of detection (LOD) is less than or equal to the limit values specified below.

   b. For purposes of this specification, the Limit of Detection (LOD) is defined as 7 fibers/mm² on the filter or 5 fibers/100 fields.

   c. For purposes of this specification overloaded samples will be considered as exceeding the applicable limit value.

2. **TEM:** Analytical Sensitivity of 0.05 structures/cc as set forth in the AHERA regulation.
### D. Baseline:

1. **Before Start of Work:** The Owner will secure air samples to establish a baseline.

2. **PCM Samples**

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Limit Value (Fibers/cc)</th>
<th>Approx. Volume (Liters)</th>
<th>Rate (Liters/Minute)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>5</td>
<td>0.01</td>
<td>1,000</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Each Work Area</td>
<td>5</td>
<td>0.01</td>
<td>1,000</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Building</td>
<td>5</td>
<td>0.01</td>
<td>1,000</td>
<td>1-10</td>
</tr>
</tbody>
</table>

3. **TEM Samples:**

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Analytical Sensitivity (Struct./cc.)</th>
<th>Approx. Volume (Liters)</th>
<th>Rate (Liters/Minute)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>1</td>
<td>0.005</td>
<td>1,300</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Each Work Area</td>
<td>1</td>
<td>0.005</td>
<td>1,300</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Building</td>
<td>1</td>
<td>0.005</td>
<td>1,300</td>
<td>1-10</td>
</tr>
</tbody>
</table>

4. **Baseline:** A level expressed in fibers per cubic centimeter which is twenty-five percent greater than the largest of the following:

   a. Average of the PCM samples collected outside each Work Area.
   
   b. Average of the PCM samples collected outside the building.
   
   c. 0.01 fibers per cubic centimeter.

5. **Samples collected for TEM analysis** will be held without analysis. These samples will be analyzed under the conditions and terms set forth in "Fibers Counted" and "Affect On Contract Sum".
COMPLIANCE ENVIRONMENTAL, INC.

E. Daily:

1. From start of work of Section 01526 Temporary Enclosures through the work of Section 01711 Project Decontamination, the Owner may take samples.

2. Sample volume and sensitivity: inside the work area may vary depending upon conditions in the work area. If samples are overloaded at the sample volume required for a limit value equal to the "Stop Action Levels" or "Immediate Stop Action Levels" given later in this section, the level is considered to have been exceeded.

3. PCM Samples:

<table>
<thead>
<tr>
<th>Location Sampled</th>
<th>Number of Samples</th>
<th>Limit Value (Fibers/cc)</th>
<th>Approx. Volume (Liters)</th>
<th>Rate (LPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Work Area</td>
<td>2</td>
<td>0.01</td>
<td>1,000</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Each Work Area at Critical Barrier</td>
<td>1</td>
<td>0.01</td>
<td>1,000</td>
<td>1-10</td>
</tr>
<tr>
<td>Clean Room</td>
<td>1</td>
<td>0.01</td>
<td>1,000</td>
<td>1-10</td>
</tr>
<tr>
<td>Equipment Decon</td>
<td>1</td>
<td>0.01</td>
<td>1,000</td>
<td>1-10</td>
</tr>
<tr>
<td>Outside Building</td>
<td>1</td>
<td>0.01</td>
<td>1,000</td>
<td>1-10</td>
</tr>
<tr>
<td>Output of Pressure Differential System</td>
<td>1</td>
<td>0.01</td>
<td>1,000</td>
<td>1-10</td>
</tr>
</tbody>
</table>

F. Additional samples may be taken at Owner or Owner’s Representative’s discretion. If airborne fiber counts exceed allowed limits additional samples may be taken as necessary to monitor fiber levels.

1.10 ANALYTICAL METHODS USED BY THE OWNER

A. The following methods will be used by The Owner in analyzing filters used to collect air samples. Sampling rates may be varied from printed standards to allow for high volume sampling.

1. Phase Contrast Microscopy (PCM) will be performed using the NIOSH 7400 method.
2. Transmission Electron Microscopy (TEM) will be performed using the analysis method set forth in the AHERA regulation 40 CFR Part 763 Appendix A.

1.11 LABORATORY TESTING BY OWNER

A. The services of a testing laboratory may be employed by the Owner or Owner’s Representative to perform laboratory analyses of the air samples. Samples available for analysis will be sent daily by 5:00 pm from Dover via a carrier for next day delivery to the laboratory, so that verbal reports on air samples can be obtained within 24 hours after receipt by the laboratory.
B. A complete record of all air monitoring and results will be furnished to the Owner’s Representative, the Owner, and the Contractor.

C. The Contractor will have access to all air monitoring tests and results upon request.

D. Written Reports of all air monitoring tests will be posted at the job site on a daily basis.

E. Additional laboratory samples and professional services time required for re-sampling of areas for clearance due to failed samples because of the Contractor’s activities will be paid for by the Contractor.

1.12 FIBERS AND STRUCTURES

A. Fibers Counted: The following procedure will be used to resolve any disputes regarding fiber types when a project has been stopped due to excessive airborne fiber counts.

1. Large Fibers: "Airborne Fibers" referred to above include all fibers regardless of composition as counted by phase contrast microscopy (PCM), unless additional analysis by transmission or scanning electron microscopy demonstrates to the satisfaction of the Owner or Owner’s Representative that non-asbestos fibers are being counted. "Airborne Fibers" counted in samples analyzed by transmission electron microscopy shall be asbestos fibers, greater than 5 microns in length. For purposes of stop action levels, subsequent to analysis by electron microscopy, the number of "Airborne Fibers" shall be determined by multiplying the number of fibers, regardless of composition, counted by PCM by the proportion of fibers that are asbestos as determined by TEM (a number equal to, asbestos fibers counted, divided by all fibers counted in the electron microscopy analysis).

2. Small Structures: "Airborne Fibers" referred to above include asbestos structures (fibers, bundles, clusters or matrices) of any diameter and any length greater than 0.5 microns.

1.13 ADDITIONAL TESTING

A. The Contractor may conduct air monitoring and laboratory testing. If he elects to do this the cost of such air monitoring and laboratory testing shall be at no additional cost to the Owner. A NIOSH-582 certified microscopist will be on-site during the afternoon hours to provide analysis of available PCM samples by NIOSH Method 7400. Verbal report on air samples will be provided that day.

1.14 PERSONAL MONITORING

A. Owner will not perform air monitoring for the Contractor to meet Contractor's OSHA requirements for personal sampling or any other purpose.

PART 2 - PRODUCTS (Not Applicable)
COMPLIANCE ENVIRONMENTAL, INC.

PART 3 - EXECUTION

3.1 SITE WORKERS

A. All workers and supervisors shall be currently certified by the State of Delaware and have their State of Delaware issue badge with them at all times while at the project site.

B. All workers and supervisors shall have a copy of their current medical and respirator fit test documentation at all times while at the project site.

C. The Contractor shall provide, at all times during any site activities, at least three (3) site workers which includes at least one (1) certified Supervisor and two (2) certified workers. The certified Supervisor shall remain on the outside of the work area as required.

D. Prior to the start of work, the Contractor shall submit the level of respiratory protection intended for each operation of the project on the Initial Exposure Assessment form (See Section 01562).

E. A signed copy of the Certificate of Workers Acknowledgement must be obtained from each site worker including supervisors prior to the start of work. (See Section 01530).

3.2 MINIMUM PERSONAL PROTECTION EQUIPMENT

A. All site workers engaged in asbestos abatement activities shall use, at all times and as a minimum, PAPR respiratory protection equipment.

3.3 STOP ACTION LEVELS

A. Inside Work Area: Maintain an average airborne count in the work area of less than the Stop Action Level given below for the type of respiratory protection in use. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts. If the Time Weighted Average (TWA) fiber count for any work shift or 8 hour period exceeds the Stop Action Level, stop all work except corrective action, leave pressure differential and air circulation system in operation and notify the Owner or Owner's Representative. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by the Owner or Owner's Representative.

<table>
<thead>
<tr>
<th>ACTION LEVEL (Max Exposure) (f/cc)</th>
<th>STOP LEVEL (f/cc)</th>
<th>RESPIRATOR</th>
<th>RESPIRATOR ASSIGNED PROTECTION FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5</td>
<td>Half Face</td>
<td>10</td>
</tr>
<tr>
<td>100</td>
<td>50</td>
<td>PAPR</td>
<td>1,000</td>
</tr>
<tr>
<td>100</td>
<td>50</td>
<td>Supplied Air, Pressure Demand</td>
<td>1,000</td>
</tr>
</tbody>
</table>

Table 1. Action Level and Stop Action Fiber Concentrations.
COMPLIANCE ENVIRONMENTAL, INC.

1. If airborne fiber counts inside contained work areas exceed the stop level for any period of time cease all work except corrective action until fiber counts fall below the stop level and notify Owner's Representative. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by the Owner or Owner's Representative.

2. The Contractor shall stop work immediately if any visual emissions are observed.

B. **Outside Work Area:** If any air sample taken outside of the Work Area exceeds the baseline established in Part 1 of this section, immediately and automatically stop all work except corrective action. The Owner or Owner's Representative will determine the source of the high reading and so notify the Contractor in writing.

1. If the high reading was the result of a failure of Work Area isolation measures initiate the following actions:
   
a. Immediately erect new critical barriers as set forth in Section 01526 Temporary Enclosures to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (e.g. wall, ceiling, floor).
   
b. Decontaminate the affected area in accordance with Section 01712 Cleaning & Decontamination Procedures.
   
c. Require that respiratory protection as set forth in Section 01562 Respiratory Protection be worn in affected area until area is cleared for re-occupancy in accordance with Section 01711 Project Decontamination.
   
d. Leave Critical Barriers in place until completion of work and insure that the operation of the pressure differential system in the Work Area results in a flow of air from the balance of the building into the affected area.
   
e. If the exit from the clean room of the personnel decontamination unit enters the affected area, establish a decontamination facility consisting of a Shower Room and Changing Room as set forth in Section 01563 Decontamination Units at entry point to affected area.
   
f. After Certification of Visual Inspection in the Work Area remove critical barriers separating the work area from the affected area. Final air samples will be taken within the entire area as set forth in Section 01711 Project Decontamination.

2. If the high reading was the result of other causes initiate corrective action as determined by the Owner or Owner’s Representative.

3. The Contractor shall stop work immediately if any visual emissions are observed.

C. **Effect on Contract Sum:** Complete corrective work with no change in the Contract Sum if high airborne fiber counts were caused by Contractor's activities. The Contract Sum and schedule will be adjusted for additional work caused by high airborne fiber counts beyond the Contractor's control.
3.4 STOP WORK

A. If the Owner, Owner or Owner’s Representative, or Project Administrator presents a written stop work order, immediately and automatically conform to that stop work order, while maintaining temporary enclosures and pressure differential. Do not recommence abatement work until authorized in writing by Owner, Owner, or Owner’s Representative or Project Administrator.

B. Immediately initiate the following actions: After being presented with a stop work order immediately:

1. Cease all asbestos removal activities, or any other activities that disturbs ACM.

2. Repair any fallen, ripped or otherwise failed work area isolation measures.


4. Maintain all worker protections including those required by Sections 01560 “Worker Protection - Asbestos Abatement,” and 01562 “Respiratory Protection.”

5. Fog the air in the work area with a mist of amended water to reduce airborne fiber levels.

C. Do not recommence work until authorized in writing by the Owner or Owner’s Representative.

3.5 SCHEDULE OF ASBESTOS-CONTAINING MATERIALS

See the attached Table 1 and Table 2. for approximate quantities and locations for positive asbestos-containing materials and assumed asbestos-containing materials on the project. All quantities were estimated. The Contractor shall field verify said quantities without delay and immediately inform the Owner’s Representative of any discrepancies.
Table 1.
Summary of Positive Asbestos-Containing Materials at Milton Elementary School Building and Maintenance Shop Building.

<table>
<thead>
<tr>
<th>Building Material</th>
<th>Location and Description</th>
<th>Sample ID:</th>
<th>Color</th>
<th>Laboratory Result</th>
<th>Approximate Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERIOR - MAIN BUILDING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor Tile Mastic</td>
<td>First Floor - Computer Room, Hallway by Computer Room, Hallway by Locker Rooms, Room 111, and Main Entrance Hallway: 12&quot; x 12&quot; Floor Tile with Asbestos Mastic over Concrete.</td>
<td>FTM-7, FTM-9, FTM-25-A, FTM-25-B, FTM-35-A, FTM-35-B</td>
<td>Black, Yellow</td>
<td>3 to 6% Chrysotile</td>
<td>5,400 SF Total</td>
</tr>
<tr>
<td>Floor Tile</td>
<td>First Floor - Room 123 and Hallway by Gym: Asbestos 9&quot; x 9&quot; Floor Tile with Mastic over Concrete.</td>
<td>FT-11-A, FT-11-B, FT-87-A, FT-87-B</td>
<td>Pink, Tan, Brown</td>
<td>6 to 8% Chrysotile</td>
<td>1,900 SF Total</td>
</tr>
<tr>
<td>Floor Tile and Felt Paper</td>
<td>First Floor - Room 110 and 109: 12&quot; x 12&quot; Floor Tile (Mastic not over Asbestos 9&quot; x 9&quot; Floor Tile with Asbestos Felt Paper (Floor Underlayment) over Concrete.</td>
<td>FT-31-A, FT-31-B, FP-32-A, FP-32-B</td>
<td>Green, Black</td>
<td>2 to 5% Chrysotile</td>
<td>1,200 SF Total</td>
</tr>
<tr>
<td>Pipe Insulation</td>
<td>First Floor - Stage (Below), Gym Lobby Area, Room 123 Front Storage Room: NOTE: Some Asbestos Pipe Insulation located above Ceilings.</td>
<td>INS-3-A, INS-3-B, INS-3-C, INS-91</td>
<td>White, Black, Gray</td>
<td>5 to 10% Chrysotile 12% Amosite</td>
<td>500 LF Total</td>
</tr>
<tr>
<td>Pipe Fittings</td>
<td>First Floor - Stage (Below), Gym Lobby Area, Room 123 Front Storage Room: NOTE: Some Asbestos Pipe Insulation located above Ceilings.</td>
<td>PF-4, PF-90</td>
<td>White</td>
<td>15% Chrysotile 20% Amosite</td>
<td>100 EA</td>
</tr>
<tr>
<td>Sink Undercoating</td>
<td>First Floor - Room 110, 1202, 1203, 1204, 1206, 1207, and 1209: Metal Sink with Asbestos Sink Undercoating.</td>
<td>SU-27, SU-52-A, SU-52-B, SU-52-C</td>
<td>Black</td>
<td>2 to 15 % Chrysotile</td>
<td>7 EA</td>
</tr>
<tr>
<td>Ceiling Glue Dots</td>
<td>Basement - Cafeteria, Hallway, Teachers Lounge, and Classroom/Small Cafe: 12&quot; x 12&quot; Ceiling Tile with Asbestos Glue Dots on Concrete Floor Deck. Drop ceiling tiles must be removed to access asbestos.</td>
<td>GD-73-A, GD-73-B, GD-73-C</td>
<td>Brown</td>
<td>5 % Chrysotile</td>
<td>3,900 SF Total</td>
</tr>
</tbody>
</table>
Table 1.
Summary of Positive Asbestos-Containing Materials at Milton Elementary School Building and Maintenance Shop Building.

<table>
<thead>
<tr>
<th>Building Material</th>
<th>Location and Description</th>
<th>Sample ID:</th>
<th>Color</th>
<th>Laboratory Result</th>
<th>Approximate Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EXTERIOR - MAIN BUILDING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof Coating</td>
<td>Roof #8 - Walls along 3 sides (East, West and North) Asbestos Roof Coating located on Masonry and Brick.</td>
<td>MES-8-SC-11, MES-8-SC-12</td>
<td>Silver/ Black</td>
<td>5 to 7 % Chrysotile</td>
<td>500 SF Total</td>
</tr>
<tr>
<td>Window Caulk and Glazing</td>
<td>Boiler Room Window; Asbestos Building Caulk and Glazing located on Masonry, Brick and Metal.</td>
<td>BC-95</td>
<td>Gray, White, Red</td>
<td>8 % Chrysotile</td>
<td>50 LF</td>
</tr>
<tr>
<td>Wall Parapet Cap Tar</td>
<td>Roof #8 - Terra-Cotta Along the top Edge; Asbestos Tar located on top of parapet wall at cap.</td>
<td>MES-8-CT-9, MES-8-CT-10</td>
<td>Black</td>
<td>5 % Chrysotile</td>
<td>250 LF</td>
</tr>
<tr>
<td>Tar Coating</td>
<td>Roof #5 - Roof Edge; Asbestos Flashing Tar located along the edge.</td>
<td>MES-5-TC-10</td>
<td>Black</td>
<td>8 % Chrysotile</td>
<td>80 LF</td>
</tr>
<tr>
<td><strong>INTERIOR - MAINTENANCE BUILDING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cement Wall and Ceiling Panels</td>
<td>Storage Room C; Asbestos Cement Wall and Ceiling Panels (Transite)</td>
<td>WP-42</td>
<td>Gray</td>
<td>20 % Chrysotile</td>
<td>1,800 SF</td>
</tr>
<tr>
<td><strong>EXTERIOR - MAINTENANCE BUILDING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flashing Tar</td>
<td>Roof #16 around Chimney on metal roof; Asbestos Flashing Tar located along the chimney on metal roof</td>
<td>MES-16-FLT-5</td>
<td>Black</td>
<td>3 % Chrysotile</td>
<td>20 LF</td>
</tr>
</tbody>
</table>

Note: SF = Square-Feet, CF = Cubic-Feet, LF = Linear-feet, EA = Each
Table 2.

<table>
<thead>
<tr>
<th>Building Material</th>
<th>Location and Description</th>
<th>Category</th>
<th>Approximate Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chalkboard Glue Dots</td>
<td>Assumed throughout buildings located behind chalkboards in classrooms and in hallways. Remove chalkboards to gain access to glue dots for complete abatement.</td>
<td>Category II Non-Friable</td>
<td>45 Locations 3,600 SF Total</td>
</tr>
<tr>
<td>Pipe Coverings (Insulation and Fittings)</td>
<td>Assumed throughout buildings at inaccessible locations within walls, floors, and ceilings including locations at all heat and water sources. Remove ceilings to inspect and remove all ACBM at these locations with no ceiling access: First and Second Floor (Hallways and Classrooms)</td>
<td>Friable</td>
<td>2,000 LF estimate most pipes are connected in crawlspace (abated in 2007)</td>
</tr>
<tr>
<td>Fire Doors</td>
<td>Metal fire doors containing ACBM are located throughout the buildings. Most locations shown on drawing have double doors.</td>
<td>Non-Friable</td>
<td>32 EA</td>
</tr>
<tr>
<td>Floor Tile</td>
<td>Assumed asbestos floor tile and mastic underneath built-in shelving. Remove built-ins to access ACBM for complete abatement.</td>
<td>Non-Friable</td>
<td>420 SF</td>
</tr>
<tr>
<td>Asbestos Heat Shields</td>
<td>Heat sources are located throughout buildings. Units may have internal transite panels that vary in size and quantity and may be mounted on floors, walls, or ceilings at locations. All heating units required to be opened for inspection and all identified ACBM abated if found.</td>
<td>Category II Non-Friable</td>
<td>100 Locations</td>
</tr>
<tr>
<td>Vibration Dampening Cloth</td>
<td>Assumed asbestos vibration dampening cloth located on elevated ductwork in Gymnasium.</td>
<td>Category II Non-Friable</td>
<td>5 Areas (16 Dampering Cloths)</td>
</tr>
<tr>
<td>Break-In Locations Pipe Covering (Insulation and Fittings)</td>
<td>Assumed throughout buildings at inaccessible locations within walls, floors, and ceilings which includes all locations at heat and water sources.</td>
<td>Friable</td>
<td>80 Locations</td>
</tr>
<tr>
<td>Valve and Flange Gaskets</td>
<td>Boiler room valves and gaskets. Remove all valves and flange gaskets identified as containing ACBM. Pipework may need to be disassembled to access gaskets.</td>
<td>Category I Non-Friable</td>
<td>50 EA</td>
</tr>
<tr>
<td>Boilers and Components</td>
<td>Boiler and internal boiler components at the Maintenance Shop Building. Open and disassemble boilers as necessary for a complete inspection and sampling. All identified ACBM must be abated.</td>
<td>Friable</td>
<td>1 Boiler</td>
</tr>
<tr>
<td>Break-In Locations Flooring Materials</td>
<td>Assumed throughout building at inaccessible locations under built-in shelving.</td>
<td>Non-Friable</td>
<td>10 Locations</td>
</tr>
<tr>
<td>Cement Panel</td>
<td>Assumed cement panel located in fume hood of Classroom 109 (First Floor).</td>
<td>Non-Friable</td>
<td>60 SF</td>
</tr>
</tbody>
</table>

Note: SF = Square-Feet, CF = Cubic-Feet, LF = Linear-feet, EA = Each
## LIST CONTRACT DRAWINGS

### Milton Elementary School Building

<table>
<thead>
<tr>
<th>Location</th>
<th>Exterior</th>
<th>A Flooring</th>
<th>B Pipe Covering</th>
<th>C Plumbing</th>
<th>D Heat Units</th>
<th>E Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Perimeter</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof</td>
<td>X</td>
<td></td>
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<td>X</td>
<td>X</td>
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<td>X</td>
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</tr>
<tr>
<td>Second Floor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### Maintenance Shop Building

<table>
<thead>
<tr>
<th>Location</th>
<th>Exterior</th>
<th>A Flooring</th>
<th>B Pipe Covering</th>
<th>C Plumbing</th>
<th>D Heat Units</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Building Perimeter</td>
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<tr>
<td>Roof</td>
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<td></td>
<td></td>
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<tr>
<td>First Floor</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Note:**

1. The roof drawing shows both the Milton Elementary School building and Maintenance Shop building work locations.
Milton Elementary School - Exterior
Asbestos Containing Material Locations

NOTE:

1. The Contractor shall start and complete all work shown on this drawing as the last task on the project. Prior to performing this work, 72-hour notification by the Contractor must be provided so that the Construction Manager can coordinate replacement of building components.

2. The Contractor can wrap and take the window as an option. The Contractor shall install plywood to cover the window opening and secure in a manner to prevent access.

LEGEND

= Location of Asbestos Building Caulk and Glazing.
Please see Table 1 for more description and quantities.

Note: This drawing is adapted from a 2017 Google Earth image and is diagrammatic, not to scale or proportion.

Cape Henlopen School District
Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing - EXT; Exterior
Asbestos-Containing Material Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
150 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427  www.compliancecanhelp.com
Milton Elementary School - Exterior - Roofing Asbestos Containing Material Locations

NOTE:
1. The Contractor shall start and complete all work shown on this drawing as the last task on the project. Prior to performing this work, 72-hour notification by the Contractor must be provided so that the Construction Manager can coordinate replacement of roof components.

2. The Contractor shall not damage any other roof components during his work.

LEGEND
- = Location of Asbestos flashing tar at chimney. Please see Table 1 for more description and quantities.
- = Location of Asbestos tar on top of parapet wall at brick cap. Please see Table 1 for more description and quantities.
- = Location of Asbestos parapet wall silver coating. Please see Table 1 for more description and quantities.
- = Location of Asbestos roof tar on roof edge. Please see Table 1 for more description and quantities.

Note: This drawing is adapted from a 2017 Google Earth image and is diagrammatic, not to scale or proportion.
Milton Elementary School
Basement - Asbestos Pipe Covering Locations
PLAN VIEW

NOTE:

1. Amount of asbestos-containing materials vary at each location.

2. Some locations may have two or more components requiring asbestos abatement.

3. The Contractor shall remove all asbestos pipe coverings located in ceiling where pipes penetrate second floor deck.

4. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School Distric: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing B-B: Basement - Interior
Asbestos Pipe Covering Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
130 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.compliancecanhelp.com
Milton Elementary School
Basement - Asbestos Plumbing Locations
PLAN VIEW

NOTE:
1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all asbestos pipe coverings located in ceiling where pipes penetrate second floor deck.
4. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

Assumed Asbestos Containing Materials (Table 2)

= Water Fixtures (Break in Points).
Break in points require opening up floors, walls, and ceilings at each location. Plumbing pipe insulation/fittings may be located inside floors and walls. Wall substrate varies throughout building. Each location may require multiple break in points and may contain multiple insulation/fittings.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School District: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing C-B: Basement - Interior
Asbestos Plumbing Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
150 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.compliancecanhelp.com
Milton Elementary School
Basement - Asbestos Heat Source Locations
PLAN VIEW

Assumed Asbestos-Containing Building Materials (See Table 2)

= Location of Heater Unit internal transite panels vary in size and quantity and may be mounted on floors, walls, or ceiling at each location. All heating units required to be opened for inspection and removal of panels if found. See Table 2.

NOTE:
1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

LEGEND

= Valve and Flange Gaskets. See Table 2.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School District: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing D-B: Basement - Interior
Asbestos Heat Source Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
150 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.compliancecanhelp.com
Milton Elementary School
Basement - Miscellaneous Asbestos Locations
PLAN VIEW

Assumed Asbestos-Containing Materials (Table 2)

- Location of Metal Fire Doors.
- Glue Dots behind Chalkboards on Walls.

NOTE:
1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

NOTE:
1. The Contractor shall remove the drop ceiling to access ceiling tile with asbestos glue dots.

LEGEND

- Location of Ceiling Tile with Asbestos Glue Dots above Drop Ceiling. Please see Table 1 for more description and quantities.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School District: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing E-B: Basement - Interior
Miscellaneous Asbestos Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
150 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.compliancecanhelp.com
Milton Elementary School
First Floor - Asbestos Flooring Locations
PLAN VIEW

**LEGEND**
- = Location of Asbestos 9" X 9" Floor Tile (with mastic).
  Please see Table 1 for more description and quantities.
- = Location of 12" X 12" Floor Tile over Asbestos Floor Tile Mastic over concrete.
  Please see Table 1.
= = Location of 12" X 12" Floor Tile over Asbestos 9" X 9" Floor Tile and Asbestos Felt Paper.
  Please see Table 1.

**Assumed Asbestos-Containing Building Materials (See Table 2)**
+ = Location of Assumed Flooring Materials located under Classroom built-in shelving. Removal of
  shelving required to access asbestos materials.

**NOTE:**
1. The Contractor shall remove all layers of floor coverings starting from the surface down to the
   lowest layer containing no asbestos containing materials. All non asbestos-containing materials
   in contact with asbestos materials shall be removed and disposed as asbestos materials.

**FIRST FLOOR FLOOR COVERINGS**

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School District: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing A-1: First Floor - Interior
Asbestos Floor Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
150 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.compliancecanhelp.com
Milton Elementary School
First Floor - Asbestos Pipe Covering Locations

PLAN VIEW

NOTE:
1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all asbestos pipe coverings located in ceiling where pipes penetrate second floor deck.
4. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

Assumed Asbestos-Containing Building Materials (See Table 2)

Assumed Pipe Coverings (Insulation and Fittings) Throughout Original Building at Inaccessible Locations Behind Cabinets, below Ceilings and penetrating the second floor deck (including Locations at all Heat and Water Sources).

Asbestos Pipe Coverings under Stage. Access through front panels.

LEGEND

= Location of Asbestos Pipe Coverings (Insulation and Fittings). Please see Table 1 for more description and quantities.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School District: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing B-1: First Floor - Interior
Asbestos Pipe Covering Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
150 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.compliancecanhelp.com
Milton Elementary School
First Floor - Asbestos Plumbing Locations
PLAN VIEW

Assumed Asbestos-Containing Building Materials (See Table 2)

🌟 = Water Fixtures (Break in Points).
Break in points require opening up floors, walls, and ceilings at each location. Plumbing pipe insulation/fittings may be located inside floors and walls. Wall substrate varies throughout building. Each location may require multiple break in points and may contain multiple insulation/fittings.

NOTE:
1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all asbestos pipe coverings located in ceiling where pipes penetrate second floor deck.
4. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

LEGEND

🌟 = Location of Asbestos Sink Undercoating. Please see Table 1 for more description and quantities.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School District: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing C-1: First Floor - Interior
Asbestos Plumbing Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
130 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.compliancecanhelp.com
Milton Elementary School
First Floor - Heat Source Locations

PLAN VIEW

Assumed Asbestos-Containing Building Materials (See Table 2)

△ = Location of Heater Unit internal transite panels vary in size and quantity and may be mounted on floors, walls, or ceiling at each location. All heating units required to be opened for inspection and removal of panels if found.

★ = Location of Elevated Vibration Dampening Cloths.

NOTE:
1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all asbestos containing materials in ceiling where pipes penetrate second floor deck.
4. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School District: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing D-1: First Floor - Interior
Asbestos Heat Source Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
130 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427  www.compliancecanhelp.com

CHSD-MES-FF-Heat-ACMLoc-D-1.srf
Milton Elementary School
First Floor - Miscellaneous Asbestos Locations
PLAN VIEW

Assumed Asbestos-Containing Materials (Table 2)

X = Location of Metal Fire Doors.
○ = Glue Dots behind Chalkboards on Walls.

NOTE:
1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School District: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing E-1: First Floor - Interior
Asbestos Miscellaneous Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
150 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.complianceanhelp.com
Assumed Asbestos Containing Materials (Table 2)

- Water Fixtures (Break in Points).

Break in points require opening up floors, walls, and ceilings at each location. Plumbing pipe insulation/fittings may be located inside floors and walls. Wall substrate varies throughout building. Each location may require multiple break in points and may contain multiple insulation/fittings.

NOTE:

1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all asbestos pipe coverings located in ceiling where pipes penetrate second floor deck.
4. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.
Milton Elementary School
Second Floor - Asbestos Heat Source Locations
PLAN VIEW

Assumed Asbestos Containing Materials (Table 2)

△ = Location of Heater Unit internal transite panels vary in size and quantity and may be mounted on floors, walls, or ceiling at each location. All heating units required to be opened for inspection and removal of panels if found.

NOTE:
1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all asbestos-containing materials in ceiling where pipes penetrate second floor deck.
4. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School Distriet: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing D-2: Second Floor - Interior
Asbestos Heat Source Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
130 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.compliancecanhelp.com
Milton Elementary School
Second Floor - Miscellaneous Asbestos Locations
PLAN VIEW

Assumed Asbestos-Containing Materials (Table 2)

= Location of Metal Fire Doors.

= Glue Dots behind Chalkboards on Walls.

NOTE:
1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.
Assumed Asbestos Containing Materials (Table 2)

- Water Fixtures (Break in Points).
  Break in points require opening up floors, walls, and ceilings at each location. Plumbing pipe insulation/fittings may be located inside floors and walls. Wall substrate varies throughout building. Each location may require multiple break in points and may contain multiple insulation/fittings.

NOTE:

1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all asbestos pipe coverings located in ceiling where pipes penetrate second floor deck.
4. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

MAINTENANCE SHOP
PLUMBING
DRAWING M-C
NOTE:

1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all drop ceilings to access asbestos-containing materials.
Milton Elementary School
Maintenance Shop Building

PLAN VIEW

Storage Room A
Storage Room B
Storage Room C

Wood Shop
Equipment Room
Classroom

Main Entrance
Main Entrance

Parking Lot

Assumed Asbestos-Containing Materials (Table 2)

= Location of Metal Fire Doors.
= Glue Dots behind Chalkboards on Walls.

NOTE:
1. Amount of asbestos-containing materials vary at each location.
2. Some locations may have two or more components requiring asbestos abatement.
3. The Contractor shall remove all drop ceilings to access asbestos-containing materials.

LEGEND
= Location of Asbestos Cement Wall & Ceiling Panels.
See Table 1 for more description and quantities.

NOTE: THIS SKETCH IS DIAGRAMMATIC AND IS NOT TO SCALE OR PROPORTION.

Cape Henlopen School District: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing E-M: Maintenance Building - Interior
Miscellaneous Asbestos Locations
February 20, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
150 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.complianceanhelp.com
SPECIFICATION

FOR

2019 UNDERGROUND STORAGE TANK REMOVAL AND CLOSURE

AT THE

MILTON ELEMENTARY SCHOOL BUILDING

PREPARED FOR:  Mr. Brian J. Bassett, Director of Capital Projects
                 Cape Henlopen School District
                 1270 Kings Highway
                 Lewes, Delaware 19958
                 (302) 436-1000

PREPARED BY:    Valentino P. De Rocili, Ph.D., CHMM
                 Compliance Environmental, Inc.
                 150 South Bradford Street
                 Dover, Delaware 19904

CEI Project No.: CEI-022219

DATE:           February 22, 2019
2019 UNDERGROUND STORAGE TANK REMOVAL AND CLOSURE
AT THE MILTON ELEMENTARY SCHOOL BUILDING

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Instructions To Bidders
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State of Delaware Required Language
General Specifications
Delaware Prevailing Wage Rates

Part III: Technical Specification

Summary of the Work - Underground Storage Tank Removal and Closure.
Section 3-12-30: Excavation and Backfill for Pipelines and Structures.

Appendix

A. Project Drawings
B. DNREC Historical Information: Milton Elementary School Building
PART I

BID INSTRUCTIONS, CONDITIONS AND FORMS
Bids for the Cape Henlopen School District, 2019 Underground Storage Tank Removal and Closure at the Milton Elementary School will be accepted until 4:00 p.m., local time on Friday, March 29, 2019 at the Compliance Environmental, Inc., 150 South Bradford Street, Dover, Delaware 19904.

The project consists of the complete removal and disposal of underground storage tank system which includes the pumping and disposal of product and tank bottoms, needed vapor purging, cleaning of the tank and fuel lines, removal and disposal of heating oil underground storage tank, removal and disposal of fuel lines, vent piping and electrical/signal conduits and wires. Also included is the demolition and disposal of concrete, vaults, excavation, backfilling of excavations with imported fill and completing the required DNREC tank closure process for the underground storage tank at the Milton Elementary School building.

A MANDATORY PRE-BID MEETING will be held on Thursday, March 14, 2019 at 10:00 A.M., local time, at the Milton Elementary School, 512 Federal Street, Milton, Delaware, 19968. Please meet in the parking lot at the rear of the building. ATTENDANCE AT THE PRE-BID MEETING IS A MANDATORY PREREQUISITE FOR SUBMITTING A BID ON THIS PROJECT. Each prospective bidder must be represented by a full-time employee of that company. Attendees may not represent more than one company.

For further information, please contact Valentino (Val) De Rocili at Compliance Environmental, Inc., (302) 674-4427, x101.

Prevailing Wage Rates, as described by Delaware Law, must be adhered to where applicable.

Orders for bidding documents are now being taken until three (3) days prior to the Pre-Bid Meeting by contacting Compliance Environmental, Inc., 150 South Bradford Street, Dover, Delaware 19904, (302) 674-4427. Bidding documents will be provided upon receipt of $ 75.00 per set (non-refundable). Checks are to be made payable to “Compliance Environmental, Inc.” All major credit and debit cards accepted.

The bids may not be withdrawn for a period of sixty (60) calendar days after the scheduled closing time for receipt of bids.

A bid bond is required. A performance bond and payment bond is required if the based bid is greater-than $ 50,000.00.

The Cape Henlopen School District may extend the time and place for the opening of bids from that described in the advertisement on not less than two (2) calendar days notice, by certified delivery, facsimile machine, or other electronic means to those bidders who obtained copies of the bidding documents.

The Cape Henlopen School District reserves the right to waive irregularities and reject any and all bids.

Mr. Brian J. Bassett, Director of Capital Projects
Cape Henlopen School District
1270 Kings Highway
Lewes, Delaware 19958
INSTRUCTIONS TO BIDDERS

Project: 2019 Underground Storage Tank Removal and Closure at the Milton Elementary School Building

Bids Due: March 29, 2019 at 4:00 PM (Local Time)

Bids Addressed
To: Mr. Brian J. Bassett, Director of Capital Projects
Cape Henlopen School District
1270 Kings Highway
Lewes, Delaware 19958
(302) 436-1000

The Contractor shall submit its bid to Compliance Environmental, Inc. as follows:

1. By Email: vderocili@compliancecanhelp.com
2. By FAX: 302-674-4429

The Contractor is responsible for submitting their bid by the required deadline and verifying that their bid has been received prior to the due date and time.

Bids must be completed by the Contractor in accordance with all instructions for providing a bid as included in these instructions. Please provide the following with your bid:

1. Completion of the Bid Form including acknowledgment of all addendums and properly completed Non-Collusion Statement and all other requirements. A copy of the Bidder Delaware Business License must be attached to the Bid Form.
2. Completed Bid Bond Form and Bid Bond document.
3. Copy of your current Delaware Business License.
5. List all Federal, State, and Local citations (e.g., Notice of Violation) received in the last five years.
INSTRUCTIONS TO BIDDERS
2019 Underground Storage Tank Removal and Closure
at the Milton Elementary School Building

6. List all litigation or pending litigation with any Delaware school district or agency within the last five years. This list shall include the Contractor and/or any Subcontractors and/or Vendors used by the Contractor.

7. List the number of Workers (including Supervisors) to complete the Work.

8. List the number of Calendar Days and Working Days to complete the Work.

9. List of all project Subcontractors.

Arrangements can be made by the Contractor directly with the Owner for additional site visits prior to the bid due date by contacting Valentino (Val) De Rocili, Compliance Environmental, Inc., 302-674-4427, x101.

Bids shall remain valid for sixty (60) days from the date of opening.

The Cape Henlopen School District reserves the right to reject all, or any bid, and to waive any informality or irregularity in any bid received.

A bid bond is required. The Contractor shall use the form provided in the Specifications.

The awarded Contractor shall provide a Payment Bond and Performance Bond for 100-percent of the amount included as the Base Bid indicated on the Bid Form prior to beginning the work if the bid is greater-than $50,000.00.

The Contractor shall begin the work within five (5) calendar days from the date of a Notice to Proceed and shall perform all site work within the time frame as specified.

The Contractor and their Subcontractors shall comply with all of the requirements of the Delaware Department of Labor, Delaware Prevailing Wage Regulations. Accordingly, the Contractor shall prepare and submit all payroll and time sheet information directly to the Delaware Department of Labor as required and provide a copy to the Owner.

Applications for payment shall be submitted by the Contractor to the Cape Henlopen School District on AIA Documents G702/G703.

At completion of the project and prior to the release of retainage monies, the Contractor shall submit an affidavit of payment of debts and claims, and affidavit of release of liens on AIA documents.
BID FORM

For Bids Due: March 29, 2019

To: Cape Henlopen School District
    1270 Kings Highway
    Lewes, Delaware 19958

Name of Bidder: ________________________________________________________________

Delaware Business License No.: ___________________________________________

Taxpayer ID No.: ________________________________________________________

(A copy of Bidder's Delaware Business License must be attached to this form.)

(DNREC Certification No.): ________________________________________________

Phone No.: (    ) __________-__________  Fax No.: (    ) __________-__________

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

Complete removal and closure of underground heating fuel tank system at the Milton Elementary School building and all other required work in accordance with the bidding documents, DNREC requirements, drawings and specifications.

$ ________________________________________________________

($ ___________________________ )
UNIT PRICES

Unit prices conform to applicable project specification section. The Cape Henlopen School District reserves the right to accept or reject any or all unit prices listed below. Refer to the specifications for a complete description of the following Unit Prices.

List the cost associated with adding or deducting each of the following items:

<table>
<thead>
<tr>
<th>UNIT PRICE No.</th>
<th>Description</th>
<th>ADD/DEDUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pumping, hand removal and disposal of tank product and tank bottoms per gallon,</td>
<td>$ __________</td>
</tr>
<tr>
<td>2</td>
<td>Excavation and properly storing potentially petroleum contaminated soil at the site per cubic-yard,</td>
<td>$ __________</td>
</tr>
<tr>
<td>3</td>
<td>Additional imported soil needed to in-fill the petroleum impacted soils volume, placed and compacted per cubic-yard,</td>
<td>$ __________</td>
</tr>
</tbody>
</table>
BID FORM

I/We acknowledge Addendums numbered ________, and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (60) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid.

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

Should I/We be awarded this contract, I/We pledge to achieve substantial completion of all of the work at the Milton Elementary School building with in forty-five (45) calendar days from the Notice to Proceed date using ___________ workers each day and completing in ___________ calendar days.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By ________________________________ Trading as ________________________________

(Individual’s / General Partner’s / Corporate Name)

______________________________ (State of Corporation)

Business Address:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Witness: ________________________________ By: ________________________________

(SEAL)

(Authorized Signature)

(Title)

Date: ________________________________

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Bid Security
(Others as Required by Project Manuals)
### BID FORM

#### SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor **must be listed for each category** where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Cape Henlopen School District, it is **required** that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<table>
<thead>
<tr>
<th>Subcontractor Category</th>
<th>Subcontractor</th>
<th>Address (City &amp; State)</th>
<th>Subcontractors tax payer ID # or Delaware Business license #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tank Removal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Waste Hauler</td>
<td></td>
<td></td>
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<tr>
<td>3. Analytical Services</td>
<td></td>
<td></td>
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</tbody>
</table>
2019 UNDERGROUND STORAGE TANK REMOVAL AND CLOSURE AT THE
MILTON ELEMENTARY SCHOOL BUILDING
Project Number: CEI-022219

BID FORM

WASTE DISPOSAL FACILITY LIST

The Contractor has included all required disposal of wastes in the bid and will use the following licensed and permitted waste disposal facilities on this project without substitution:

1. **Tank Product and Tank Bottoms:**
   - Facility Name: 
   - Facility Address: 
   - Facility Telephone Number: (_____) _______ - ____________  EPA/State ID: ____________________

2. **Underground Storage Tanks:**
   - Facility Name: 
   - Facility Address: 
   - Facility Telephone Number: (_____) _______ - ____________  EPA/State ID: ____________________
2019 UNDERGROUND STORAGE TANK REMOVAL AND CLOSURE AT THE
MILTON ELEMENTARY SCHOOL BUILDING
Project Number: CEI-022219

BID FORM

WASTE TRANSPORTER LIST

The Contractor has included all required transport of wastes in the bid and will use the following licensed and permitted transporter(s) on this project without substitution:

1. **Transporter 1:**
   Transporter Name: 
   Transporter Address: 
   Telephone Number: (______) _______ - ______

2. **Transporter 2:**
   Transporter Name: 
   Transporter Address: 
   Telephone Number: (______) _______ - ______
This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date to the Cape Henlopen School District.

All the terms and conditions of Project Number CEI-022219 have been thoroughly examined and are understood.

NAME OF BIDDER: __________________________________________

AUTHORIZED REPRESENTATIVE (TYPED): __________________________________________

AUTHORIZED REPRESENTATIVE (SIGNATURE): __________________________

TITLE: __________________________________________

ADDRESS OF BIDDER: __________________________________________

E-MAIL: __________________________________________

PHONE NUMBER: __________________________________________

Sworn to and Subscribed before me this __________________________ day of ________________ 20___.

My Commission expires __________________________. NOTARY PUBLIC __________________________

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.
STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: ________________________ of ________________________ in the County of ________________ of ________________________ in the County of ________________________ and State of ________________________ as Principal, and ________________________ of ________________________ in the County of ________________________ and State of ________________________ as Surety, legally authorized to do business in the State of Delaware ("State"), are held and firmly unto the State in the sum of ________________________ Dollars ($ ____________), or ____________ percent not to exceed ________________________ Dollars ($ ____________) of amount of bid on Contract Number CEI-022219, to be paid to the State for the use and benefit of ________________________ (Cape Henlopen School District) for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bonded Principal who has submitted to the ________________________ (Cape Henlopen School District) a certain proposal to enter into this contract for the furnishing of certain material and/or services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and execute this Contract as may be required by the terms of this Contract and approved by the ________________________ (Cape Henlopen School District) this Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with ________ seal and dated this ________ day of ________________ in the year of our Lord two thousand and ________________________ (20__)..

SEALED, AND DELIVERED IN THE
Presence of

________________________________________
Name of Bidder (Organization)

________________________________________
Authorized Signature

Title

________________________________________
Name of Surety

Title

________________________________________
Witness: ________________________

By: ________________________
PART II

GENERAL SPECIFICATIONS
STATE OF DELAWARE REQUIRED LANGUAGE (10-18-99)

The following language must be included in the front end of all Project Manuals:

RETAINAGE

Per Section 6962(d)(5) a., Title 29, Delaware Code: The agency may at the beginning of each public works project establish a time schedule for the completion of the project. If the project is delayed beyond the completion date due to the contractor's failure to meet his or her responsibilities, the agency may hold permanently, at its discretion, all or part of the contractor's retainage.

This forfeiture of retainage also applies to the timely completion of the punchlist. A punchlist will only be prepared upon the mutual agreement of the Owner, Architect and Contractor. Once the punchlist is prepared, all three parties will by mutual agreement, establish a schedule for its completion. Should completion of the punchlist be delayed beyond the established date due to the contractor's failure to meet his or her responsibilities, the agency may hold permanently, at its discretion, all or part of the contractor's retainage.

ACCEPTANCE OF BID and CONTRACT AWARD

Per Section 6962(d)(13) a., Title 29, Delaware Code, The contracting agency shall award any public works contract within thirty (30) days of the bid opening to the lowest responsive and responsible bidder, unless the agency elects to award on the basis of best value, in which case the election to award on the basis of best value shall be stated in the invitation to bid.

Each bid on any public works contract must be deemed responsive by the agency to be considered for award. A responsive bid shall conform in all material respects to the requirements and criteria set forth in the contract plans and specifications.

An agency shall determine that each bidder on any public works contract is responsible before awarding the contract. Factors to be considered in determining the responsibility of a bidder include:

1) The bidder's financial, physical, personnel or other resources including subcontracts;

2) The bidder's record of performance on past public or private construction projects, including, but not limited to, defaults and/or final adjudication or admission of violations of prevailing wage laws in Delaware or any other state;

3) The bidder's written safety plan;

4) Whether the bidder is qualified legally to contract with the State;

5) Whether the bidder supplied all necessary information concerning its responsibility; and,
STATE OF DELAWARE REQUIRED LANGUAGE (10-18-99)

6) Any other specific criteria for a particular procurement, which an agency may establish; provided however, that, the criteria be set forth in the invitation to bid and is otherwise in conformity with State and/or federal law.

If an agency determines that a bidder is nonresponsive and/or nonresponsible, the determination shall be in writing and set forth the basis for the determination. A copy of the determination shall be sent to the affected bidder within five (5) working days of said determination. The final determination shall be made part of the procurement file.

SUSPENSION and DEBARMENT

Per Section 6962(d)(14), Title 29, Delaware Code, any contractor who fails to perform a public works contract or complete a public works project within the time schedule established by the agency in the invitation to bid, may be subject to suspension or debarment for one or more of the following reasons:

1) Failure to supply the adequate labor supply ratio for the project;

2) Inadequate financial resources; or,

3) Poor performance on the project.

Upon such failure for any of the above stated reasons, the agency that contracted for the public works project may petition the Secretary of the Department of Administrative Services for suspension or debarment of the contractor. The agency shall send a copy of the petition to the contractor within three (3) working days of filing with the Secretary. If the Secretary concludes that the petition has merit, the Secretary shall schedule and hold a hearing to determine whether to suspend the contractor, debar the contractor or deny the petition. The agency shall have the burden of proving, by a preponderance of the evidence, that the contractor failed to perform or complete the public works project within the time schedule established by the agency and failed to do so for one or more of the following reasons:

1) Failure to supply the adequate labor supply ratio for the project;

2) Inadequate financial resources; or,

3) Poor performance on the project.

Upon a finding in favor of the agency, the Secretary may suspend a contractor from bidding on any project funded, in whole or in part, with public funds for up to 1 year for a first offense, up to 3 years for a second offense and permanently debar the contractor for a third offense. The Secretary shall issue a written decision and shall send a copy to the contractor and the agency. Such decision may be appealed to the Superior Court within thirty (30) days for a review on the record.
2019 Underground Storage Tank Removal and Closure at the
Milton Elementary School Building

GENERAL SPECIFICATIONS

The following requirements are provided and must be considered by the Contractor when preparing their cost proposal:

1. The requirements of this section, along with the requirements of AIA Document A201 General Conditions and Supplementary Conditions, OMB/DFM General Requirements, and the State of Delaware required language constitute the general specifications for this project.

2. Submittals:

   A. With the bid:

      1. Completed bid form with base bid and all alternates (if required), unit prices, addendum(s) acknowledgment, number of workers, number of working days and calendar days to complete the project, subcontractor list, and non-collusion statement.


      4. Bid bond (if required).

      5. List of Citations.

   B. Prior to the start of work: The Contractor shall submit to the Cape Henlopen School District and Compliance Environmental, Inc. (Compliance Environmental), for their review and consideration, the following:

      1. Copy of the Contractor’s Certificate of Liability Insurance from the Contractor’s insurance carrier with the minimum coverage and notations as follows:
i. $1 million combined single limit automobile liability, either "any auto" or scheduled hired and non-owned automobile coverages.

ii. $1 million per occurrence general liability plus $2 million aggregate general liability.

iii. Evidence of employer liability insurance: $100,000 each accident, $500,000 disease each employee, $100,000 disease policy limit.


v. Environmental liability insurance of $1 million per occurrence with 5-year indemnification clause if a claims made policy.

vi. Listed as additionally insured: Cape Henlopen School District and Compliance Environmental, Inc.

vii. A waiver of subrogation in favor of the Cape Henlopen School District and Compliance Environmental, Inc.

The insurance carrier must be financially capable, at a minimum rated A-, Class VII by AM Best.

2. All other required submittals.

C. Prior to final payment: The Contractor shall submit to the Cape Henlopen School District and Compliance Environmental for their review and consideration, the following:

1. Contractor signed Affidavit of Payment of Debts/Claims (AIA G706 form).
3. A copy of all daily site logs.
4. All waste disposal documentation.
5. All other required submittals.

3. The Contractor's subcontractors engaged in this project shall have insurance with at least the minimum coverage as listed above. The Contractor is responsible for insuring that their subcontractors have current policies with at least the minimum coverage as listed above. Also, should the Contractor fail to utilize any or all of the listed subcontractors in the performance of the work, the Contractor shall be subject to a penalty in the amount of one-percent (1%) of the total contract amount (not to exceed $10,000.00). The agency may determine to deduct payments of the penalty from the Contractor or have the amount paid directly to the agency. Any penalty amount assessed against the Contractor may be
remitted or refunded, in whole or in part, by the agency awarding the contract, only if it is established to the satisfaction of the agency that the subcontractor in question has defaulted or is no longer engaged in such business. No claim for the remission or refund of any penalty will be granted unless an application is filed within one (1) year after the liability of the successful bidder accrues. All penalty amounts assessed and not refunded or remitted to the Contractor will be reverted to the State of Delaware.

4. All work shall comply with the project specifications and with all laws, codes, ordinances, regulations, and requirements for this type of work wherever applicable. The most stringent of all foregoing shall govern. It is the Contractors responsibility to determine what laws, codes, ordinances, regulations, and requirements for this type of work are applicable.

5. The Owner reserves the right to award the project to the Contractor with the best Base Bid amount or Base Bid plus any Alternate bid item amount which the Owner feels is in the best interest of the Owner.

6. The unit prices listed on the bid form could be used to adjust the Contractor’s base bid, add or deduct, for changes in quantities on the project. However, the Owner reserves the right to accept or reject these listed unit prices and to ask the Contractor to provide other pricing based upon project conditions.

7. The Contractor shall remedy any defect due to faulty material or workmanship and pay for all damage to other work resulting therefrom.

8. The Contractor may be required, at times, to share the physical work area with others. The Contractor shall fully cooperate with the requirements of the building owner and Compliance Environmental.

9. Prior to the start of any work, the Contractor shall verify the work scope and actual site conditions. Any changed conditions or discrepancies in the work scope must be reported to Compliance Environmental immediately upon discovery. The Contractor shall not incur any billable costs for any changes in conditions until approved.

10. The Contractor shall not make an assignment of any Cape Henlopen School District contract for the benefit of creditors without the expressed written permission of the Cape Henlopen School District.

11. The Cape Henlopen School District reserves the right to discharge any persons connected with the Contractor including subcontractors for any or all of the following reasons:

A. Directing profanity or abusive language, or both, at Cape Henlopen School District representatives or their agents.
B. Interfering with Cape Henlopen School District representatives or their agents in performance of their work.

C. Disobeying or evading, or both, instructions of Cape Henlopen School District representatives or their agents.

D. Carelessness or incompetency, or both.

E. Being objectionable to the Cape Henlopen School District.

Discharged persons shall not be allowed to re-enter the project site without the written consent of the Cape Henlopen School District.

12. The Contractor shall be responsible for all means, methods, and work practices required to perform the work in accordance with the project specifications and within the established time limits.

13. The Contractor shall not allow any person or persons who is not under their direct supervision into work areas other than their work forces, and parties conducting official business.

14. The Contractor shall always take appropriate steps to protect human health, safety, and the environment. The methods used by the Contractor shall be adequate to protect site workers, visitors, project officials, and the general public, adjoining properties, and the environment. The methods shall, at a minimum, protect against bodily injury, sickness, disease or death, or to injury to tangible property, including the loss of use. The Contractor alone shall be responsible for the safety, the adequacy of his work, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance or operation. During the course of the project, protection of the property, all adjacent properties, occupants, materials and equipment shall be the responsibility of the Contractor. The use of good engineering controls shall be employed throughout the duration of the project by the Contractor.

15. The Contractor will be solely and completely responsible for conditions at the site, including the health and safety of all persons and property during performance of the work. This includes, but not limited to, electrical safety, mechanical (tool) safety, fire safety, and personal protective equipment safety. This requirement will apply continuously and not be limited to normal working hours. At no time shall the Contractor cause or allow to be caused, conditions which may cause risk or hazard to the site workers, visitors, project officials, or the general public. This work requires that the Contractor at times to work in and around live utilities which may include, but not limited to, electric, gas, sewer, and water.

16. Until the final acceptance of all the work shall be indicated in writing by the Cape Henlopen School District, the work shall be under the charge of and care of the
Contractor. The Contractor shall take every precaution against destruction of, injury, or damage to the work, or to any part thereof from any other cause whatsoever. The Contractor shall rebuild, repair, restore, and make good, at his own expense, all destruction of, injuries, or damage to the work or any of the above causes before its final completion and acceptance shall be indicated in writing by the Cape Henlopen School District.

17. Site observers and testing personnel employed by the Cape Henlopen School District shall be authorized to observe and where require, test all work done and materials furnished. Such observation and testing may extend to all or any part of the work and to the preparation or manufacture of the materials to be used. No inspection, oversight, or any failure to inspect, at any time or place, however, shall relieve the Contractor from their obligation to perform all the work strictly in accordance with the project specifications.

18. The Contractor shall provide and maintain in a neat and sanitary condition such sanitary conveniences and accommodations for the use of his employees as may be necessary to comply with the requirements and regulations of the Department of Health or of other agencies and shall commit no public nuisance.

19. The Contractor shall conduct all activities with only certified individuals. Additionally, the Contractor shall maintain its certification and the certification of all individuals throughout the project duration.

20. During all work, a State of Delaware licensed Supervisor, employed by the Contractor, shall be on site at all times. The licensed Supervisor shall maintain all daily records as required.

21. The Contractor shall not begin or continue work for any work until the Owner’s Representative is on the site. The Contractor shall provide adequate notice to the Owner’s Representative for the period of time agreed to by the Contractor and Owner’s Representative.

22. The Contractor shall be responsible for securing his work area during work periods. During this period of time, the Contractor shall be responsible for all damages or theft of his tools, equipment, and materials by himself or others.

23. The Contractor is responsible for all materials, equipment, tools, and any other items required to complete the work.

24. The Contractor represents that it and its subcontractors have all necessary licenses, permits, insurance, and certifications to perform the work, are financially capable to perform the work, and have the skill and work force required to complete the project. The Contractor, subcontractors, workers and supervisors at the site will be required, at all times, to meet all federal, state, municipal, and local certifications and requirements.
including, but not limited to, the State of Delaware regulations governing tank removal and closure activities, EPA, and OSHA laws and regulations. The Contractor shall be responsible for the payment of wages in accordance with all federal, state, or local requirements.

25. The Contractor, after receiving written notification from the Cape Henlopen School District, shall within forty-eight (48) hours, correct any work at their cost determined to be defective.

26. The Contractor covenants that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree in providing products or performing services required under this contract. The Contractor further covenants that in the performance of this contract, no person having any such interest shall be employed.

27. Only the Contractor shall be responsible or accountable for any losses or damages that shall or may happen to materials, tools, or equipment employed by the Contractor. This includes, but not limited to, damage, theft or any other loss. Additionally, if the Contractor (or vendors, subcontractors, or agents) cause additional contamination to any site, the Contractor shall immediately clean-up and remediate any such contamination at the Contractors cost. If the Contractor fails to do so, the State of Delaware may immediately contain, clean-up and remediate the contamination, all at the Contractors cost.

28. The Contractor, their employees and subcontractors shall incur the cost of all citations, fines, or penalties resulting from non-compliance with any federal, state, or local agency laws, codes, ordinances, regulations, and requirements for their work. The Contractor shall notify the Owner in writing within 24-hours if they, their employees or any subcontractor received any citations, fines, or penalties during the contract period.

29. The Contractor shall maintain books, records, documents, and other evidence pertaining to this Contract to the extent and in such detail as shall adequately reflect performance hereunder. The Contractor agrees to preserve and make available to the State, upon request, such records for a period of five (5) years from the date services were rendered by the Contractor. Records involving matters in litigation shall be retained for one (1) year following the termination of such litigation. The Contractor agrees to make such records available for inspection, audit, or reproduction to any official State representative in the performance of his/her duties under the Contract. Upon notice given to the Contractor, representatives of the State or other duly authorized State or Federal agency shall inspect, monitor, and/or evaluate the cost and billing records or other material relative to this Contract. The cost of any Contract audit disallowance resulting from the examination of the Contractors financial records will be borne by the Contractor. Reimbursement to the State for disallowance shall be drawn from the contractors own resources and not charged to Contract cost or cost pools indirectly charging Contract costs.
30. The Contractor shall pay, indemnify, and save harmless the Cape Henlopen School District, Compliance Environmental, Inc., their agents, subcontractors, and employees, from all suits, actions, claims, demands, damages, losses, expenses, and/or costs of every kind and description to which they may be subjected or put by reason of general and pollution liability, illness and injury (including death) to persons, exposure, the environment, or property resulting from the manner or method employed, neglect or default, performance of the work, waste disposal, and account of any act or omission by the Contractor, his agents and employees, vendors, subcontractors, facilities, and any other entity engaged by the Contractor. In addition, the Contractor agrees that it shall indemnify and hold harmless from and against any and all claims for injury, loss of life, or damage to or loss of use of property caused or alleged to be caused, by acts or omissions of the Contractor, its employees, its Subcontractors or vendors, and invitee on or about the premises and which arise out of the Contractors performance, or failure to perform as specified.

31. The Contractor shall provide the necessary quality control and quality assurance procedures to ensure that the work is completed according to all requirements.

32. It is the Contractors responsibility to coordinate with all trades and agencies involved with the work, including but not limited to, utilities to be removed or abandoned at the site.

33. No material or items shall be removed from the site without written approval from the Cape Henlopen School District.

34. The Contractor shall protect, where appropriate, all temporary and permanent facilities and utilities, and property outside the designated work areas and zones. The Contractor shall extend full cooperation to the Cape Henlopen School District and Compliance Environmental in all matters. At no time shall the Contractor cause or allow to be caused conditions which may cause risk or hazard to the occupants, workers, project officials, or the general public or create conditions that might impair safe use of the facility. The use of electricity, water or like utilities by the Contractor shall be coordinated through the owner of record.

35. The Contractor shall not use any of the Owner’s facilities, including this project location, for activities other than the specified work without written permission from the Owner.

36. The Contractor shall perform all activities required using new materials, good practices, and in a skillful manner. The Contractor shall meet all federal, state, municipal, and local laws, codes, ordinances, regulations, and requirements for this type of work and shall seek approval of appropriate agencies prior to work. This includes, but not limited to, the State of Delaware regulations governing tank removal and closure, OSHA, and the EPA.

37. All waste materials shall be neatly stacked, covered, secure, and kept in suitable containers and removed regularly from the premises by the Contractor. The Contractor
shall keep the premises clean, neat, and in orderly condition at all times at the discretion of the Cape Henlopen School District and Compliance Environmental.

38. The Contractor shall utilize signs, barriers, and other control measures to protect workers, visitors, project officials, and the general public.

39. The Contractor may consider working at any time (8-hour day, 10-hour day, 12-hour day, 7-days per week, etc.) as long as the Contractor follows project specification requirements which include, but not limited to, all regulations, ordinances, etc, and provides timely written notification to the Cape Henlopen School District and Compliance Environmental.

40. The Cape Henlopen School District reserves the right to make any changes or alterations in requirements as it deems necessary or desirable. The Contractor shall not have claim to extra compensation unless a claim is received by the Cape Henlopen School District, in writing, within five (5) days from the time of said changes.

41. Except for changes made by the Cape Henlopen School District, the Contractor shall make no claim for additional cost or time, or increase in price for the work included in the project specifications.

42. Any materials provided by the Contractor shall be new, contamination free, and of such quality as to satisfy the Owner and the Owner’s Representative. All materials and equipment provided or used by the Contractor shall be approved by all laws, codes, ordinances, regulations, and requirements for this type of work wherever applicable. This includes, but not limited to, the local fire department, and the Cape Henlopen School District.

43. Material and equipment for all trades delivered to the site shall be in good condition. The Contractor shall handle and store materials carefully in accordance with manufacturers recommendations and protect them from, but not limited to, moisture, extremes of heat and cold, damage, and theft.

44. Any substitution in material, equipment and/or methods by the Contractor shall be reviewed by the Cape Henlopen School District and Compliance Environmental in writing prior to their use. Any requests for substitution shall be provided by the Contractor in writing in a timely fashion, allowing ample time for review and consideration without delays to the schedule. The Contractor shall provide complete and adequate information for review of proposed substitutions. All items or services delivered during the project shall be of the same type and manufacture as specified or accepted as part of the bid unless specific approval is given by the Cape Henlopen School District considering recommendations from Compliance Environmental to do otherwise. Substitutions may require the submission of written specifications and product evaluation prior to any approvals being granted.
45. If conditions change while you are working in an area (people found at work locations, evidence that people were at work locations, changes outside, vandalism, etc.), the Contractor shall immediately call the Cape Henlopen School District, and Compliance Environmental. Additionally, the Contractor shall provide written documentation regarding the incident.

46. The Contractor shall not unreasonably encumber the work area(s), building or grounds with materials or equipment. The Contractor shall not use any facilities, equipment, or portions of the building or grounds other than the designated work area(s) and storage area(s) without the written permission of the Owner. Stockpile of materials and waste containers at locations after approved by the Owner’s Representative. If additional off-site storage is needed by the Contractor, the off-site storage will be provided by the Contractor at no additional cost to the Owner. Smoking, open fires, and heat sources will not be permitted within the building or grounds without written approval from the Owner. Alcoholic beverages and non-prescription drugs use is prohibited within buildings or on the property. No permanent modifications shall be made to any building component, sidewalk, parking area, signage, or any other appurtenances without expressed written permission from the Owner. See this Section for more information. The Contractor shall keep driveways and entrances serving the premises clear and available to the Owner, the Owner’s employees, and emergency vehicles at all times. The Contractor shall not use these areas for parking or storage of materials. The Contractor shall schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

47. At all work area locations shown on the specification drawings, the Contractor is responsible for determining the actual quantities. The Contractor shall consider these actual quantities when preparing its bid for the project.

48. During the performance of this contract, the Contractor agrees not discriminate against any employee or applicant for employment because of race, creed, color, sex, or national origin. The Contractor will take positive steps to ensure that applicants are employed and that employees are treated during employment without regard to their race, creed, color, sex, or national origin. Such action will include, but not 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 applications for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.

The Contractor 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 race, creed, color, sex, or national origin.

END OF SECTION
Via Electronic and Regular Mail

February 13, 2019

Mr. Valentino DeRocili
Principle Consultant
Compliance Environmental Inc.
150 South Bradford Street
Dover, DE 19904

Re: CEI-02219 Milton Elementary School Tank Removal, Sussex County DE

Dear Mr. DeRocili:

I am responding to your request for a category determination for the Milton Elementary School Tank Removal project, which is a state funded construction project located in Sussex County, DE. The work consists of removal and closure of an underground storage tank. You estimate the total cost of construction for this project to be

Pursuant to Delaware's Prevailing Wage law, 29 Del.C.§6960.... The specifications for every contract or aggregate of contracts relating to a public works project in excess of $500,000 for new construction (including painting and decorating) or $45,000 for alteration, repair, renovation, rehabilitation, demolition or reconstruction (including painting and decorating of buildings or works) to which this State or any subdivision thereof is a party and for which the State appropriated any part of the funds and which requires or involves the employment of mechanics and/or laborers shall contain a provision stating the minimum wages to be paid various classes of laborers and mechanics which shall be based upon the wages that will be determined by the Delaware Department of Labor, Division of Industrial Affairs, to be prevailing in the county in which the work is to be performed.

Therefore, since the total cost of construction is below the threshold dollar requirements for this project it will not be subject to Delaware's Prevailing Wage law, 29 Del.C.§6960 and Regulations.

This determination is directed solely to the parties identified herein. It is based on the unique facts relevant to this matter. It does not constitute precedent and should not be cited as such by future parties.

If you have any questions or I can provide any additional assistance, please do not hesitate to contact me at 302 761 8326.

Sincerely,

Michael Hopkins
Labor Law Enforcement Officer
Michael.Hopkins@state.de.us
PART III

TECHNICAL SPECIFICATIONS
COMPLIANCE ENVIRONMENTAL, INC.

SUMMARY OF THE WORK - UNDERGROUND STORAGE TANK REMOVAL AND CLOSURE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including all specification sections and any other information in the bidding documents apply to this section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of the complete removal and disposal of underground storage tank systems which includes the pumping and disposal of product and tank bottoms, needed vapor purging, cleaning of tank and fuel lines, removal and disposal of heating oil underground storage tank, removal and disposal of fuel lines, vent piping and electrical/signal conduits and wires. Also included is the demolition of concrete, vaults, excavation, backfilling of excavations with imported fill and completing the required DNREC tank closure process including, including, but not limited to, notifications, soil sampling, waste and tank disposal documentation and reports for the underground storage tank at the Milton Elementary School building as follows:

1. **Project Name:** 2019 Underground Storage Tank Removal and Closure at the Milton Elementary School Building.

2. **Project Location:** Milton Elementary School, 512 Federal Street, Milton, Delaware, 19968.

3. **Owner:** Cape Henlopen School District, 1270 Kings Highway, Lewes, Delaware 19958.

4. **Work Period:** All required activities must be started as determined by the Cape Henlopen School District on or about July 15, 2019 and substantial completion of the project must be achieved within forty-five (45) calendar days starting from the Notice to Proceed date. The work period includes the time required for the DNREC notification prior to site work.

5. **Working Times and Schedule:** The Owner desires that all work be completed as soon as possible without the addition of overtime hours. The town is sensitive to activities creating noise and dust and strictly enforces their ordinances. The Contractor shall only perform the work during daytime hours in accordance with all federal, state, and municipal laws, regulations and ordinances.

6. **Prevailing Wage Rates:** A Prevailing Wage Rate determination was made by the State of Delaware and are attached.

7. **Liquidated Damages:** The Contractor shall pay liquidated damages at the rate of $2,000.00 per calendar day if substantial completion is not achieved within the time specified.

8. **Owner's Representative:** Compliance Environmental, Inc. (CEI) will represent the Owner on this project. CEI will be performing routine inspections during the Contractor's work and will act as a liaison between the Contractor and Owner. The Contractor shall provide adequate notice to CEI to provide site meetings and inspections. Adequate notice is the period of time agreed to by the Contractor and CEI.
9. **Bonds**: A Bid bond is required with the bid to include 10-percent of the amount of the Base Bid plus any alternates (if applicable). **If you are providing a certified check as the bid bond, you must write the check to the Cape Henlopen School District and include it with your bid by the due date and time for your bid to be considered.** The awarded contractor shall also provide a Payment bond and Performance Bond for 100-percent of the amount included as the Base Bid plus any alternates on the Bid Form prior to beginning the work if the total bid is greater than $50,000.00. **Payment and Performance Bonds must be provided by the awarded contractor prior to execution of a contract and notice to proceed.**

B. **Contract Documents**, dated February 22, 2019 were prepared for the project by Compliance Environmental, Inc., 150 South Bradford Street, Dover, Delaware 19904, CEI Project Number CEI-022219. Conditions and requirements are indicated on the contract documents including, but not limited to, this specification, drawings, and any addenda to the specifications.

C. **The Work** consists of the complete removal and disposal of underground storage tank systems which includes the pumping and disposal of product and tank bottoms, needed vapor purging, cleaning of the tank and fuel lines, removal and disposal of heating oil underground storage tank, removal and disposal of fuel lines, vent piping and electrical/signal conduits and wires. Also included is the demolition of concrete, vaults, excavation, backfilling of excavations with imported fill and completing the required DNREC tank closure process including, but not limited to, notifications, soil sampling, waste and tank disposal documentation and reports for the underground storage tank at the Milton Elementary School building. This work is being performed in preparation of building renovation. Therefore, all underground storage tank systems and appurtenances must be removed on this project.

1. **Work to be Performed Under This Contract**: includes, but not limited to, the complete removal and proper disposal the heating oil underground storage tank (tank) at the building, completion of the required DNREC tank closure procedures and all other work in this specification. The heating oil tank located at the building includes the following:

   i. **Milton Elementary School Building**:
      (Sometimes listed as the Milton Middle School)
      512 Federal Street, Milton, Delaware 19968
      DNREC Facility ID: 5-000913
      Tank ID-2, 10,000-gallon heating oil underground storage tank

      **The Contractor shall provide in its lump sum cost for the project which includes all of the work included in this summary of work and all other requirements in the contract documents.**

      **All work on this project must be performed in accordance with State of Delaware, Department of Natural Resources and Environmental Control (DNREC) requirements. Additionally, the work must be performed according to all federal, state and local laws, regulations, ordinances, and requirements. The Contractor performing the work must be currently certified by DNREC as a Delaware Certified UST Closure Contractor and remain certified for the entire project duration.**
3. **Project Site Notices:** The Contractor shall provide, as a minimum and at all times, at a visible location at the project site, the following:

   (i). Equal Employment Opportunity and Minimum Wage Information
   (ii). State of Delaware Prevailing Wage Determination
   (iii). Emergency Planning Procedures
   (iv). Subcontractor List
   (v). Material Safety Data Sheets

4. **Submittals Prior to Site Work:** The Contractor shall provide the following items to the Owner’s Representative prior to project work:

   (i). Signed Contracts.
   (ii). Signed Payment and Performance Bonds (if required).
   (iii). Certificate of Liability Insurance.
   (iv). Project Schedule.
   (v). Complete list of Project Supervisors and Workers including names and addresses.

5. **DNREC Tank Closure Procedures:** The Contractor shall include in its bid all costs associated with completing all of the requirements by DNREC regarding tank closure procedures for non-impacted soil and non-impacted groundwater. The Contractor shall provide the necessary UST Closure Notification, sampling, analytical test documentation, and all of the requirements required by DNREC for proper UST closure included in all applicable State of Delaware regulations, including, but not limited to, the following:


   iii. All other required DNREC requirements and regulations.

6. **Documentation:** The Contractor shall include in its bid the cost of providing copies of all project documents to the Owner’s Representative, including, but not limited to, all documentation sent to and received from DNREC, all waste disposal and recycling waste manifests and documentation including receiving tickets from waste disposal and recycling facilities. All documentation must be provided to the Owner’s Representative prior to final project payment.

7. **Tank Product and Bottoms:** The Contractor shall include in its bid the cost of pumping and hand removal as necessary and the proper transport and disposal of tank product and tank bottoms as follows:

   i. **Milton Elementary School, 10,000-gallon UST:**
      500-gallons total of tank product and tank bottoms.

8. **Fuel Removal:** The Contractor shall remove all liquids and purge all vapors from all fuel lines starting at each boiler to the tank. All fuel lines, injectors, burner, pumps and filters shall be cleaned to remove all liquids and solids. The Contractor shall remove and dispose of all fuel lines starting at the tank to the location shown on the drawings. Cap and seal all
underground piping not removed at the location shown on the drawing. Capping and sealing by the Contractor shall be substantial and not allow stormwater or groundwater into existing underground piping.

9. **Unit Prices:** The unit prices listed on the bid form could be used to adjust the Contractor’s base bid and alternates, add or deduct, for changes in quantities on the project. However, the Owner reserves the right to accept or reject these listed unit prices and to ask the Contractor to provide other pricing based upon project conditions.

10. **Measurements and Dimensions:** It is the Contractor’s responsibility to verify all measurements prior to the openings of the bids. Any discrepancies in the measurements or work site conditions must be made prior to the opening of the bids.

11. **Work Area Security & Safety:** In performing the work, the Contractor is responsible for the security and safety of the work area and protection of any and all equipment, materials, and surfaces not scheduled for work activities. The Contractor shall not be provided with a key to building(s) where work is to be performed. It is the Contractor’s responsibility to adequately barricade, sign and control access to work areas in such a way to prevent accidental access to work areas.

12. **Damage Repair & Missing Item Replacement:** The Contractor shall repair or replace, at his own expense, any damage occurring during his activities to any building component or property not scheduled for work activities. Any damaged or missing items will be replaced or paid for by the Contractor prior to receipt of final contract payment.

13. **Payment Requests:** The Owner’s Representative shall review and recommend payment of all invoices from the Contractor. Invoices shall be submitted by the Contractor in a form acceptable to both the Owner’s Representative and Owner. Five percent (5%) retainage will be deducted from invoices until final completion.

14. **Toilet Facilities:** The Contractor shall provide, at his own expense, toilet facilities for his use during the project.

15. **Underground Storage Tank System Removal:** Complete removal and disposal of the existing heating oil underground storage tank including the required pumping, removal and disposal of product, tank bottoms, needed vapor purging, cleaning removal and disposal of heating oil underground storage tank, demolition and removal of concrete, vaults, and hatches, removal and disposal of all vent piping, fuel lines, and associated piping including underground electrical conduits/ wires, and the backfilling of all excavations to existing grade. The removal and disposal includes the tank site and all underground system components including the tank, and underground piping/conduits terminating at a point inside of the building. The Contractor shall remove all heating oil fluid and vapors starting at the boiler pump inside of the building to the tank site. The Contractor shall remove and dispose of the pump filter(s).

Tasks listed below are not provided in any particular order. The Contractor shall include in its bid all costs associated with each of these items and all other items listed in this summary of work and the contract documents.

i. Complete and submit the required DNREC UST Closure Notification form for the removal and ultimate closure of the tank within the time frame required by DNREC.
ii. Removal and disposal of one 10,000-gallon heating oil tank, associated piping and electrical conduits/wires. Top of concrete to bottom of tank is approximately 118-inches.

iii. Tank and fuel lines are to be degassed, product and tank bottoms removed, cleaned, marked, and transported to a licenced recycling facility for ultimate off-site destruction of the tank shells and fuel lines. Re-use of the tank, fuel lines, vent piping or any other tank system components or appurtenances are prohibited. Purge and clean all fuel lines from the boiler to the tank prior to removal.

iv. Perform excavation for trenches and tank according to Section 3-12-300 (structures). The Contractor shall perform any necessary sheeting, shoring and bracing necessary to prevent a cave in, structural or property damage, and copy with all federal, state and local laws and regulations. Excavate to remove and dispose the tank, fuel lines, vent piping and electrical/signal conduits to the location shown on the drawing. Remove and dispose of concrete top and all necessary asphalt and stone needed to perform excavation. Asphalt shall be saw cut allowing for a clean edge after completion. All concrete, asphalt and stone shall be left on-site near the excavation. All suitable non-impacted soils from the excavation can be used as in-fill material at the excavation area.

v. Perform any necessary dewatering according to Section 3-12-300. Control water in excavation to allow adequate compaction of imported select soil backfill provided by Contractor. The Contractor shall include in its bid all costs associated with this item.

vi. Remove top concrete ballast slabs above tank (if applicable) to access tank from removal. Concrete ballast slabs below the tank can remain.

vii. Excavate any potentially petroleum contaminated soil as directed by DNREC and the Owner’s Representative and placed it on a double-layer 6-mil polyethylene sheeting and covered with a single layer of polyethylene at a location approved by the Owner’s Representative and DNREC on the property. The Contractor shall place the soil on the sheeting in a manner to prevent contact of the soil with the existing surface and secure the cover in a manner to prevent removal by wind. For planning purposes, the Contractor shall place all potentially petroleum contaminated soil at one location on the property as shown at the planned soil stockpile area on the drawings. All costs associated with excavating and storing potentially petroleum contaminated soil at the site is not included in the Contractor’s base bid. Do not include the cost of sampling or disposal of potentially petroleum contaminated soil in the bid. The cost of any additional imported soil needed to be placed and compacted to in-fill the petroleum impacted soils volume is not included in the Contractor’s base bid.

viii. The Contractor shall perform the necessary soil sampling and analysis needed for a non-impacted site tank closure in accordance with DNREC requirements. The Contractor shall include all of the necessary soil sampling and analysis required by DNREC in its bid for the project.
ix. Complete and provide all of the required DNREC soil sampling and analytical reports and documentation needed for tank closure. Provide copies of all information to the Owner's Representative prior to final payment.

x. Perform backfilling for trenches and tank to existing grade elevation according to Section 3-12-300. All suitable non-contaminated soil removed from excavations can be used as backfill. Provide and compact all backfilling materials at all excavation areas to in-fill work areas to existing grade. The Contractor shall include in its bid the cost of performing all needed backfilling except for the backfill needed for potentially petroleum contaminated soil volume.

xi. Complete transport and off-site disposal (or recycling) of the tank, all removed fuel lines, vent piping, electrical/signal conduits and wiring, and any other article removed by the Contractor. The Contractor shall provide disposal manifests and facility documentation to the Owner's Representative prior to final payment.

xii. Complete all other requirements listed in this summary of work and all other requirements in the Contract Documents.

16. Excavation and Backfill for Pipelines and Structures: The Contractor shall perform all excavation, backfilling, dewatering, sheeting, shoring and bracing in accordance with Section 3-12-300, the Summary of Work section, and all other sections of the specifications and include all cost associated with this work in its bid.

17. Backfilling with Soil: The Contractor shall provide the following:

1. Submittals. Prior to performing backfilling using imported (off-site) soil backfill material, the Contractor shall provide a submittal for the proposal soil backfill material for approval at least one week before the start of the work. The submittal shall include a description of all proposed soil backfill material and the source of supply. Additionally, the Contractor shall submit a 5-gallon bucket sample of the proposed imported soil backfill material for gradation and proctor testing.

2. Imported Soil Backfill Materials. Imported soil backfill material shall meet the USCS classifications of SW, SM, SP, SC, or GW, with no more than 35% passing a No. 200 sieve (ASTM D1140), and a plasticity index (ASTM D4318) not exceeding 6.

3. Placement of all Soil Backfill Materials. The Contractor can use all clean existing soil material excavated as backfill material. Imported backfill material must be provided by the Contractor to fill the void within excavations after the removal of tank, piping, concrete, paving, stone and any other material or tank component removed from the excavations. All loose materials shall be removed from excavation prior to the placement of backfill materials. Subsequently, the bottom of excavation shall be compacted to a visually firm and stable condition. All soil backfill material shall be placed in horizontal thin lifts with a compacted thickness no greater than 8 inches. Each thin lift of soil backfill material shall be compacted to at least 90% of maximum dry density, as determined by the Modified Proctor Test (ASTM D1557). The soil backfill material shall be conditioned by the Contractor to provide a moisture content that will facilitate compaction (typically +/- 2 to 3% of optimum moisture).
iv. **Testing During Soil Backfill Placement.** Placement and compaction of all backfill materials will be monitored and tested on a full-time basis by a qualified geotechnical technician at no cost to the Contractor. The Contractor shall provide adequate notification prior to placement of any backfill to the Owner's Representative for scheduling of the geotechnical technician.

The Contractor can include in its bid the cost of using all existing soil material as suitable backfill material and assume it to be non-potentially petroleum contaminated soil and suitable for backfilling in accordance with all of the requirements in this addendum when preparing its bid. All existing soil material must be placed and compacted at excavations locations by the Contractor. No existing soil material shall be removed from the site without the written permission of the Owners Representative.

18. **Alternative Use of Stone as Imported Backfill:** In lieu of imported soil material to fill the void in excavations after the removal of the tank, piping, concrete, paving, stone and any other material or tank components removed from the excavations, the Contractor can provide imported stone to be used as backfill at all excavations at no additional cost to the Owner. The stone shall meet the requirements of AASHTO No. 57 and shall be placed by the Contractor in maximum 12-inch lifts. Additionally, the stone shall be placed on top of the finished soil elevation after backfilling and compaction is completed by the Contractor using the existing soil material. Each stone lift shall be compacted using a vibratory plate compactor. Prior to using stone as imported materials, the Contractor shall provide a submittal for the proposal stone backfill material for approval at least one week before the start of the work. The submittal shall include a description of all proposed stone material and the source of supply. Placement and compaction of all stone backfill materials will be monitored on a full-time basis by a qualified geotechnical technician at no cost to the Contractor. The Contractor shall provide adequate notification prior to any placement of backfill to the Owner's Representative for scheduling of the geotechnical technician.

19. **Alternative Use of Stone, Fabric and Soil as Backfill:** In lieu of using all imported soil material or using all stone to fill the void in excavations after the removal of the tank, piping, concrete, paving, stone and any other material or tank components removed from the excavations, the Contractor can use a combination of stone, fabric, excavated soil and imported soil material (if needed) to backfill and compact all excavations to existing grade. All loose materials shall be removed from excavation prior to the placement of backfill materials. Subsequently, the bottom of excavation shall be compacted to a visually firm and stable condition.

i. **Submittals.** The Contractor shall provide the following submittals for approval prior to using stone, imported soil, or fabric on the project.

(a). **Stone.** Stone used on the project shall meet the requirements of AASHTO No. 57. Prior to using stone on the project, the Contractor shall provide a submittal for the proposal stone backfill material for approval at least one week before the start of the work. The submittal shall include a description of all proposed stone material and the source of supply.

(b). **Imported Soil Material.** Imported soil material shall meet the USCS classifications of SW, SM, SP, SC, or GW, with no more than 35% passing a No. 200 sieve (ASTM D1140), and a plasticity index (ASTM D4318) not exceeding 6. Prior to performing backfilling using imported (off-site) soil
backfill material, the Contractor shall provide a submittal for the proposal soil backfill material for approval at least one week before the start of the work. The submittal shall include a description of all proposed soil backfill material and the source of supply. Additionally, the Contractor shall submit a 5-gallon bucket sample of the proposed imported soil backfill material for gradation and proctor testing.

(c) Fabric. Fabric used on the project shall be non-woven and have a weight of 6 ounces per square-yard. Prior to using fabric on the project, the Contractor shall provide a submittal for the proposal fabric material for approval at least one week before the start of the work. The submittal shall include a description of the proposed fabric and the source of supply.

ii. Placement of Stone, Fabric, Excavated Soil and Imported Soil as Backfill Materials. Stone shall be used by the Contractor as the first backfill material used at excavations, placed from the bottom of the excavations to at least 4-vertical feet below existing grade. The stone shall be placed by the Contractor in maximum 12-inch lifts. Each stone lift shall be compacted using a vibratory plate compactor. The use of an excavator bucket for providing compaction of stone or soil on the project in not acceptable. The stone shall be placed to an elevation to allow safe entry of site personnel within the excavation area. After placement of the stone, the Contractor shall place a fabric over the stone completely cover the stone using 12-inch laps in the fabric. After placing the fabric, the Contractor shall place and compact the excavated soil material on top of the fabric in lifts. Imported soil material, if needed to refill the excavation to grade, shall be placed and compacted on top the excavated soil material by the Contractor in lifts. All soil backfill material (existing soil and imported soil) shall be placed in horizontal thin lifts with a compacted thickness no greater than 8 inches. Each thin lift of soil backfill material shall be compacted to at least 90% of maximum dry density, as determined by the Modified Proctor Test (ASTM D1557). The soil backfill material shall be conditioned by the Contractor to provide a moisture content that will facilitate compaction (typically +/- 2 to 3% of optimum moisture).

iii. Excavated Soil Material. The Contractor can include in its bid the cost of using all excavated soil material as suitable backfill material and assume it to be non-potentially petroleum contaminated soil and suitable for backfilling in accordance with all of the requirements in this addendum when preparing its bid. All existing soil material must be placed and compacted at excavations locations by the Contractor. No existing soil material shall be removed from the site without the written permission of the Owners Representative.

iv. Testing During Soil Backfill Placement. Placement and compaction of all backfill materials will be monitored and tested on a full-time basis by a qualified geotechnical technician at no cost to the Contractor. The Contractor shall provide adequate notification prior to placement of any backfill to the Owner’s Representative for scheduling of the geotechnical technician.
20. **Waste Disposal:** All tank system components removed by the Contractor shall be properly handled, stored and disposed (or recycled) by the Contractor at a licensed and permitted facility. The Contractor shall utilize the disposal facility or recycling facility listed on the bid form for this project. Waste shall be stored in a manner which does not block ingress or egress of the buildings or the property and does not pose a fire or safety concern as determined by the Owner or the Owner’s Representative. No disposal of any wastes at the property is permitted by the Contractor, subcontractors or vendors on this project.

21. **Use of Drawings:** All drawings provided in the document are diagrammatic, not to proportion and are not to scale. Drawings are provided to the Contractor for reference purposes. The Contractor shall develop and verify the actual quantities and locations required for all of the work and consider these actual quantities when preparing its bid.

22. **Sheeting, Shoring and Bracing:** If sheeting, shoring or bracing is used, the Contractor shall perform this work in accordance with Section 3-12-300 and all federal, state and local laws and regulations, including, but not limited to, OSHA regulations. All work at locations with sheeting, shoring and bracing must be performed according to OSHA regulations. The Contractor shall include in its bid all costs associated with this item.

23. **Electric Power:** The Owner shall provide limited low voltage temporary electric service (single phase, 120-volt, 20 amp circuit source). The Contractor shall provide the Owner with their specifications within five (5) calendar days prior to scheduling the start of work. The Owner shall provide a plug type outlet within 300 feet of work locations. Adequate extension cords shall be provided by the Contractor. If required by the Contractor, a licensed electrician shall be provided by the Contractor, at no additional cost, for making electrical connections and disconnections.

24. **Project Supervisor:** During all tank work, a State of Delaware licensed Supervisor employed by the Contractor shall be on the site at all times. The licensed Supervisor shall maintain all daily records and complete all documentation as required.

25. **Damage Repair:** The Contractor shall repair or replace, at his own expense, any damage occurring from his activities for items the Owner desires to save prior to demolition or any building component. Any damaged items will be replaced or paid for by the Contractor prior to receipt of final contract payment.

26. **Stop Work:** If the Owner, or the Owner’s Representative presents a written stop work order to the Contractor, the Contractor shall immediately stop all work in a fashion not to create a hazard to workers, building occupants, site users or others.

27. **Building and Property Usage:** The Contractor shall not unreasonably encumber the site with materials or equipment and may be required to share the project site with others. Stockpile all materials at locations after approved by the Owner’s Representative. If additional off-site storage is needed by the Contractor, the off-site storage will be provided by the Contractor at no additional cost to the Owner. Smoking or open fires will not be permitted within the building. Alcoholic beverages and non-prescription drugs use are prohibited within buildings or on the property. No permanent modifications shall be made to any building component, sidewalk, parking area, signage, or any other appurtenances without expressed written permission from the Owner.
28. Confined and Enclosed Spaces: The Contractor shall follow OSHA requirements for work in confined and enclosed spaces.

29. Lock-Out and Tag-Out Procedures: The Contractor shall follow OSHA requirements for all equipment and locations requiring lock-out and tag-out. The Contractor shall verify, prior to the start of work in any work area, that all utilities (e.g., water, fuel oil, gas, electric) are isolated (dead) and purged.

30. Underground Utilities Locations: The Contractor shall contact Miss Utility prior to any excavation on the project. The Contractor shall renew the Miss Utility ticket as required. The Contractor is responsible for locating all underground utilities within the work area and ensuring that he will not damage any underground utilities.

31. Building Access: No contractor personnel, subcontractors, vendors or visitors are allowed inside the school buildings except in designated work areas without written permission from the Owner.

32. Zero Tolerance: Cape Henlopen School District has a Zero Tolerance for drugs, alcohol, tobacco products and weapons. The use or possession of drugs, tobacco products, weapons, firearms, dangerous devices, or destructive devices are prohibited and will not be tolerated at buildings or properties. Additionally, the use of vulgar language will not be tolerated on school grounds.

33. Personnel Clothing Requirement: At no time will the Contractor’s employees expose bare skin or remove any articles of clothing in clear sight on the property except at the work area designated hygiene shower locations (if applicable).

34. Scaffolding, Lifts and Ladders: Safety is a prime importance on this project. If scaffolding is used, the Contractor must erect, use, and disassemble the scaffolding in accordance with OSHA Standards. Additionally, all lifts and ladders shall meet and be used in accordance with OSHA Standards. The Contractor shall insure that all building components are protected during the use of scaffolding, lifts and ladders. The Contractor shall use only trained personnel experienced with using scaffolding, lifts, ladders, and working in elevated conditions.

D. Single Prime Contract: The Work will be constructed under a single prime contract. The Contractor shall not sublet this contract without expressed written permission from the Owner.

E. Pre-site work assessment: A comprehensive pre-site work assessment will be completed by the Contractor, Owner’s Representative, and any other individual authorized by the Owner. An agreed list of damage to structures, surfaces, and equipment shall be developed and agreed upon prior to the commencement of work by the Contractor.

F. Potentially Contaminated Petroleum Soil: Any potentially contaminated petroleum soil discovered and contaminated in the opinion of the Owner’s Representative in agreement with DNREC shall be excavated and stored on the property at a location approved by DNREC and the Owner’s Representative. For planning purposes, the Contractor shall place all potentially petroleum contaminated soil at one location on the property within one hundred yards from the work area. The Contractor shall excavate any potentially petroleum contaminated soil and placed it on a double-layer 6-mil polyethylene sheeting and covered with a single layer of polyethylene at the approved storage location on the property. The Contractor shall place the
soil on the sheeting in a manner to prevent contact of the soil with the existing surface and secure the cover in a manner to prevent removal by wind. Storing shall include the Contractor shall maintain the cover during soil stockpiling and dispose of all plastic materials when all soil is removed. All costs associated with excavating and storing potentially petroleum contaminated soil is not included in the Contractor’s base bid.

G. Plan of Action: The Contractor shall submit a detailed plan of action which details proposed procedures used for completing all of the work in accordance with the Contract Documents. Included in the plan shall be the location and layout of work areas, the sequence of work, a schedule, the interface of all trades, methods used to ensure safety of the workers, building occupants, and users of the property, and a detailed description of methods that will be used to address potentially contaminated petroleum soil.

H. Potential Site Hazards: The Contractor shall inform all workers, supervisors, subcontractors, and Owner’s Representatives who will be at the project site of the seriousness of any hazard and of proper work procedures which must be followed. The Contractor shall, continuously and at all times, take the measures necessary including, but not limited to, procedures, work practices, and methods, to ensure complete compliance with federal, state, and local regulations and eliminate the potential for site hazards.

I. Site Safety: The Contractor shall at all times comply with all applicable federal, state and local, laws and regulations, including environmental, health and safety laws and regulations, pertaining to its services. The Contractor represents it is familiar with all aspects of the job site (including but not limited to site conditions and site access limitations) and hazards associated with tank removal. The Contractor shall be solely responsible for the safety of its personnel, subcontractors or any third party in its work areas or common areas and Contractor hereby releases and indemnifies Client and Owner’s Representative from any and all claims brought by, or on behalf of itself, its employees or its subcontractors arising out of or in connection with its Contractor’s services or presence at the job site. Prior to the start of daily work, and at the conclusion of each day, the Contractor shall visually inspect his work areas and all areas required to access his work areas. Any unsafe conditions found during any inspection shall be reported to the Owner’s Representative immediately in writing subsequent to each inspection. The report provided by the Contractor to the Owner’s Representative shall adequately describe the unsafe condition and the procedures the Contractor has immediately taken to correct the unsafe condition. The Contractor shall promptly report any and all accidents to the Owner’s Representative in writing, and shall include sufficient details regarding the accident and procedures implemented by the Contractor to prevent similar accidents. The Contractor shall be responsible for reporting accidents to the appropriate regulating agency as may be required by applicable law or regulation.

1.3 WORK SEQUENCE

A. The Work will be conducted in distinct phases at each tank site location.

1. Each work phase shall consist of planning, establishing of work areas, installation of all required engineering controls, tank system removal, waste transport and disposal, and post work inspection.
2. The following inspections and meetings will be performed by the Contractor and Owner's Representative simultaneously for project activities:

i. **Planning:** The Contractor shall attend a pre-construction meeting scheduled prior to site activities. A visual planning inspection will be performed at each work area to identify conditions and hazards. This inspection will occur prior to the site work.

ii. **Work Area:** Work areas will be visually inspected each day prior to the start of work activities and upon work completion each day to insure that the integrity of the work area without hazards. This inspection does not relieve the Contractor of their responsibilities of performing the work in accordance with the Contract Documents.

iii. **Substantial Completion:** After completion of all applicable removal and site waste disposal and all other site activities have been completed and issuance of tank closure status by DNREC. A final inspection will be performed after substantial completion.

1.4 **CONTRACTOR USE OF PROPERTY**

A. **Use of the Site:** Limit the use of the premises to work in areas. Confine operations to areas within contract limits. Do not disturb portions of the property beyond the areas in which the work is required.

1. **Owner Occupancy:** Allow for Owner occupancy and use of the property by others.

2. **Driveways and Entrances:** Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

3. **Smoking or Open Flames:** Smoking or open fires will not be permitted on the property.

4. **Toilet Rooms (if applicable):** Except for toilet rooms designated for use by the Contractor's personnel, use of existing toilets within the building, by the Contractor's personnel, will not be permitted.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION**

3.1 **SITE WORKERS**

A. All Supervisors shall be currently certified by the State of Delaware for tank removal work and have their State of Delaware issue badge with them at all times while at the project site.
ATTACHMENTS

Section 3-12-300: Excavation and Backfill for Pipelines and Structures.

Prevailing Wage Determination: Letter from the State of Delaware, Department of Labor.

General Specifications: Milton Elementary School Building.

Drawings: Milton Elementary School Building, Underground Storage Tank Location and Details.
SECTION 3 12 300
EXCAVATION AND BACKFILL FOR PIPELINES AND STRUCTURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contractor shall perform all excavation, backfilling grubbing and grading required for construction and installation of pipelines, structures and appurtenances. Excavation shall include removal of pavement, concrete, rock, earth and debris, regardless of character. Trenches and excavations shall be sheeted, shored and braced by the Contractor, as necessary to allow construction and provide safe working conditions. Additionally, the Contractor shall be responsible for maintaining a dry excavation by dewatering. He shall also locate, support and protect existing utilities and structures encountered in the work, provide traffic control, dispose of surplus and unsuitable excavated materials and restore backfilled areas to original condition or as required by the drawings and specifications. All backfilled and restored areas shall be maintained by the Contractor, in a proper condition, for the duration of the project.

B. The Contractor is responsible for direct or indirect damage to existing structures, pipelines, conduits, poles, wires and utilities of every description in the vicinity of his work whether above or below ground, or that may be encountered in trench or structure excavation. This responsibility shall include the cost of protection by sheeting, bracing, hand excavation, when warranted, and the expense to repair or replace any existing facility damaged directly or indirectly by construction activities under this contract, whether such facility is or is not shown on the drawings.

C. The Contractor shall verify the location, size and elevation of all existing utilities at the various points of connection and/or crossings prior to starting any work. Any discrepancies in locations or elevations shall be brought to the attention of the Engineer in order that the designs may be adjusted accordingly. Damages suffered or additional costs incurred by the Contractor as a result of his failure to conform to the requirements of this paragraph shall be the sole responsibility of the Contractor. Connections to existing utilities shall be made by the Contractor at such a time and in such a manner as the Engineer may direct, and the cost shall be included in the price bid for pipeline and structures, unless otherwise defined in the proposal.

D. Excavation and backfill, within an area where a State agency has jurisdiction, shall be done in accordance with requirements and provisions of the permits issued by the agencies for the construction within their respective rights-of-way. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these specifications.

PART 2 - PRODUCTS

2.1 MATERIALS
No classification of excavated materials will be made. excavation and trenching work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the contract work, regardless of the type, character, composition, or condition thereof.

PART 3 - EXECUTION

3.1 PIPELINE TRENCH EXCAVATION

A. The Contractor shall excavate, maintain and backfill all excavation necessary for completing the work under the contract. Unless otherwise specified or approved, excavation shall be open cut. No extra compensation will be allowed for hand excavation and backfill necessary to complete the work or required by the Engineer.

B. Trenches shall be excavated to the necessary width and depth, as shown on the drawings and as required for the protective sheeting, pull boxes, etc. No extra compensation will be allowed for trenches wider than that detailed on the drawings.

C. The sides of the trenches shall be practically plumb and shall not be sloped unless approved in writing by the Engineer. Trench sides shall be supported or sheeted as required to protect pavement surfaces, curbing, utilities, etc., and required for safety. Safety regulations shall be as required by State safety codes and OSHA.

D. In paved areas, the Contractor shall remove the paving only as necessary for the excavation of the trench or as detailed. Pavement edges at the trench shall be saw cut neat and straight prior to the start of any excavation. Should the Contractor disturb or damage pavement for a greater width than detailed on the drawings or should pavement damage result from cave-ins, settlement, etc., Contractor shall replace such paving at his own expense. Saw cuts shall be carried out to the full depth of existing bituminous or concrete paving or combination thereof.

E. In non-paved areas strip surface vegetation and topsoil and place in stock piles which are separated from the trench excavated materials. Topsoil shall not be used for general trench refill.

F. The excavation of all trenches shall be fully completed at least twenty (20) feet in advance of pipe laying, unless otherwise authorized or directed. The Engineer may require the backfilling of open trench, over completed pipelines, or ahead of the pipe laying operation, if in his judgment such action is necessary, and the Contractor shall have no claim for extra compensation.

G. Should work be stopped for any reason and any excavation is left open for an unreasonable length of time, the Contractor shall refill the excavation at his own expense if so directed, by the Engineer or the Town Inspector. He shall not reopen the excavation until he is ready to complete the facility. Should the Contractor refuse or fail to refill any excavation completely within forty-eight (48) hours or immediately if it poses a safety hazard after a proper notice has been given by the Engineer or Town Inspector the Owner shall be authorized to do the work. The resulting expenses shall be deducted from monies due the Contractor.
The Contractor shall complete excavation as nearly as practicable to the lines of the pipeline to be installed as detailed. All cavities in the bottom of the trench shall be filled to the required level with compacted crushed stone or gravel. Unless the cavities have been made on direction of the Engineer and classified as "Excavation Below Subgrade" for unsuitable material, no extra compensation shall be due the Contractor.

Excavated materials shall be graded, hauled, stored and protected as such material found suitable will be required for backfilling, repaving or other purposes. Material classified as unsuitable shall be disposed of by the Contractor at a location approved by the Engineer. Hauling of excavated materials for any purpose shall not entitle the Contractor to additional compensation. Only those excavated materials designated by the Owner shall become property of the Contractor.

All stockpiled materials shall be placed in such a way to prevent damage to the trench, structures, drainage areas or private property. Excavated materials shall not be placed on private property, unless written permission is obtained from the property Owner by the Contractor.

The Contractor shall remove, relocate, change or protect all structures including but not limited to signs, mailboxes, overhead and buried utilities as required for construction whether shown on drawings or not. No extra compensation will be allowed for property damage, injury or loss of time due to obstructions encountered not shown on plans.

The Contractor shall be responsible for any damage to curb, gutter, sidewalk, traffic control devices, pavement material and lawns. Any damage resulting directly or indirectly during construction shall be replaced in kind by the Contractor without additional compensation. The reuse of disturbed curb, gutter or sidewalk is prohibited. New sections shall be installed to the nearest undisturbed control joint. Cost for replacement shall be included in the linear foot cost for pipe.

### 3.2 PIPELINE TRENCH BACKFILL

Materials excavated from the trench except topsoil shall be used for trench backfill, provided that, in the opinion of the Engineer, the excavated material is suitable for this purpose. Backfill material shall be free from large lumps, pavement, pieces of concrete and stones.

Suitable material, as approved by the Engineer, shall be carefully deposited in the trench by methods which will not damage or disturb the pipeline or structure, and shall be solidly tamped around the pipe or structure. Backfill material shall be placed in 8-inch layers. Compaction shall be accomplished by mechanical tampers. Care shall be taken in the use of mechanical tampers not to injure or move the pipe or to cause the pipe to be supported unevenly. Each layer shall be mechanically tamped for the full trench width unless an alternative method is approved in writing by the Engineer.

Every backfill layer shall be compacted to 95% of maximum density at optimum moisture content as determined by the Modified Proctor Test, ASTM D1557 Method C. Materials containing an excess of moisture shall be permitted to dry until the moisture content is within the specified range. Materials too dry shall be wetted uniformly until the moisture content is in the specified range.
D. No compacting shall be done when the material is too wet to be compacted properly. At such times the work shall be suspended until the backfill materials have dried sufficiently to permit proper compaction or such other precautions shall be taken as may be necessary to obtain proper compaction. The Contractor is responsible for hauling, storing and drying of excavated material to be used in backfill operations within the prices bid.

E. The Engineer may request compaction tests of the backfilled trenches at any time during construction or upon completion of the backfill operations. As a minimum field density testing shall be performed at a rate of 1 test per 100 linear feet of trench, at a depth and location specified by the Engineer or his representative. Such testing shall be arranged by the Contractor and performed by an independent testing agency approved by the Engineer. The Contractor shall pay the testing laboratory for all tests performed inclusive of sample collection, preparation and transportation. The Contractor will be paid, at the unit price bid, for all Proctor tests. For those field density tests which indicate that compaction satisfies specification requirements, the Contractor will be paid for testing at the unit price bid. For those tests which indicate that compaction does not satisfy specification requirements, the Contractor will not be paid. Whenever test results indicate compaction densities less than specified, the Contractor shall, at his own expense, secure the specified compaction using methods approved by the Engineer. The testing agency, so employed by the Contractor, shall submit a copy of all testing reports directly to the Engineer. Each report shall contain the project identification name and number, name of Contractor, name of testing agency, and location of sample tested by station, street and depth, as a minimum.

F. The Contractor shall, at his own expense, maintain all refilled excavations in proper condition. Trench surfaces shall be reshaped when necessary. If the Contractor fails to make repairs within forty-eight (48) hours after receipt of written notice from the Owner, the Owner may refill said depression wherever necessary and the cost of so doing will be retained from any monies due or to become due the Contractor under the Contract. The Contractor shall be fully responsible for any injury or damage that may result from lack of maintenance of any refilled excavation at any time prior to final acceptance.

G. All unauthorized excavations made by the Contractor shall be immediately backfilled in accordance with the requirements of the specifications for trench backfill at the Contractor's expense.

H. After completion of backfilling, all material not used shall be disposed of as approved by the Engineer, and all places on the line of the work shall be left clean and in good condition. This cleaning up shall be done by the Contractor without extra compensation. If he fails to do this work within a reasonable time after receipt of notice, it will be performed by the Owner, and the cost will be retained from the monies due the Contractor under the contract.

I. No backfilling of pipelines will be allowed until measurements of pipe and an inspection has been performed by the Owner's representative, and until the Engineer has authorized the backfill. Any unauthorized backfill of pipelines shall be uncovered by the Contractor at his expense if required by the Engineer.

3.3 EXCAVATION FOR STRUCTURES
A. Excavate for structures, walls, foundations, footings, etc., to the depth and width required for construction and stripping of forms. Structural excavation shall consist of the excavation of all earth, rock boulders existing concrete and masonry foundations and walls, and all other materials encountered regardless of type, which the Contractor may encounter.

B. Excavated materials shall be segregated as they are excavated, with the suitable and unsuitable material and topsoil being piled separately. All suitable material shall be used for backfill. All unsuitable material shall be removed, at the Contractor’s expense, and disposed of at an approved off-site location. No excavated material shall be deposited at any time so as to endanger partly finished structures either by direct pressure, or indirectly by overloading banks contiguous to the operation.

C. The Contractor shall be responsible for the condition of all excavations made by him. All slides and cave-ins shall be removed without extra compensation, at whatever time and under whatever circumstances they may occur.

3.4 BACKFILL FOR STRUCTURES

A. Backfill around structures with suitable material from the excavation to the original surface grades or the finished grades shown on the plans or defined by the Engineer. If additional material is needed to fill around the structure, Special Backfill shall be furnished and placed by the Contractor at the price bid in the proposal.

B. No backfill shall be placed against new concrete or masonry structures until properly cured.

C. Backfill shall be placed in eight (8) inch loose layers and compacted by mechanical tampers. Compaction shall conform with the requirements for compaction already set forth in this specification.

D. The Contractor shall exercise caution in backfill and compaction to prevent damage to structures.

3.5 MISCELLANEOUS EXCAVATION AND BACKFILL

A. The Contractor shall do such miscellaneous excavation as may be necessary or directed. Such excavation shall be subject to the same conditions and requirements as specified for trench excavation, but will be paid for as “Miscellaneous Excavation and Backfill”.

B. Miscellaneous Excavation shall include the digging of test pits in the areas not called out on the project plans, extra width of trench made necessary by change in its location, or excavation for any special structures outside the trench that may not be shown on the drawings or described in the specifications, where such excavation is done at the direction of the Engineer.

C. Test pits shall be dug by the Contractor whenever directed or as necessary to determine location, depth or materials of existing utilities. The depth and size shall be such as required by the Engineer. Test pits shall be dug by the Contractor, without being directed to do so, along the lines of the trenches as shown on the drawings in advance of the excavation, or prior to use of mechanical moles, for the purpose of satisfying himself as to the location and elevation of underground obstructions or conditions.
3.6 EXCAVATION BELOW SUBGRADE AND GRAVEL REFILL

A. Materials below the excavation limit for pipelines and structures (below subgrade), which in the judgment of the Engineer should be removed, shall be removed as directed. All spaces created by the removal of unsuitable material below subgrade shall be refilled and compacted with crushed stone or gravel. Payment for Excavation Below Subgrade and Gravel Refill shall be made at the unit price bid.

B. Should the Contractor elect to excavate suitable material below subgrade and install stone for the purpose of securing a dry trench bottom, in lieu of dewatering by mechanical methods, no payment will be made for Excavation Below Subgrade and Gravel Refill.

3.7 DEWATERING

A. All excavations must be kept free of water below the subgrade of the work while work is in progress. This may be accomplished by ordinary pumping methods or by well points, whichever will produce the required results. Upon removal of dewatering equipment, the Contractor shall backfill all holes and restore disturbed areas to their original condition.

B. Dewatering for the structures and pipelines shall commence when groundwater is first encountered and shall be continued until such time as backfill has been completed. No concrete or pipe shall be laid in water nor shall water be allowed to rise over them until the concrete or mortar has set at least eight (8) hours. Groundwater shall not be allowed to rise around the pipe until the trench is backfilled.

C. The Contractor shall dispose of the water from the work in a suitable manner without damage to adjacent property. No water shall be drained into work built or under construction without prior consent of the Engineer. Water shall be disposed of in such a manner as not to be a menace to the Public Health.

D. In the event the Contractor’s dewatering operations affect any water supplies within the project area, the Contractor shall take whatever steps that are required to provide uninterrupted water service.

E. The Contractor shall remove any siltation deposits in storm sewer systems, resulting from his dewatering or construction operations. He shall also be responsible for conveyance of dewatering flows and for erosion and sediment control.

3.8 SHEETING, SHORING AND BRACING

A. The Contractor shall furnish and install all sheeting, shoring and bracing necessary to insure safe working conditions and to prevent damage to public and private property and structures. If, in the opinion of the Engineer, the sheeting, shoring, or bracing is not of proper quality or is not properly placed to insure safe working conditions and to prevent property damage, the Contractor shall remedy such inadequacy at his own expense as may be directed by the Engineer. Sheetin, shoring, and bracing shall be removed as backfilling progresses, except at such locations as the Engineer may direct or approve it to be left in place.
B. The condition of all excavations made by the Contractor shall be the responsibility of the Contractor. No extra compensation will be allowed for property damage, injury or loss of time, due to excavation slides or cave-ins at any time under any circumstances.

C. The Contractor shall cut off any sheeting left in place, at least eighteen (18) inches below finished grade, and shall remove the material cut off without compensation.

D. Where necessary, in quicksand, soft ground, or for the protection of any structure or property, sheeting shall be driven to such depth below the bottom of the trench as may be required to protect all existing and/or proposed work.

E. The cost for furnishing, placing and removal of sheeting, shoring or bracing shall be included in the prices bid.

F. A trench box is an acceptable alternative to sheeting, shoring or bracing providing such boxes conform to safety codes.

3.9 SELECT BACKFILL

A. Should the Contractor encounter unsuitable material during excavation, he shall remove and dispose of such material at a location approved by the Engineer. The cost of such disposal shall be included in the prices bid for pipe and structures.

B. Should sufficient suitable material from excavations on the project not be available for backfill, the Contractor shall furnish Select Backfill upon approval of the Engineer. Special backfill shall conform to Delaware DOT, Type G.

C. Payment for authorized Select backfill will be made at the price bid for the material placed within the trench width detailed and for the length and depth approved.

3.10 GRAVEL BEDDING

Gravel bedding for installation of under structures shall meet the requirements of #57 stone per Section 813 of the Delaware Standard Specifications.

END OF SECTION
APPENDIX A

Project Drawings
NOTES:

1. The Contractor shall completely remove and dispose of the heating oil UST tank system as shown in accordance to the specifications and State of Delaware requirements.

2. Prior to moving potentially contaminated petroleum soils to a soil stockpile within one hundred yards from the work area, the Contractor must secure the approval of Owner's Representative and DNREC. All potentially contaminated soil must be stored on a polyethylene sheeting liner with a cover as required by the specifications and the State of Delaware.

Milton Elementary School
Underground Heating Fuel Tank Location

10K GALLON UST (Tank ID 2)

MAINTENANCE BUILDING

SCHOOL BUILDING

Note: This drawing is adapted from a 2018 Google Earth image and is diagrammatic, not to scale or proportion.

Cape Henlopen School District: Milton Elementary School
512 Federal Street, Milton, Delaware 19968
Drawing A- Location of Underground Heating Fuel Tank
February 18, 2019

COMPLIANCE ENVIRONMENTAL, INC.
Environmental Health & Safety Consultants
150 South Bradford Street, Dover, Delaware 19904
Phone: 302-674-4427 www.compliancecanhelp.com
NOTES:

1. Work area shown is approximate. The Contractor shall completely remove and dispose of the heating oil UST tank system including tank, piping, conduits and all other tank system components in accordance to the specifications and State of Delaware requirements to the location shown on the drawing.

2. The Contractor shall clean and purge all heating fuel piping from the tank to all locations where fuel travels within the boiler room.

3. Cap and seal all underground piping not removed at the location shown on the drawing.

Milton Elementary School
(Listed as Milton Middle School)
DNREC Facility ID: 5-000913

Note: This drawing is adapted from a 2007 Google Earth image and is diagrammatic, not to scale or proportion.
APPENDIX B

DNREC Historical Information: Milton Elementary School Building
Photo 1 (Right): View showing the top of the heating oil UST (fiberglass) and the existing steel product and vent piping. New piping sump is shown in the background.

Photo 2 (Left): View showing existing product and vent piping (steel), in the vicinity of the site structure.

NOTE: This is a historical drawing provided for informational purposes and is diagrammatic, not to scale or proportion.
Photo 3 (Right): View showing new fiberglass product and vent piping (double-wall).

Photo 4 (Left): View showing new product piping, fillport with overfill catchment and piping sump.

NOTE: This is a historical drawing provided for informational purposes and is diagrammatic, not to scale or proportion.
ADDENDUM No. 1  
March 22, 2019


Bid Due: **Thursday, April 11, 2019 at 2:00 PM (Local Time) (Unchanged)**
Bids are due at the Cape Henlopen School District Office, 1270 Kings Highway, Lewes, Delaware 19958.
Bids will be publicly opened at that time.

Address  
Bids To: Mr. Brian J. Bassett, Director of Capital Projects  
Cape Henlopen School District  
1270 Kings Highway  
Lewes, Delaware 19958  
(302) 436-1000

The Contractor shall submit three (3) complete copies of the bid with original signatures. Send the bid to the Cape Henlopen School District. Provide a sealed envelope containing the bid with envelope outer markings as follows:

Mr. Brian J. Bassett, Director of Capital Projects  
Cape Henlopen School District  
1270 Kings Highway  
Lewes, Delaware 19958

“BID FOR 2019 ASBESTOS ABATEMENT AT THE MILTON ELEMENTARY SCHOOL  
SEALED BID - DO NOT OPEN”

Bids can be mailed using the U.S. Postal Service, hand-delivered or sent via an overnight delivery service. NO FAXSIMILE OR EMAIL BIDS WILL BE ACCEPTED. The Contractor is responsible for submitting their bid by the required deadline and verifying that their bid has been received prior to the due date and time.

All entries must be typed or made in ink. Bids must be completed by the Contractor in accordance with all instructions for providing a bid as included in this Specification.

The Contractors providing bids shall incorporate this Addendum into the Project Specifications and acknowledge receipt on the bid form.
ADDENDUM No. 1
March 22, 2019
Cape Henlopen School District
Milton Elementary School
Page 2 of 8

The Cape Henlopen School District reserves the right to waive irregularities and reject any and all bids.

A Pre-Bid Meeting was held on March 21, 2019 from 10:05 a.m. to 11:10 a.m. The Pre-Bid Meeting sign-in sheet is attached. The following are the minutes of the meeting. During the meeting, CEI reviewed the requirements of the project. A walking tour of the working areas was also provided. The subcontractor list was affirmed at the meeting and is included on the bid form.

1. **Scope of Work Review:** A general review of the scope of work for the project was presented. Bidders are urged to completely review all of the information contained in the bidding documents prior to submitting a bid on this project. The project will be started on or about July 15, 2019 and substantial completion must be achieved within seventy (70) calendar days starting from the Notice to Proceed date. The Contractor shall start and complete all exterior work as the last task on the project. Prior to performing exterior work, a 72-hour notification from the Contractor must be provided so that the Construction Manager can coordinate replacement of building components. No Contractor representative present at the Pre-Bid Meeting objected to this required work period or requirements.

2. **Liquidated Damages:** The Contractor shall pay liquidated damages at the rate of $2,000.00 per calendar day if substantial completion is not achieved within the time specified.

3. **Bid Form:** Use the Bid Form attached to this addendum to submit your bid. The Subcontractor list was reviewed and established at the meeting. Bidding Contractors shall provide a completed Bid Form including the Subcontractor list included in the bid documents. The Contractor’s bid form shall state the number of days required to complete the project and the number of workers scheduled to be on site daily. In addition, the Subcontractor list and all other requested information must be provided completely by the bidding contractor. A copy of the Bidder's Delaware Business License must be attached to the bid form.

4. **Bonds:** A Bid Bond is required with the bid to include 10-percent of the amount of the Base Bid plus any alternates (if applicable). The Bid Bond form is attached to this addendum. The awarded contractor shall also provide a Payment bond and Performance Bond for 100-percent of the amount included as the Base Bid plus any alternates on the Bid Form prior to beginning the work if the total bid is greater-than $50,000.00. Payment and Performance Bonds must be provided by the awarded contractor prior to execution of a contract and Notice to Proceed.

5. **Questions During Bid Preparation:** All questions regarding the project requirements must be submitted to compliance environmental in writing no later than Friday, April 5, 2019. Any changes to the specification will be provided by addendum prior to the bid due date.
ADDENDUM No. 1
March 22, 2019
Cape Henlopen School District
Milton Elementary School
Page 3 of 8

6. **Removal Procedures:** The Contractor shall follow the procedures for removal of asbestos-containing materials provided in the specification. The use of pop-up containments on this project is not allowed. The Contractor shall remove all layers to expose asbestos-containing materials for complete abatement of the building. All asbestos-containing materials must be removed. (See Section 01013).

7. **Ten-Day Notification:** The Contractor shall submit the required notification of asbestos abatement activities at least ten-days prior to starting the work to the EPA and DNREC for this project. The Contractor shall provide a copy of this notification to the Owner’s Representative prior to the start of any work.

8. **Prevailing Wage Rates:** State of Delaware prevailing wage rates are in effect and shall be included by the Contractor in its bid. Wage rates are provided in the specification. The project is in Sussex County. (Part II., General Specifications)

9. **Certificate of Liability Insurance:** Prior to the start of work, the Contractor shall provide a Certificate of Liability Insurance in accordance with the General Specifications. The Cape Henlopen School District and Compliance Environmental, Inc. shall be named as additionally insured. A waiver of subrogation in favor of the Cape Henlopen School District and Compliance Environmental, Inc. (See General Conditions)

10. **Confirmed Positive and Assumed Asbestos Materials:** The project contains both confirmed positive asbestos-containing materials and assumed asbestos-containing materials as shown in the specification. The Contractor shall include in its bid the cost of complete abatement and proper disposal of all confirmed positive and assumed asbestos-containing materials according to the specifications. Some locations require that the Contractor “break-in” into wall, floor and ceiling for inspection by the Owner’s Representative. The Contractor shall also include in its bid the cost of completing “break-in” at the locations shown on the drawings and tables. The size, number and shape of the break-in shall be adequate as determined by the Owner’s Representative to perform a proper inspection. Some locations shown on the drawing will require multiple break-ins. The Contractor shall include in its bid all costs associated with break-in activities and complete abatement of all of the quantities of assumed materials listed in the specifications at no additional cost to the Owner.

11. **Affidavit of Employee Drug Testing Program:** 4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds. Complete the form included and submit with your bid. (See Bid Form).

12. **Drawings:** All drawings provided in the Specification are diagrammatic and are not to scale or proportion. Drawings are provided to the Contractor for reference purposes. The Contractor shall develop and verify all dimensions and measurements.
13. **Owner’s Representative Oversight:** Compliance Environmental (CEI) will act as the Owner’s Representative on the project. CEI will be performing routine inspections during the Contractor’s work and will act as a liaison between the Contractor and Owner. The Contractor shall provide adequate notice to CEI to provide site meetings and inspections. Adequate notice is the period of time agreed to by the Contractor and Professional Service Firm. (See Section 01013)

14. **Contractor Project Staffing:** A minimum of three (3) asbestos personnel are required to be present at the project site at all times. The Contractor’s on-site supervisor must be able to make timely decisions for this company. **Prior to any site activity, the Contractor shall submit the name and address of each supervisor, worker and any other person he intends to use at the project site for informational screening (e.g., registered sex offenders list and other lists) by the Owner. The Contractor shall be notified by the Owner if their personnel will be allowed to work at the project site based upon the results of the screening. The Owner reserves the right to reject any proposed Contractor personnel for this project.** (Section 01043)

15. **Project Supervisor:** During all site work, a State of Delaware licensed Supervisor, employed by the Contractor, shall be on site at all times. The licensed Supervisor shall maintain all daily records as required.

16. **Project Monitor Must Be On-Site:** The Contractor shall not begin or continue work for any asbestos abatement related activities until a certified Project Monitor is on site. The Project Monitor must be on site at all times during asbestos abatement related activities. The Contractor shall provide adequate notice to the Professional Service Firm providing the Project Monitor. Adequate notice is the period of time agreed to by the Contractor and Professional Service Firm.

17. **Equality of Employment Opportunity:** During the performance of this contract, the Contractor agrees as follows:

The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex, or national origin. The Contractor will take positive steps to ensure that applicants are employed and that employees are treated during employment without regard to their race, creed, color, sex, or national origin. Such action will include, but not 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 applications for employment notices to be provided by the contracting agency setting forth this nondiscrimination clause.

The Contractor 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 race, creed, color, sex, or national origin.

18. **Penalty for Substitution of Subcontractors:** Should the Contractor fail to utilize any or all of the listed subcontractors in the performance of the work, the Contractor shall be subject to a penalty in the amount of one-percent (1%) of the total contract amount (not to exceed $10,000.00). The agency may determine to deduct payments of the penalty from the Contractor or have the amount paid directly to the agency. Any penalty amount assessed
against the Contractor may be remitted or refunded, in whole or in part, by the agency awarding the contract, only if it is established to the satisfaction of the agency that the subcontractor in question has defaulted or is no longer engaged in such business. No claim for the remission or refund of any penalty will be granted unless an application is filed within one (1) year after the liability of the successful bidder accrues. All penalty amounts assessed and not refunded or remitted to the Contractor will be reverted to the State of Delaware.

19. **Waste, Material Handling and Disposal:** The Contractor shall include in its bid all costs associated with wastes and used materials for proper bag-out, containerizing, handling, storage, profiling, transportation, unloading, disposal and all other required tasks in the project specifications, transporter requirements and disposal facility requirements as needed. **All asbestos-containing and asbestos-contaminated materials and wastes shall be properly transported and disposed at an off-site location by the Contractor at the facilities listed on the bid form for this project without substitution.** All costs associated with this requirement shall be included in the Lump Sum bid. Non-asbestos-containing and non-asbestos-contaminated materials can remain inside of the building at a location agreed by the Contractor and Owner’s Representative **except for any suspended ceiling tiles and track removed by the Contractor which must be disposed by the Contractor.** All non-asbestos-containing and non-asbestos-contaminated wastes generated by the Contractor must be properly transported and disposed to an off-site location at the facilities listed on the bid form for this project without substitution. The Contractor shall also use the waste transporters listed on the bid form for this project without substitution. The Contractor shall provide all waste disposal documentation (i.e., contractor profiles, manifests, weight tickets, facility and transporter provided documentation to the contractor, etc.) to the Owner’s Representative when available within five calendar days. (See Section 01013 and 02084 for more information).

20. **Suspended Ceiling Tiles and Tracks:** All non-asbestos suspended ceiling tiles and track removed by the Contractor to access any asbestos-containing materials must be properly disposed at an off-site location by the Contractor at the facility listed on the bid form. All ceilings in the work areas shall be in a safe condition when work is complete. All costs associated with this requirement must be included in the Lump Sum bid amount. Any suspended ceiling and tracks which do not require to be removed by the Contractor in a work area can remain undisturbed and in place.

21. **Change on Table 1., Summary of Positive Asbestos-Containing Materials:** For the interior Floor Tile Mastic item listed on the table (first row), First Floor Room 111 is 12" x 12" Floor Tile with Asbestos Mastic over Wood (not concrete). All other locations for this item remain the same (over concrete).

22. **Access to Work Areas:** The Contractor shall, at all times, take every measure to secure all work areas from entry by non-authorized people. It is the Contractor’s responsibility to adequately barricade, sign and control access to work areas in such a way to prevent accidental access to work areas. (See Section 01013)

23. **Other Contractors On-Site:** During the Contractor’s work, other Contractors will be on-site including the underground tank removal Contractor. No Contractors are scheduled to perform work in asbestos abatement work areas until final completion.

24. **Work Area Security & Protection:** In performing the work, the Contractor is responsible
for the security of the work area and protection of any and all equipment, materials, and surfaces not scheduled for work activities. The Contractor shall not be provided with a key to building(s) where work is to be performed. It is the Contractor’s responsibility to adequately barricade, sign and control access to work areas in such a way to prevent accidental access to Work Areas. Drop cloths shall be installed and used from all exterior access points to work areas. Plastic sheeting shall be installed by the Contractor to cover all articles and equipment remaining in Work Areas and access areas prior asbestos removal activities. All drop cloths and plastic sheeting shall be properly disposed by Contractor after use.

25. **Exhaust from Negative Air Machines:** Windows, doors and any other building openings used to exhaust negative air shall be protected by the Contractor by installing plywood and bracing if the opening is located on the first floor or below. The plywood and bracing shall be installed in a manner by the Contractor that prevents damage to the building components and prevents unauthorized access into the building.

26. **Electronic Equipment and Building Sensors:** The bidding contractors were advised that parts of the building may contain electronics including, but limited to, smoke and fire sensors which cannot be relocated prior to work activities. Further, the Contractor must provide all necessary means to protect all building electronics within work areas which cannot be relocated.

27. **Smoking or Open Flames:** Smoking or open flames are not permitted in the building or on the property. The Contractor shall follow OSHA requirements for all cutting using open flames including, but not limited to, cutting permits and fire watch provisions.

28. **Contractor Provided Personal Protective Equipment:** The Contractor shall provide, at no additional cost to the Owner or Owner’s Representative, all necessary personal protective equipment required by the Owner’s Representative to perform all required inspections.

29. **Respirator Protection:** The minimum respiratory protection on this project will be Powered Air Purifying Respirators (PAPR).

30. **Final Clearance Sampling:** Final air clearance samples will be by Transmission Electron Contrast Microscopy (TEM). See Section 01013 and 02081 and this specification for more information.

31. **Electric Power:** All electric power shall be shut down in each work area where possible. The Owner shall provide low voltage temporary electric service (single phase, 120-volt, 100 amp circuit source). The Contractor shall provide the Owner with their specifications within five (5) calendar days prior to scheduling the start of work. The Owner shall provide a plug type outlet within 300 feet of work locations. Adequate extension cords shall be provided by the Contractor. Temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in each work area shall be provided by the Contractor. If required by the Contractor, a licensed electrician shall be provided, at no additional cost, for making electrical connections and disconnections.
32. **Water Service:** The Owner shall provide limited cold water service for small connections (3/4-inch hose maximum). The Contractor shall provide, at no additional cost to the Owner, all necessary connections and ensure proper back-flow protection. Hot water heaters shall be supplied and operated by the Contractor at no additional cost to the Owner. The Contractor shall be responsible for turning on and off valves at their point of connection.

33. **Confined and Enclosed Spaces:** The Contractor shall follow OSHA requirements for work in confined and enclosed spaces.

34. **Lock-Out and Tag-Out Procedures:** The Contractor shall follow OSHA requirements for all equipment and locations requiring lock-out and tag-out. The Contractor shall verify, prior to the start of work in any work area, that all utilities (e.g., water, fuel oil, gas, electric) are isolated (dead) and purged.

35. **Emergency Needs:** For duration of the contract, the Contractor agrees to respond to the needs of the Owner by providing abatement personnel at the project site within 24-hours after notification for abatement of additional asbestos materials which may be discovered and require abatement after the Contractor has completed all of their planned work. A change order will be provided for these services.

36. **Building Access:** No contractor personnel, subcontractors, vendors or visitors are allowed inside the school buildings except in designated work areas without written permission from the Owner.

37. **Zero Tolerance:** Cape Henlopen School District has a Zero Tolerance for drugs, alcohol, tobacco products and weapons. The use or possession of drugs, tobacco products, weapons, firearms, dangerous devices, or destructive devices are prohibited and will not be tolerated at buildings or properties. Additionally, the use of vulgar language will not be tolerated on school grounds.

38. **Personnel Clothing Requirement:** At no time will the Contractor’s employees expose bare skin or remove any articles of clothing in clear sight of building occupants or users inside or outside of the building and on the property except work areas designated as hygiene shower out locations.

39. **Scaffolding, Lifts and Ladders: Safety is a prime importance on this project.** If scaffolding is used, the Contractor must erect, use, and disassemble the scaffolding in accordance with OSHA Standards. Additionally, all lifts and ladders shall meet and be used in accordance with OSHA Standards. The Contractor shall ensure that all building components are protected during the use of scaffolding, lifts and ladders. The Contractor shall use only trained personnel experienced with roof elevation work and when using scaffolding, lifts, ladders, and working in elevated conditions.

40. **Work Area Movable Objects:** The Owner will be responsible for moving of all large non-fixed (i.e., movable) objects from the work area(s) that are not contaminated. It is the Contractor’s responsibility to move any smaller non-contaminated materials out of the work area prior to starting the abatement.
41. **Decontamination Stations:** As required by the regulations, the Contractor shall provide three (3) stage decontamination stations at all work areas.

42. **Additional Site Visits:** Please contact Compliance Environmental, Inc. if you would like to schedule an additional site visit.

This represents the items that were reviewed and the items changed subsequently to the Pre-Bid Meeting held on March 21, 2019. If you have any further comments, please contact Compliance Environmental (302-674-4427) in writing within five (5) days. Therefore, these minutes shall become part of Addendum No. 1 and therefore binding on the Contractor for this project. Any changes to this Addendum will be provided in a future Addendum for this project.

**COMPLIANCE ENVIRONMENTAL, INC.**

[Signature]

Valentino P. De Rocili, Ph.D., CHMM
Senior Principal Consultant
Asbestos Project Designer
vderocili@compliancecanhelp.com

**Attachments:**

(2-Pages): Pre-Bid Meeting Sign-In Sheet.
(9-Pages): Bid Form
(1-Page): Bid Bond Form

[ END OF ADDENDUM No.1 ]
# Cape Henlopen School District
## 2019 Asbestos Abatement at the Milton Elementary School

**Mandatory Pre-Bid Meeting - Sign-in Sheet**
*Thursday, March 21, 2019 at 10:00 a.m. (Local Time)*

<table>
<thead>
<tr>
<th>Company: Compliance Environmental, Inc.</th>
<th>Company: Astore, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address: 150 South Bradford Street, Dover, DE 19904</td>
<td>Address: 1554 Lorewood Grove Rd</td>
</tr>
<tr>
<td>Representative Name: Valentino P. De Rocili</td>
<td>Representative Name: Robert Powell</td>
</tr>
<tr>
<td>Telephone: 302-674-4427</td>
<td>Telephone: 302-573-7023</td>
</tr>
<tr>
<td>FAX: 302-674-4429</td>
<td>FAX:</td>
</tr>
<tr>
<td>Email: <a href="mailto:vderocili@compliancecanhelp.com">vderocili@compliancecanhelp.com</a></td>
<td>Email: <a href="mailto:asdccc@mac.com">asdccc@mac.com</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company: Compliance Environmental, Inc.</th>
<th>Company: CGC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address: 150 S. Bradford St, Dover, DE 19904</td>
<td>Address: 461 New Churchmans Rd New Castle DE 19720</td>
</tr>
<tr>
<td>Representative Name: JP Heider</td>
<td>Representative Name: Virgil Cassel</td>
</tr>
<tr>
<td>Telephone: 302-674-4427</td>
<td>Telephone: 302-420-3013</td>
</tr>
<tr>
<td>FAX: 302-674-4429</td>
<td>FAX:</td>
</tr>
<tr>
<td>Email: <a href="mailto:JHeider@compliancecanhelp.com">JHeider@compliancecanhelp.com</a></td>
<td>Email: <a href="mailto:vmassell@countygep.com">vmassell@countygep.com</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company: Fishers Environmental</th>
<th>Company: Bristol Environmental Inc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address: 809 Maryland Ave</td>
<td>Address: 9100 Yellow Brick Rd</td>
</tr>
<tr>
<td>Representative Name: Steve Schritz</td>
<td>Representative Name: Adam Kopperl</td>
</tr>
<tr>
<td>Telephone: 443-783-4231</td>
<td>Telephone: 410-682-3201</td>
</tr>
<tr>
<td>FAX:</td>
<td>FAX: 410-682-9205</td>
</tr>
<tr>
<td>Email: <a href="mailto:Steve@FishersEnvironmental.com">Steve@FishersEnvironmental.com</a></td>
<td>Email: <a href="mailto:AKopperl@BristolGroup.com">AKopperl@BristolGroup.com</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company: Cape Henlopen School</th>
<th>Company: Plywood Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address: 511 Federal St</td>
<td>Address: 913 Harsens Rd Eastpoint PA 1980</td>
</tr>
<tr>
<td>Representative Name: Chad Cleland</td>
<td>Representative Name: Jim Kelly</td>
</tr>
<tr>
<td>Telephone: 302-441-1619</td>
<td>Telephone: 610-239-9400</td>
</tr>
<tr>
<td>FAX:</td>
<td>FAX: 610-239-941</td>
</tr>
<tr>
<td>Email: <a href="mailto:Chad.Cleland@Cape.K12.DE.us">Chad.Cleland@Cape.K12.DE.us</a></td>
<td>Email: <a href="mailto:JAKelly@Plywood.com">JAKelly@Plywood.com</a></td>
</tr>
<tr>
<td>Company:</td>
<td>Cape Henlopen School District</td>
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<tr>
<td>-----------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Address:</td>
<td>1270 Kings Hwy Lanes</td>
</tr>
<tr>
<td>Representative Name:</td>
<td>Brian Bossman</td>
</tr>
<tr>
<td>Telephone:</td>
<td>302-542-7315</td>
</tr>
<tr>
<td>FAX:</td>
<td></td>
</tr>
<tr>
<td>Email:</td>
<td></td>
</tr>
<tr>
<td>Company:</td>
<td>Cape Henlopen School District</td>
</tr>
<tr>
<td>Address:</td>
<td>1270 Kings Hwy</td>
</tr>
<tr>
<td>Representative Name:</td>
<td>Larry Ruggiero</td>
</tr>
<tr>
<td>Telephone:</td>
<td>302 228-1530</td>
</tr>
<tr>
<td>FAX:</td>
<td></td>
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<tr>
<td>Email:</td>
<td></td>
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<td>Company:</td>
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<td>Address:</td>
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<td>Representative Name:</td>
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<td>FAX:</td>
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<tr>
<td>Email:</td>
<td></td>
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</tbody>
</table>
BID FORM

For Bids Due: April 11, 2019

To: Cape Henlopen School District
1270 Kings Highway
Lewes, Delaware 19958

Name of Bidder: __________________________________________________________

Delaware Business License No.: ________________________________ Taxpayer ID No.: ________________________________
(A copy of Bidder's Delaware Business License must be attached to this form.)

(Other License Nos.): __________________________________________________________________________________________

Phone No.: ( ) ___________ - ______________ Fax No.: ( ) ___________ - ______________

The undersigned, representing that he has read and understands the Bidding Documents and that this bid is made in accordance therewith, that he has visited the site and has familiarized himself with the local conditions under which the Work is to be performed, and that his bid is based upon the materials, systems and equipment described in the Bidding Documents without exception, hereby proposes and agrees to provide all labor, materials, plant, equipment, supplies, transport and other facilities required to execute the work described by the aforesaid documents for the lump sum itemized below:

Asbestos abatement of interior and exterior surfaces of positive and assumed asbestos-containing materials at the school building and Maintenance Shop building, including the removal and disposal of asbestos-containing materials, asbestos-contaminated materials, and debris associated with all of the Work listed in Section 01013 and all other sections of the specification and drawings for this project.

$ __________________________

($ __________________________ )
UNIT PRICES

Unit prices conform to applicable project specification section. The Cape Henlopen School District reserves the right to accept or reject any or all unit prices listed below. Refer to the specifications for a complete description of the following Unit Prices.

List the cost associated with adding or deducting each of the following items:

<table>
<thead>
<tr>
<th>UNIT PRICE No.</th>
<th>Description</th>
<th>ADD/DEDUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Asbestos-containing floor tiles (single layer, no mastic) per sq ft</td>
<td>$ ________</td>
</tr>
<tr>
<td>2</td>
<td>Asbestos-containing floor tiles (single layer, with mastic) per sq ft</td>
<td>$ ________</td>
</tr>
<tr>
<td>3</td>
<td>Asbestos-containing floor tiles (double layer, with mastic) per sq ft</td>
<td>$ ________</td>
</tr>
<tr>
<td>4</td>
<td>Asbestos-containing pipe insulation per linear ft.</td>
<td>$ ________</td>
</tr>
<tr>
<td>5</td>
<td>Asbestos-containing pipe fittings per each.</td>
<td>$ ________</td>
</tr>
<tr>
<td>6</td>
<td>Asbestos-containing ceiling glue dots per sq ft.</td>
<td>$ ________</td>
</tr>
<tr>
<td>7</td>
<td>Asbestos-containing wall glue dots per sq ft.</td>
<td>$ ________</td>
</tr>
<tr>
<td>8</td>
<td>Asbestos-containing HVAC vibration cloth per sq ft.</td>
<td>$ ________</td>
</tr>
<tr>
<td>9</td>
<td>Asbestos-containing valve and fitting gaskets per sq ft each.</td>
<td>$ ________</td>
</tr>
<tr>
<td>10</td>
<td>Asbestos-containing fire doors per each.</td>
<td>$ ________</td>
</tr>
<tr>
<td>11</td>
<td>Asbestos-containing transite wall and ceiling panels per sq ft.</td>
<td>$ ________</td>
</tr>
</tbody>
</table>
# BID FORM

Set up price - A - (Asbestos Contractor price to set up for additional work while still at the site). Three stage decontamination unit. Respiratory protection - PAPR

\[
\begin{array}{ll}
\text{($\text{Figure Amount}$)} \\
\text{($\text{Dollar Amount}$)}
\end{array}
\]

Containment - Price to be added to Set Up Price - A - reflects construction based on floor area as well as decontamination of affected areas.

<table>
<thead>
<tr>
<th>1</th>
<th>-10 square feet</th>
<th>$_______ per square foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>-100 square feet</td>
<td>$______ per square foot</td>
</tr>
<tr>
<td>101</td>
<td>-200 square feet</td>
<td>$______ per square foot</td>
</tr>
<tr>
<td>201</td>
<td>-500 square feet</td>
<td>$______ per square foot</td>
</tr>
<tr>
<td>501</td>
<td>-1000 square feet</td>
<td>$______ per square foot</td>
</tr>
</tbody>
</table>

Set up price – B - (Asbestos Contractor price to set up for additional work while still at the site). Two stage decontamination unit. Respiratory protection - PAPR

\[
\begin{array}{ll}
\text{($\text{Figure Amount}$)} \\
\text{($\text{Dollar Amount}$)}
\end{array}
\]

Containment - Price to be added to Set Up Price - B - reflects construction based on floor area as well as decontamination of affected areas.

<table>
<thead>
<tr>
<th>1</th>
<th>-10 square feet</th>
<th>$______ per square foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
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</tr>
<tr>
<td>101</td>
<td>-200 square feet</td>
<td>$______ per square foot</td>
</tr>
<tr>
<td>201</td>
<td>-500 square feet</td>
<td>$______ per square foot</td>
</tr>
<tr>
<td>501</td>
<td>-1000 square feet</td>
<td>$______ per square foot</td>
</tr>
</tbody>
</table>

Set up price - C - (Asbestos Contractor price to set up for additional work while still at the site). Three stage decontamination unit. Respiratory protection – Type “C”

\[
\begin{array}{ll}
\text{($\text{Figure Amount}$)} \\
\text{($\text{Dollar Amount}$)}
\end{array}
\]

Containment - Price to be added to Set Up Price - A - reflects construction based on floor area as well as decontamination of affected areas.

<table>
<thead>
<tr>
<th>1</th>
<th>-10 square feet</th>
<th>$______ per square foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
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<td>$______ per square foot</td>
</tr>
<tr>
<td>101</td>
<td>-200 square feet</td>
<td>$______ per square foot</td>
</tr>
<tr>
<td>201</td>
<td>-500 square feet</td>
<td>$______ per square foot</td>
</tr>
<tr>
<td>501</td>
<td>-1000 square feet</td>
<td>$______ per square foot</td>
</tr>
</tbody>
</table>

3
BID FORM

I/We acknowledge Addendums numbered _________ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (60) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid.

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

Should I/We be awarded this contract, I/We pledge to achieve substantial completion of all of the work at the Milton Elementary School project within seventy (70) calendar days from the Notice to Proceed date using ____________ workers each day and completing in ____________ working days.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By __________________________________ Trading as __________________________________

(Individual’s / General Partner’s / Corporate Name)

(State of Corporation)

Business Address:

__________________________________________________________

__________________________________________________________

__________________________________________________________

Witness: __________________________________ By: __________________________________

(SEAL) (Authorized Signature)

(Title)

Date: __________________________________

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Bid Security
(Others as Required by Project Manuals)
### BID FORM

**SUBCONTRACTOR LIST**

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor must be listed for each category where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the Cape Henlopen School District, it is required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.

<table>
<thead>
<tr>
<th>Subcontractor Category</th>
<th>Subcontractor</th>
<th>Address (City &amp; State)</th>
<th>Subcontractors tax payer ID # or Delaware Business license #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Asbestos Remover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. OSHA Monitor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Waste Hauler</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Analytical Services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Electrician</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
BID FORM

WASTE DISPOSAL FACILITY LIST

The Contractor has included all required disposal of wastes in the bid and will use the following licensed and permitted waste disposal facilities on this project without substitution:

1. **Asbestos-Containing and Asbestos-Contaminated Wastes:**
   
   Facility Name:
   
   Facility Address:
   
   Facility Telephone Number: (______) _______ - ___________   EPA/State ID:____________________

2. **Non-Asbestos-Containing and Non-Asbestos-Contaminated Wastes:**
   
   Facility Name:
   
   Facility Address:
   
   Facility Telephone Number: (______) _______ - ___________   EPA/State ID:____________________
2019 ASBESTOS ABATEMENT AT THE  
MILTON ELEMENTARY SCHOOL  
Project Number: CEI-022119

BID FORM

WASTE TRANSPORTER LIST

The Contractor has included all required transport of wastes in the bid and will use the following licensed and permitted transporter(s) on this project without substitution:

1. **Transporter 1:**
   
   Transporter Name: ____________________________
   
   Transporter Address: ____________________________
   
   Telephone Number: (_____) _______ - _____________

2. **Transporter 2:**
   
   Transporter Name: ____________________________
   
   Transporter Address: ____________________________
   
   Telephone Number: (_____) _______ - _____________
BID FORM

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date to the Cape Henlopen School District.

All the terms and conditions of Project Number CEI-022119 have been thoroughly examined and are understood.

NAME OF BIDDER: ____________________________________________

AUTHORIZED REPRESENTATIVE (TYPED): ___________________________

AUTHORIZED REPRESENTATIVE (SIGNATURE): _________________________

TITLE: _________________________________________________________

ADDRESS OF BIDDER: __________________________________________

_________________________________________________________________

E-MAIL: _________________________________________________________

PHONE NUMBER: _______________________________________________

Sworn to and Subscribed before me this __________________________ day of __________________ 20____.

My Commission expires _______________________. NOTARY PUBLIC ________________________

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.
AFFIDAVIT
OF
EMPLOYEE DRUG TESTING PROGRAM

4104 Regulations for the Drug Testing of Contractor and Subcontractor Employees Working on Large Public Works Projects requires that Contractors and Subcontractors implement a program of mandatory drug testing for Employees who work on Large Public Works Contracts funded all or in part with public funds.

We hereby certify that we have in place or will implement during the entire term of the contract a Mandatory Drug Testing Program for our employees on the jobsite, including subcontractors that complies with this regulation:

Contractor/Subcontractor Name: ______________________________________

Contractor/Subcontractor Address: ______________________________________

Authorized Representative (typed or printed): _____________________________

Authorized Representative (signature): ___________________________________

Title: _________________________________________________________________

Sworn to and Subscribed before me this ______________ day of ______________ 20___.
My Commission expires __________________.  NOTARY PUBLIC ____________________

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.
STATE OF DELAWARE
OFFICE OF MANAGEMENT AND BUDGET

BID BOND

TO ACCOMPANY PROPOSAL
(Not necessary if security is used)

KNOW ALL MEN BY THESE PRESENTS That: 

____________________________________, in the County of ______________ 

and State of ________________________ as Principal, and 

____________________________________, in the County of ______________

and State of ________________________ as Surety, legally authorized to do business in the State of Delaware 

("State"), are held and firmly unto the State in the sum of ________________________ 

____________________ Dollars ($____________________), or __________ percent not to exceed ________________ 

Dollars ($____________________) of amount of bid on Contract CEI-022119, to be paid to the State for the use and benefit of ________________________ (Cape Henlopen School District) for which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators, and successors, jointly and severally for and in the whole firmly by these presents.

NOW THE CONDITION OF THIS OBLIGATION IS SUCH That if the above bonded Principal who has submitted to the ________________________ (Cape Henlopen School District) a certain proposal to enter into this contract for the furnishing of certain material and/or services within the State, shall be awarded this Contract, and if said Principal shall well and truly enter into and execute this Contract as may be required by the terms of this Contract and approved by the ________________________ (Cape Henlopen School District) this Contract to be entered into within twenty days after the date of official notice of the award thereof in accordance with the terms of said proposal, then this obligation shall be void or else to be and remain in full force and virtue.

Sealed with __________ seal and dated this __________ day of _____________ in the year of our Lord two thousand and ________________ (20__) 

SEALED, AND DELIVERED IN THE 

Presence of

____________________________________

Name of Bidder (Organization)

Corporate 

Seal

By: ________________________________

Authorized Signature

Attest: ______________________________

Title

Witness: ______________________________

By: ________________________________

Title

BID BOND 00 43 13
ADDENDUM No. 2
April 2, 2019


Bid Due: Thursday, April 11, 2019 at 2:00 PM (Local Time) (Unchanged)
Bids are due at the Cape Henlopen School District Office,
1270 Kings Highway, Lewes, Delaware 19958.
Bids will be publicly opened at that time.

The project scope of work and project specifications are hereby changed as follows:

1. **Suspended Ceiling Tiles and Tracks:** All non-asbestos suspended ceiling tiles and track removed by the Contractor to access any asbestos-containing materials must be properly disposed at an off-site location by the Contractor at the facility listed on the bid form. The existing ceiling light fixtures and building sensors must remain functional, wired in place and undamaged. Prior to starting the abatement, the Contractor shall wrap each light fixture and sensor with one layer of polyethylene sheeting in a manner to protect the fixture and sensor from fiber exposure and damage during the abatement. After the abatement, the polyethylene sheeting shall be removed and properly disposed by the Contractor. All ceilings, light fixtures and building sensors in the work areas shall be in a safe condition when work is complete. All costs associated with this requirement must be included in the Lump Sum bid amount. Any suspended ceiling and tracks which do not require to be removed by the Contractor in a work area can remain undisturbed and in place.

The Contractors providing bids shall incorporate this Addendum into the Project Specifications and acknowledge receipt on the bid form.

The Cape Henlopen School District reserves the right to waive irregularities and reject any and all bids.

Any changes to the specification will be provided in a future Addendum for this project.

COMPLIANCE ENVIRONMENTAL, INC.

Valentino P. De Rocili, Ph.D., CHMM
Senior Principal Consultant, Asbestos Project Designer
vderocili@compliancecanhelp.com

[ END OF ADDENDUM No. 2 ]
Geotechnical Subsurface Investigation Report

Milton Elementary School Addition

512 Federal Street
Milton, Delaware

PRESENTED TO

Cape Henlopen School District
1270 Kings Highway
Lewes, Delaware 19958

PRESENTED BY

Tetra Tech, Inc.
240 Continental Drive
Suite 200
Newark, DE 19713

P +1-302-738-7551
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tetratech.com

Approved by:

Ralph H. Boedeker, P.E.
Manager, Geotechnical Engineering and Construction Services
January 22, 2019

103IS5178
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<td>15</td>
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- Appendix C Laboratory Testing Summary
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INTRODUCTION

This report presents results of a geotechnical subsurface investigation regarding a new addition at Milton Elementary School, 512 Federal Street, Milton, Delaware. Purposes of this study were to investigate subsurface conditions within the project site, formulate foundation design criteria for the proposed site development, and offer pertinent geotechnical site recommendations for construction.

This geotechnical study evaluated subsurface conditions within the project site, and the report offers recommendations based on an exploration of subsurface soil conditions by means of Standard Penetration Test (SPT) Borings (ASTM International [ASTM] D1586). The scope of this investigation included a test boring program, infiltration testing in support of stormwater management design activities, laboratory testing of representative soil samples, engineering analyses of the available data, and preparation of this engineering report.

These services were provided under the supervision of a professional geotechnical engineer registered in the State of Delaware.
2.0 DESCRIPTIONS, INVESTIGATIONS, AND SUBSURFACE CONDITIONS

The following sections include a site description and discussions regarding proposed development of the facility, the geotechnical subsurface investigation program, subsurface conditions, and infiltration testing.

2.1 General Site Description and Proposed Facility Development

Initially, a large portion of the existing school structure will be demolished; the addition will be constructed at the back of the remaining building area. Underground utilities are present within the area of the addition. The school’s existing boiler room has a basement level; an area of the addition will be adjacent to the boiler room. Preliminary site development plans are in Appendix A. Development also includes pavements (parking lots and access roads) and stormwater management (SWM) features. The school addition will consist of a one- and two-story structure with a slab-on-grade (i.e., no basement). The second floor areas will be on-deck, and roof construction will be a combination of steel beams and bar joists.

Most of the addition area will have a finished floor elevation of 30.53, and other areas (food service areas) will have an elevation of 28.54, resulting in minor net cuts and fills to establish slab subgrade. Estimated structural loads provided by the project structural engineer are as follows:

- Maximum column axial loads: 150 kips
- Maxumum wall loads: 1.5 kips per lineal foot (klf).

If actual design values vary appreciably from the above values, the project geotechnical engineer should be notified to determine if additional analyses are warranted.

2.2 Geotechnical Subsurface Investigation Program

Twenty-three SPT borings were advanced at the site from January 9 to 10, 2019, to collect representative soil samples and identify conditions of subsurface soil and groundwater. Approximate locations of the borings are depicted in Appendix A. Seven test borings (TB-01 through TB-07) were advanced within proposed building areas to final depth of 25 feet below ground surface (bgs). Seven borings (PB-01 through PB-07) were advanced within proposed parking lot and access road areas to final depth of 6 feet bgs. Nine borings (IB-01 through IB-09) were advanced as offsets at proposed infiltration testing locations to depth of 12 or 14 feet bgs.
Advancements of borings proceeded by use of track-mounted Geoprobe drilling rigs. SPT split-spoon samples (ASTM D1586) within the building areas were collected from each boring at approximate 2.5-foot intervals to depth of 10 feet bgs, and thereafter at 5-foot intervals. SPT split-spoon samples at infiltration test and pavement areas were continuously collected. In the SPT procedure, a 2-inch-outside diameter (O.D.) split-barrel sampler is driven into the soil a distance of 18 or 24 inches by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler from the 6- to 18-inch interval is termed the Standard Penetration Resistance (SPR) N-value. This value can be used as a qualitative indication of the in-place relative density of cohesionless (e.g., granular) soils. It is also a secondary indicator of consistency of cohesive soils. Gravel, cobbles, and boulders may induce high blow counts not representative of the soil’s relative density/consistency. This indication is qualitative because many factors can significantly affect the SPR value (i.e., drilling crew procedures, drill rigs, and hammer-rod assemblies, etc.).

Performances of the test borings were reviewed by a Tetra Tech, Inc. (Tetra Tech) geotechnical technician. Test boring logs (Appendix B) include soil and groundwater data obtained from the explorations. After completion of the borings, they were backfilled with the auger soil cuttings. Test boring surface elevations were provided by the project civil design engineer.

All soil samples collected during this investigation were inspected and described visually in Tetra Tech’s geotechnical laboratory. Thirty-seven Water Content Tests (ASTM: D2216) and Percent Finer than a No. 200 Sieve Tests (ASTM: D1140) were performed to assist in determining the general site stratigraphy, and to measure the amount of silt and clay particulate in the soil samples. Results of the grain-size analysis, in combination with visual review of the soil samples, were referenced to determine the Unified Soil Classification System (USCS) designation for the soils encountered, which provided information regarding soil engineering behavior. A summary of laboratory testing results appears in Appendix C. The soil samples collected during this investigation will be retained for a period of 2 months, after which they will be discarded unless further instructions are received regarding their disposition.

2.3 Subsurface Conditions

Subsurface conditions encountered at boring locations are described in detail in the test boring logs (Appendix B). Subsurface conditions between boring locations were interpolated, and may not reflect actual conditions.
Beneath a surficial layer of topsoil or pavements, the predominant subsurface conditions within the investigation area can generally be described as variable brown, fine and fine to medium sand, with a trace to a little silt (USCS: SM and SP-SM). Thin lenses of silt, clay, and clayey sands were observed sporadically within the granular soils. SPR values within the proposed building area indicate a loose relative density (on average) within the upper 15 feet of the subsurface.

Apparent groundwater was encountered within each of the deeper test borings advanced within the proposed building area, ranging in depth from 18 to 20 feet bgs. Groundwater elevations fluctuate throughout a given year, depending on actual field porosity and seasonal and annual variations of precipitation. Groundwater fluctuations of several feet should be anticipated.

### 2.4 Infiltration Testing

Nine infiltration tests (IB-01 through IB-09) were performed at the site during the period January 10 to 12, 2019, at locations requested by the project civil engineer. Test locations are depicted in Appendix A. Facility bottom depths were determined by reference to proposed SWM facility bottom and existing grade elevations provided by the project civil engineer. Logs for the previously advanced SPT off-set borings are in Appendix B; these borings were advanced to minimum depth of 3 feet below stormwater management feature bottom elevations, or to depth of groundwater, whichever was less. Soil boring logs and soil classifications represent our interpretation of the field data based on visual examination and selected laboratory testing. Soil mottling was not apparent in the soil boring samples.

Infiltration testing occurred at each requested location by application of a single-ring, falling head testing method in accordance with ASTM D5126 and Delaware Department of Natural Resources and Environmental Control’s (DNREC) proposed Supplemental Requirements for Best Management Practices. Target test depths were provided by the project civil engineer—target depth of 3 feet below the SWM facility bottom. Detailed results of the infiltration testing are listed in the Infiltration Testing Tables in Appendix D. Table 1 below lists depths to bottom of SWM facilities, depths to encountered apparent groundwater, testing depths, results of the infiltration testing, and USCS classification of soils encountered at the infiltration test depths and proposed SWM facility depths.
# TABLE 1
SUMMARY OF RESULTS FROM INFILTRATION INVESTIGATION AND TESTING

<table>
<thead>
<tr>
<th>Test ID</th>
<th>SWM Facility Depth (ft)</th>
<th>Target Test Depth (ft)</th>
<th>Depth to Encountered Groundwater (ft)</th>
<th>Infiltration Test Depth (ft)</th>
<th>Infiltration Test Results</th>
<th>USCS Class. At Approx. Test Depth</th>
<th>USCS Class. At Approx. SWM Facility Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>IB-01</td>
<td>5.8</td>
<td>8.8</td>
<td>NE at 12’</td>
<td>8.12</td>
<td>12.67</td>
<td>5.40</td>
<td>SP-SM</td>
</tr>
<tr>
<td>IB-02</td>
<td>5.6</td>
<td>8.6</td>
<td>NE at 12’</td>
<td>8.50</td>
<td>0.0</td>
<td>0.0</td>
<td>SC-CL</td>
</tr>
<tr>
<td>IB-03</td>
<td>5.0</td>
<td>8.0</td>
<td>NE at 12’</td>
<td>7.86</td>
<td>1.20</td>
<td>1.68</td>
<td>SP-SM</td>
</tr>
<tr>
<td>IB-04</td>
<td>5.1</td>
<td>8.1</td>
<td>NE at 12’</td>
<td>8.03</td>
<td>2.52</td>
<td>0.36</td>
<td>SM</td>
</tr>
<tr>
<td>IB-05</td>
<td>5.3</td>
<td>8.3</td>
<td>NE at 12’</td>
<td>8.30</td>
<td>1.56</td>
<td>0.36</td>
<td>SM</td>
</tr>
<tr>
<td>IB-06</td>
<td>5.3</td>
<td>8.3</td>
<td>NE at 12’</td>
<td>8.36</td>
<td>1.92</td>
<td>1.20</td>
<td>SM/SC</td>
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<tr>
<td>IB-07</td>
<td>7.2</td>
<td>10.2</td>
<td>10</td>
<td>6.80</td>
<td>0.48</td>
<td>0.60</td>
<td>SM</td>
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<tr>
<td>IB-08</td>
<td>8.6</td>
<td>11.6</td>
<td>10</td>
<td>6.65</td>
<td>3.12</td>
<td>2.52</td>
<td>SM</td>
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<tr>
<td>IB-09</td>
<td>9.9</td>
<td>12.9</td>
<td>12</td>
<td>9.05</td>
<td>1.80</td>
<td>1.68</td>
<td>SM</td>
</tr>
</tbody>
</table>

**Notes:**
Test depths for IB-07, IB-08, and IB-09 were raised due to encounter with groundwater.
Exploratory borings at off-set location to infiltration test locations were advanced to 12 feet bgs, except at IB-09, where advancement was to 14 feet bgs.
USCS classifications were based on combination of laboratory testing and visual observation.

**Abbreviations:**
NE = Not encountered
SWM = Stormwater management
USCS = Unified Soil Classification System

Typically, infiltration design values are determined by applying a safety factor of 2.0 to the second 1-hour test.

The above-listed infiltration design values are recommendations based on field data acquired at the localized test locations and depths. Variations among test locations should be anticipated. Final project infiltration design values for the various stormwater management features should be determined by the project civil engineer based on layout and functioning of the features, final depths, and data provided herein.
3.0 GEOTECHNICAL EVALUATION AND DESIGN RECOMMENDATIONS

Tetra Tech evaluated subsurface conditions at the project site for suitability of the proposed site development. Tetra Tech believes that site subsurface conditions are suitable for placement of the proposed school addition within certain limitations. Some site preparation work will be required prior to construction, including demolition and removal of existing site buildings and foundations. Subsurface conditions directly below existing building slabs are relatively unknown. Therefore, upon removal of existing structures, subgrade soils should be inspected by a geotechnical engineer from this office to assess their suitability for the proposed site development.

Design of building foundations and other aspects of the proposed site development that would be influenced by geotechnical conditions are discussed in the following sections. Recommendations regarding general site construction are offered in Section 4.0. Foundation evaluations and recommendations presented herein assume adherence to the construction recommendations.

3.1 Shallow Foundation Systems

After completion of all site preparation work as recommended herein (Section 4.0), shallow foundations will be placed within the properly prepared natural soils at the site, or within properly placed structural fill used to bring building areas to design grades. To prevent additional structural loading of the existing lower wall of the boiler room, and because of the unknown condition of soils used to backfill the wall, the base of the addition footings in the vicinity of the boiler room wall should be placed at or lower than a theoretical 1.7H:1V line starting at and upward from the interior base of the boiler room wall.

An engineering analysis indicates that shallow spread foundations may be designed for a maximum net allowable soil bearing pressure of 3,000 pounds per square foot (psf), based on results of field and laboratory testing of soils encountered during this evaluation, structural loading information provided by the structural engineer, and the above requirements.

Estimates of foundation settlement were developed to evaluate effects of building loads on subsurface conditions. Assuming a net allowable bearing capacity of 3,000 psf, we estimate that maximum total settlement of column spread foundations, and differential settlement between columns, will be less than 1.0 and 0.75 inch, respectively. Assuming a net allowable bearing capacity of 3,000 psf, we estimate that maximum total and differential settlement of continuous wall footings will be less than 1.0 and 0.75 inch, respectively, over a distance of 25 feet. However,
the structural engineer indicated a maximum load of 1.5 klf for continuous wall footings. Assuming this loading and a minimum footing width (B) of 2.5 feet, actual loading of the footing would be 600 psf. Assuming a continuous footing with a maximum load of 600 psf, we estimate that maximum total and differential settlement will be less than 0.33 and 0.25 inch, respectively, over a distance of 25 feet.

Because of the encountered subsurface granular soils, settlement is expected to occur quickly (elastic settlement), and is expected to be “built out” primarily during construction and final loading of foundations. These magnitudes of total and differential settlement are generally considered within tolerable limits for structures such as the proposed school. However, settlement tolerance of the proposed building should be verified by the project’s structural engineer.

Exterior footings exposed to freezing conditions should be placed at least 24 inches below finished exterior grade. To provide the aforementioned allowable bearing capacity, interior footings should be placed at least 24 inches below finished floor elevations. Because of the loose relative density of the subsurface sands, shallow-spread and continuous footings should have minimum widths of 4.0 and 2.5 feet, respectively, regardless of bearing pressure. Masonry walls, if designed, should be provided with frequent control joints at architecturally convenient locations to provide preferred locations for differential settlements.

Recommendation is to provide a separation joint where the addition adjoins the existing structure to accommodate differential settlement between structures. Slight settlement of existing foundations may occur where they are located adjacent to new foundations.

### 3.2 Ground-Supported Floor Slabs

All ground-supported floor slabs should be designed as free-floating and not connected to other structural elements. The slab may bear on footing projections, but isolation joints should be utilized to accommodate potential differential settlement between the floor slab and adjacent columns or walls. Control joints should also be provided in floor slabs, as required, to provide a preferred location for possible differential slab settlement. All floor slabs should be structurally reinforced to control cracking, more evenly distribute applied loads, and bridge localized zones of lower density material. Placement of a minimum 4 inches of poorly graded, free draining stone aggregate (e.g., American Association of State Highway and Transportation Officials [AASHTO] No. 57 Stone) under all floor slabs is also recommended to provide a uniform bearing surface with
all-weather support, and to serve as a capillary break. To preclude floor dampness, placement of a minimum 0.01-inch (10-mil) polyethylene membrane or equivalent vapor barrier beneath the floor slab is recommended.

Actual stress distribution and settlement response under the floor slabs will be a function of structural rigidity of the slab and uniformity of applied loads. Individual equipment, machinery, and tanks should be supported on their own foundations and isolated from the floor slab to avoid localized cracking of the floor slab.

For floor slabs installed as recommended herein, a modulus of subgrade reaction (Ks) of 125 pounds per cubic inch (pci) is estimated for use in concrete slab-on-grade design.

### 3.3 Retaining Walls (If Required)

Determination of lateral earth pressures on retaining walls depends on (1) height and intended yield (i.e., deflection) of the wall, (2) physical properties (i.e., c, φ, and γ) and geometry of the soil fill/backfill behind and in front of the wall, and (3) drainage conditions. Retaining walls allowed to adequately deflect at the top (e.g., a cantilever retaining wall)—causing the soil behind the wall to adequately deflect with the wall—may be designed for the “active” condition of lateral earth pressure. “Passive” lateral earth pressures may be used in front of the wall where the wall adequately deflects and pushes into the soil on the toe side. Rigid retaining walls or walls designed not to deflect at the top during filling/backfilling should be designed for the “at-rest” condition of lateral earth pressure.

To facilitate construction, to minimize lateral earth pressures, and to preclude hydrostatic pressure buildup behind retaining walls, filling/backfilling behind and in front of retaining walls should proceed with use of a granular, free-draining material (with less than 25% passing a No. 200 sieve). Placement and compaction of fill/backfill material should accord with engineered fill recommendations offered in subsequent sections.

The following soil parameters for lateral earth loads are recommended (Table 2):
TABLE 2
SOIL PARAMETERS FOR LATERAL EARTH LOADS

<table>
<thead>
<tr>
<th>Backfill Materials</th>
<th>Imported Granular Fill (&lt;25% passing No. 200 Sieve)</th>
<th>In-situ Condition Onsite Granular Soils (Stratum B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moist Unit Weight (pounds per cubic foot [pcf])</td>
<td>130</td>
<td>125</td>
</tr>
<tr>
<td>At Rest Earth Pressure Coefficient ($K_0$)</td>
<td>0.44</td>
<td>0.53</td>
</tr>
<tr>
<td>Active Earth Pressure Coefficient ($K_a$)</td>
<td>0.28</td>
<td>0.36</td>
</tr>
<tr>
<td>Passive Earth Pressure Coefficient ($K_p$)</td>
<td>3.5</td>
<td>2.77</td>
</tr>
<tr>
<td>Coefficient of Sliding Friction (concrete to soil)</td>
<td>0.42</td>
<td>0.34</td>
</tr>
</tbody>
</table>

Soil parameters in Table 2 are based on the subsurface profile observed in the test borings, and are estimated from our experience with soils in the Atlantic Coastal Plain province. Although general index testing was performed on representative samples, no specific laboratory testing was conducted to determine actual soil strength characteristics.

To minimize buildup of potential hydrostatic pressures, a 4-inch-diameter subdrain should be placed behind retaining walls, along and on top of the wall foundation. The subdrain should consist of a perforated drainage pipe surrounded by a minimum of 12 inches of graded aggregate free of fines, such as AASHTO No. 57 Stone, wrapped with a nonwoven geotextile fabric (Geotex 501 or equivalent). The subdrain should be sloped and should lead to a gravity outfall and/or an active dewatering sump.

3.4 Seismic Design

Based on subsurface conditions encountered during the test boring program, Tetra Tech recommends utilization of a site Class D for seismic design purposes. The site class definition is in Section 1613.3.2 of the 2012 International Building Code.

3.5 Pavement Design

The shallow granular soils at the site are generally considered “good” subgrade soils per AASHTO (i.e., maximum 35% passing a No. 200 sieve). “Good” soils are considered better draining and less susceptible to frost than fine-grained “poor” subgrade materials.
Tetra Tech recommends placement of a non-woven geotextile fabric (Geotex 601 or equivalent) between the pavement section aggregate base course and prepared subgrade. This geotextile would serve as a separator between the base course aggregate and the subgrade to maintain the integrity of the pavement base course aggregate and reduce pavement maintenance costs. The fabric should be placed in a stretched condition (no wrinkles), directly over the carefully prepared and reviewed subgrade (discussed in Section 4.0).

Recommendations for pavement sections are as follows, and are based on proper site preparation (Section 4.0) and anticipated traffic loading. We have assumed presence in passenger car parking areas of primarily passenger vehicles, with limited numbers of delivery trucks, trash collection vehicles, and other trucks or buses.

**Passenger Car Parking Areas**

<table>
<thead>
<tr>
<th>Depth</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 inches</td>
<td>Bituminous Surface Course, DelDOT Type C</td>
</tr>
<tr>
<td>2.5 inches</td>
<td>Bituminous Base Course, DelDOT Type B</td>
</tr>
<tr>
<td>8 inches</td>
<td>Graded Aggregate Base Course, DelDOT Type B, Underlain by Geotextile Fabric (Geotex 601 or equivalent)</td>
</tr>
<tr>
<td>12 inches</td>
<td>Total Depth</td>
</tr>
</tbody>
</table>

**Significant Bus Traffic Areas (Bus Lanes and Lots), Entrances, and Service/Access Roads**

<table>
<thead>
<tr>
<th>Depth</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 inches</td>
<td>Bituminous Surface Course, DelDOT Type C</td>
</tr>
<tr>
<td>3.5 inches</td>
<td>Bituminous Base Course, DelDOT Type B</td>
</tr>
<tr>
<td>10 inches</td>
<td>Graded Aggregate Base Course, DelDOT Type B, Underlain by Geotextile Fabric (Geotex 601 or equivalent)</td>
</tr>
<tr>
<td>15 inches</td>
<td>Total Depth</td>
</tr>
</tbody>
</table>

All pavement section materials and construction should conform to the Delaware Department of Transportation’s “Standard Specifications for Construction and Materials,” latest revision.
4.0 GENERAL CONSTRUCTION RECOMMENDATIONS

The following sections discuss preparation of the site, engineered fill, construction of the shallow foundation, and quality control and quality assurance of site work.

4.1 Site Preparation

At start of construction, all applicable buildings and their foundations (demolition), pavements, topsoil, vegetation, and roots should be stripped and entirely removed from all proposed building and pavement areas. As previously discussed, shallow subsurface conditions directly below existing building slabs and foundations are relatively unknown. Therefore, upon removal of existing structures, subgrade soils should be inspected by a geotechnical engineer from this office to assess their condition and suitability for foundation and slab support.

All loose soil spoils present in excavations resulting from foundation demolition activities should be entirely removed from the excavations. Subsequently, subgrade soils should be reviewed by a qualified geotechnical technician, and excavations should be backfilled in accord with Paragraph 4.2 – Engineered Fill.

Prior to placement of fill, the subgrade of building and pavement fill areas should be proof-rolled with a minimum 15-ton vibratory smooth-wheeled roller in the presence of a qualified soils technician. Proof-rolling will increase the density of exposed subgrade areas that will have been loosened or disturbed during stripping and clearing operations. Proof-rolling will also expose potential localized soft and yielding areas. The exposed surfaces should be compacted to a visually firm and stable condition. Subgrade compaction will facilitate placement and compacting of engineered fill at the required densities. Proof-rolling should also occur at final “cut” or “at grade” areas to ensure a firm and stable subgrade. Because of the loose relative density of the shallow subsurface soils, subgrade of fill areas, as well as final cut areas, should be compacted with a minimum four passes with the aforementioned roller.

Any localized soft and unstable areas encountered during the proof-rolling program that cannot be adequately stabilized and compacted should be undercut and replaced via procedures discussed in Section 4.2. Localized soil conditioning and/or undercutting of soft subgrade soils should be anticipated during construction, especially during inclement weather seasons (winter and spring). If these soils are observed to be soft and unstable during proof-rolling, we recommend an attempt to initially condition the soils by allowing them to dry during favorable
weather conditions (e.g., sun and wind). If conditioning of these soils (via aerating/drying) appears infeasible, they should be undercut to a firm and stable subgrade.

Because ponding water may destabilize soil during construction, soil subgrade disturbance should be minimized by providing positive surface drainage and limiting construction traffic on exposed subgrade soils.

4.2 Engineered Fill

During bulk grading activities, engineered fill required to bring structural building areas to grade should be a well-graded granular material containing no organic or other deleterious materials. Engineered fill should also be used to backfill foundations, retaining walls, and excavations made during demolition activities. The granular subsurface soils at the site are considered suitable for use as engineered fill. Interbeds of silt and clay, when encountered, should be segregated and not used as engineered fill.

If sufficient quantities of on-site materials are not available for engineered fills, imported borrow material should meet USCS classifications of SW, SM, SC, or GW, with no more than 35% passing a No. 200 sieve (ASTM D1140), and a plasticity index (ASTM D4318) not exceeding 6.

Engineered fill material should be placed in horizontal thin lifts with compacted thickness no greater than 8 inches. Engineered fill lifts for hand tampers should not exceed 4 inches. Each thin lift of fill/backfill material placed below structural elements (i.e., foundations and floor slabs) and pavements should be compacted to the following criteria:

- Within proposed building area (defined as the area extending at least 5 feet beyond foundation element perimeters), compaction should be to at least 95% of maximum dry density, as determined by the Modified Proctor Test (ASTM D1557).

- Within proposed pavement areas and utility trenches outside the building area, compaction should be to at least 90% of maximum dry density, as determined by the Modified Proctor Test (ASTM D1557).

Moisture content of engineered fill for placement should facilitate compaction of that fill (typically +/- 2-3% of optimum moisture, per ASTM D1557). Placement and compaction of engineered fill should be monitored and tested on a full-time basis by a qualified geotechnical technician.
4.3 **Shallow Foundation Construction**

All foundations should be placed on dry, non-frozen, firm soil. When excessively soft, wet, or frozen soil is encountered at the foundation base, this material should be undercut to suitable bearing materials. The undercut zone may be replaced in accordance with engineered fill recommendations. AASHTO No. 57 Stone could also be used as backfill within foundation undercut zones—placed in maximum 12-inch lifts and compacted by use of a vibratory plate compactor.

During excavation of foundations, disturbance of the subgrade soils may occur; therefore, compaction of the foundation subgrades should occur prior to placement of any reinforcing steel or concrete. Because of the loose relative density of shallow subsurface soils, all footing subgrades should be compacted to a minimum 93% of maximum dry density, as determined by the Modified Proctor Test (ASTM D1557). All foundation excavations should be reviewed to verify the quality of the bearing material—by a qualified geotechnical technician working under the supervision of a geotechnical engineer familiar with the recommendations of this report. Subgrade review should occur prior to placement of reinforcing steel or concrete, and should verify presence of suitable bearing soils.

All foundation excavations should be protected from ponding water and freezing conditions, and backfilled as soon as practical after placement of the foundation concrete. Backfilling should accord with recommendations regarding engineered fill compaction offered in Section 4.2.

4.4 **Underground Utilities**

Recommendation is to relocate any existing underground utilities within proposed structural areas outside of the proposed building area. In-place abandonment of existing utilities is not recommended because of the unknown quality and density of previously placed trench backfill material. Therefore, any existing utility trenches within building areas should be backfilled in accordance with the engineered fill recommendations after removal of the utility line.

4.5 **Site Work Quality Control and Assurance**

All site clearing, grading, proofrolling, fill placement, and foundation excavation/construction should be monitored by a qualified geotechnical technician working under the supervision of a geotechnical engineer. The technician should observe and document site preparation and proof-
rolling, engineered fill construction, foundation subgrades, and foundation construction—and should conduct appropriate field tests, as necessary, to verify that construction proceeds in accordance with applicable plans, specifications, and acceptable construction practice. Conclusions and recommendations in this report are based on the premise of competent field engineering and monitoring during construction. A pre-bulk grading meeting is recommended to review recommendations of this report so that the Earthwork Contractor understands the requirements for site preparation and foundation subgrade preparation at the site.
5.0 REPRESENTATIONS

This report was prepared in accordance with generally accepted engineering principles and practices, and is based on soil and groundwater conditions encountered during the field exploration. No warranty, expressed or implied, is made. Although generalized subsurface conditions have been inferred through interpolation and/or extrapolation of acquired field and laboratory data, actual subsurface conditions between soil boring locations are unknown. As a result, recommendations in this report may require modifications based on subsurface conditions actually encountered during construction. Tetra Tech should be notified if conditions encountered during construction differ from those shown by the test borings, thus possibly requiring re-evaluation of recommendations offered in this report.

Construction bidders should thoroughly familiarize themselves with the on-site subsurface soil and groundwater conditions described herein. Tetra Tech or the Cape Henlopen School District assumes no responsibility for interpretation or deductions by the awarded contractor based on information in this report. Variations in subsurface conditions are expected.
APPENDIX A

Site Development Plans and Test Boring Locations
FLOOR PLAN GENERAL NOTES:

1. ALL INTERIOR WALLS SHALL BE PARTITION TYPE P2.3, UNLESS NOTED OTHERWISE.
2. INTERIOR PARTITION TYPE TAGS APPLY TO THE ENTIRE LENGTH OF WALL INDICATED BY THAT TAG, REGARDLESS OF OPENINGS WITHIN THAT WALL, TYP. UNO.
3. REMOVE, STORE AND REPLACE EXISTING CEILING TILES AS REQUIRED TO PERFORM NEW WORK.
4. WHERE EXISTING CONSTRUCTION IS DAMAGED OR DISTURBED, PATCH AS REQUIRED TO RESTORE SURFACES TO THEIR ORIGINAL CONDITION.
5. ALL MASONRY/ROUGH OPENINGS (MO/RO) FOR INSIDE CORNER OF DOOR FRAMES ARE 4" FROM FACE OF MASONRY OR FACE OF STUD (TYPICAL UNO). MAINTAIN MINIMUM ADA PUSH/PULL REQUIRED CLEARANCES TO OBSTRUCTIONS (IE. WALLS, COLUMN WRAPS, ETC.).
6. ALL WORK IS TO BE IN STRICT COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL LAWS AND CODES, WHICH APPLY TO THESE USES AND TO GENERALLY ACCEPTED CONSTRUCTION TRADE PRACTICES.
7. ALL PLAN DIMENSIONS ARE TO FINISH FACE OF WALL UNLESS OTHERWISE NOTED.
8. ALL FURNITURE IS FOR REFERENCE ONLY. FURNITURE IS N.I.C.

EXISTING PARTITION & DOOR TO REMAIN
NEW PARTITION & DOOR
PARTITION TYPE. SEE A-601 FOR TYPES.

FLOOR PLAN GENERAL NOTES:

1. ALL WORK IS TO BE IN STRICT COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL LAWS AND CODES, WHICH APPLY TO THESE USES AND TO GENERALLY ACCEPTED CONSTRUCTION TRADE PRACTICES.
2. ALL PLAN DIMENSIONS ARE TO FINISH FACE OF WALL UNLESS OTHERWISE NOTED.
3. ALL FURNITURE IS FOR REFERENCE ONLY. FURNITURE IS N.I.C.

NEW WORK - BASEMENT FLOOR PLAN

NEW FLOOR FRAMING IN MUSIC ROOM
EXISTING BUILDING STRUCTURE
EXISTING GYM WALL TO REMAIN

FLOOR PLAN GENERAL NOTES:

1. ALL WORK IS TO BE IN STRICT COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL LAWS AND CODES, WHICH APPLY TO THESE USES AND TO GENERALLY ACCEPTED CONSTRUCTION TRADE PRACTICES.
2. ALL PLAN DIMENSIONS ARE TO FINISH FACE OF WALL UNLESS OTHERWISE NOTED.
3. ALL FURNITURE IS FOR REFERENCE ONLY. FURNITURE IS N.I.C.
APPENDIX B

Test Boring Logs
FIELD DESCRIPTION AND LOGGING SYSTEM FOR SOIL EXPLORATION

GRANULAR SOILS
(Sand, Gravel & Combinations)

**Density**

<table>
<thead>
<tr>
<th>Description</th>
<th>N (blows)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Loose</td>
<td>5 or less</td>
</tr>
<tr>
<td>Loose</td>
<td>6 to 10</td>
</tr>
<tr>
<td>Medium Dense</td>
<td>11 to 30</td>
</tr>
<tr>
<td>Dense</td>
<td>31 to 50</td>
</tr>
<tr>
<td>Very Dense</td>
<td>51 or more</td>
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</table>

**Particle Size Identification**

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<thead>
<tr>
<th>Description Term</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Trace</td>
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</tr>
<tr>
<td>Little</td>
<td>11 - 20</td>
</tr>
<tr>
<td>Some</td>
<td>21 - 35</td>
</tr>
<tr>
<td>And</td>
<td>36 - 50</td>
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</table>

**Relative Proportions**

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<thead>
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<th>Description Term</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
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<td>1 - 10</td>
</tr>
<tr>
<td>Little</td>
<td>11 - 20</td>
</tr>
<tr>
<td>Some</td>
<td>21 - 35</td>
</tr>
<tr>
<td>And</td>
<td>36 - 50</td>
</tr>
</tbody>
</table>

**COHESIVE SOILS**
(Silt, Clay & Combinations)

**Consistency**

<table>
<thead>
<tr>
<th>Description</th>
<th>N (blows)*</th>
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<tbody>
<tr>
<td>Very Soft</td>
<td>3 or less</td>
</tr>
<tr>
<td>Soft</td>
<td>4 to 5</td>
</tr>
<tr>
<td>Medium Stiff</td>
<td>6 to 10</td>
</tr>
<tr>
<td>Stiff</td>
<td>11 to 15</td>
</tr>
<tr>
<td>Very Stiff</td>
<td>16 to 30</td>
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<tr>
<td>Hard</td>
<td>31 or more</td>
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**Plasticity**

<table>
<thead>
<tr>
<th>Degree of Plasticity</th>
<th>Plasticity Index</th>
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<tbody>
<tr>
<td>None to Slight</td>
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</tr>
<tr>
<td>Slight</td>
<td>5 - 7</td>
</tr>
<tr>
<td>Medium</td>
<td>8 - 22</td>
</tr>
<tr>
<td>High to Very High</td>
<td>&gt; 22</td>
</tr>
</tbody>
</table>

**ROCK**
(Rock Cores)

**Rock Quality**

<table>
<thead>
<tr>
<th>Rock Quality Designation (RQD), %</th>
<th>Rock Quality Description</th>
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<tbody>
<tr>
<td>0-25</td>
<td>Very Poor</td>
</tr>
<tr>
<td>25-50</td>
<td>Poor</td>
</tr>
<tr>
<td>50-75</td>
<td>Fair</td>
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<tr>
<td>75-90</td>
<td>Good</td>
</tr>
<tr>
<td>90-100</td>
<td>Excellent</td>
</tr>
</tbody>
</table>

**RQD:** Rock Quality Designation

**TCR:** Total Core Recovery

**SCR:** Solid Core Recovery

*N - Standard Penetration Resistance.* Driving a 2.0” O.D., 1-3/8” I.D. sampler a distance of 18 inches into undisturbed soil with a 140 pound hammer free falling a distance of 30.0 inches. The number of hammer blows to drive the sampler through each 6 inch interval is recorded; the number of blows required to drive the sampler through the final 12 inch interval is termed the Standard Penetration Resistance (SPR) N-value. For example, blow counts of 6/8/9 (through three 6-inch intervals) results in an SPR N-value of 17 (8+9).

**Groundwater** observations were made at the times indicated. Groundwater elevations fluctuate throughout a given year, depending on actual field porosity and variations in seasonal and annual precipitation.
**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Boring No.:** IB-01  
**Surface Elevation:** 27.8  
**Drilling Contractor:** HYNES & ASSOC.  
**Drilling Method:** SPT - ASTM D1586  
**Dates Drilled:** 01-09-19  
**Inspector:** M. ESPOSITO  
**Groundwater Depth:** NOT ENCOUNTERED  
**Total Depth:** 12.0

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
<th>Description of Materials</th>
<th>6&quot; Increment Blows *</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
<td>To</td>
<td>From</td>
<td>To</td>
<td>From</td>
<td>To</td>
</tr>
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<td>0.3</td>
<td>0.0</td>
<td>0.3</td>
<td>0.3</td>
<td>1.5</td>
</tr>
<tr>
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<td>2.0</td>
<td>1.5</td>
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<td>2.0</td>
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<td>8.0</td>
<td>8.0</td>
<td>10.0</td>
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<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
<td>10.0</td>
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<tr>
<td>6</td>
<td>10.0</td>
<td>12.0</td>
<td>10.0</td>
<td>12.0</td>
<td>12.0</td>
<td>12.0</td>
</tr>
</tbody>
</table>

**Notes/Comments:**  
Pocket Pentrometer Testing

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.

N: Number of blows to drive spoon from 6" to 18" interval.
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Strata Depth (ft)</th>
<th>Description of Materials</th>
<th>6” Increment Blows *</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
<td>To</td>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>1</td>
<td>0.0</td>
<td>0.3</td>
<td>24</td>
<td></td>
</tr>
<tr>
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<td>2.0</td>
<td>4.0</td>
<td>24</td>
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</tr>
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<td>4.0</td>
<td>6.0</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6.0</td>
<td>8.0</td>
<td>14</td>
<td>9.0</td>
</tr>
<tr>
<td>5</td>
<td>8.0</td>
<td>10.0</td>
<td>19</td>
<td>9.0</td>
</tr>
<tr>
<td>6</td>
<td>10.0</td>
<td>12.0</td>
<td>17</td>
<td>12.0</td>
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Notes/Comments: Pocket Pentrometer Testing

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.
N: Number of blows to drive spoon from 6" to 18" interval.
**TEST BORING LOG**

**Project Name:** MILTON ELEMENTARY SCHOOL

**Project Location:** 512 FEDERAL STREET, MILTON, DE

**Boring No.:** IB-03

**Dates(s) Drilled:** 01-09-19

**Inspector:** M. ESPOSITO

**Surface Elevation:** 27.0

**Drilling Method:** SPT - ASTM D1586

**Driller:** M. HYNES

**Drilling Contractor:** HYNES & ASSOC.

**Groundwater Depth (ft):** NOT ENCOUNTERED

**Total Depth (ft):** 12.0

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
<th>Description of Materials</th>
<th>6&quot; Increment Blows *</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>From</td>
<td>To</td>
<td>From</td>
<td>To</td>
<td>Topsoil (4&quot;)</td>
<td>0.0</td>
</tr>
<tr>
<td>1</td>
<td>0.0</td>
<td>2.0</td>
<td>0.3</td>
<td>2.0</td>
<td>Tan to brown fine to medium sand with a little silt.</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>2.0</td>
<td>4.0</td>
<td>18</td>
<td>4.0</td>
<td>Brown fine to medium sand with a little silt.</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4.0</td>
<td>6.0</td>
<td>20</td>
<td>6.0</td>
<td>Orange brown fine to medium sand with a trace to a little silt.</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>6.0</td>
<td>8.0</td>
<td>15</td>
<td>8.0</td>
<td>Brown to orange brown fine to medium sand with some silt.</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>8.0</td>
<td>10.0</td>
<td>7.5</td>
<td>10.0</td>
<td>Brown fine sand, trace to a little silt.</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>10.0</td>
<td>12.0</td>
<td>12.0</td>
<td>12.0</td>
<td>Brown fine sand with a little silt.</td>
<td>1</td>
</tr>
</tbody>
</table>

**Notes/Comments:**
- Pocket Penetrometer Testing

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.

N: Number of blows to drive spoon from 6" to 18" interval.
### TEST BORING LOG

**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Boring No.:** IB-04  
**Dates(s) Drilled:** 01-09-19  
**Inspector:** M. ESPOSITO  
**Surface Elevation:** 27.1  
**Drilling Method:** SPT - ASTM D1586  
**Driller:** M. HYNES  
**Drilling Contractor:** HYNES & ASSOC.  
**Groundwater Depth (ft):** NOT ENCOUNTERED  
**Total Depth (ft):** 12.0

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
<th>Description of Materials</th>
<th>6&quot; Increment Blows *</th>
<th>N</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>0.3</td>
<td>SP-SM</td>
<td>TOPSOIL (4&quot;)</td>
<td>1</td>
<td>2 4 4 6</td>
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<tr>
<td>2</td>
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<td></td>
<td>SAME</td>
<td>1</td>
<td>2 2 2 4</td>
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<tr>
<td>3</td>
<td>4.0</td>
<td>6.0</td>
<td>SM</td>
<td>BROWN FINE TO MEDIUM SAND WITH A LITTLE SILT. (SILTY CLAY THIN LENSE AT 4.5&quot;)</td>
<td>1</td>
<td>1 1 1 2</td>
</tr>
<tr>
<td>4</td>
<td>6.0</td>
<td>8.0</td>
<td></td>
<td>ORANGE BROWN FINE SAND WITH A LITTLE SILT.</td>
<td>1</td>
<td>1 1 1 2</td>
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<tr>
<td>5</td>
<td>8.0</td>
<td>10.0</td>
<td>SC</td>
<td>BROWN TO GRAY FINE SAND WITH SOME CLAY.</td>
<td>1</td>
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<tr>
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<td>10.0</td>
<td>12.0</td>
<td>SP-SM</td>
<td>BROWN FINE SAND, TRACE SILT.</td>
<td>1</td>
<td>3 2 2 5</td>
</tr>
</tbody>
</table>

**Notes/Comments:**  
Pocket Pentrometer Testing

**Groundwater Depth (ft):** NOT ENCOUNTERED  
**Total Depth (ft):** 12.0

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
N: Number of blows to drive spoon from 6" to 18" interval.
## Test Boring Log

**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Project No.:** 103/S5178

### Boring Details
- **Boring No.:** IB-05  
- **Dates Drilled:** 01-09-19  
- **Inspector:** M. ESPOSITO  
- **Surface Elevation:** 27.3

### Drilling Details
- **Drilling Method:** SPT - ASTM D1586  
- **Driller:** M. HYNES  
- **Drilling Contractor:** HYNES & ASSOC.

### Groundwater Information
- **Groundwater Depth:** NOT ENCOUNTERED  
- **Total Depth:** 12.0 ft

### Strata Details

<table>
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<tr>
<th>Sample No.</th>
<th>From (ft)</th>
<th>To (ft)</th>
<th>Strata Depth (ft) From (ft)</th>
<th>To (ft)</th>
<th>Strata (USCS)</th>
<th>Description of Materials</th>
<th>6&quot; Increment Blows *</th>
<th>N</th>
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<tbody>
<tr>
<td>1</td>
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<td>0.3</td>
<td>0.0</td>
<td>0.3</td>
<td>SM</td>
<td>ORANGE BROWN FINE SAND WITH A LITTLE SILT.</td>
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<td></td>
</tr>
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<td>2.0</td>
<td>4.0</td>
<td>2.0</td>
<td>4.0</td>
<td>SP-SM</td>
<td>ORANGE BROWN FINE TO MEDIUM SAND, TRACE TO A LITTLE SILT.</td>
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<td></td>
</tr>
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<td>3</td>
<td>4.0</td>
<td>6.0</td>
<td>4.0</td>
<td>6.0</td>
<td>SP-SM</td>
<td>BROWN FINE TO MEDIUM SAND, TRACE TO A LITTLE SILT.</td>
<td>1 2 2 4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6.0</td>
<td>8.0</td>
<td>6.0</td>
<td>8.0</td>
<td>SP-SM</td>
<td>BROWN FINE SAND, TRACE TO A LITTLE SILT.</td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td>8.0</td>
<td>10.0</td>
<td>8.0</td>
<td>10.0</td>
<td>SM</td>
<td>GRAYISH BROWN FINE SAND WITH A LITTLE SILT.</td>
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<td></td>
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<tr>
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<td>10.0</td>
<td>12.0</td>
<td>12.0</td>
<td>12.0</td>
<td>SM</td>
<td>GRAYISH BROWN FINE SAND WITH A LITTLE SILT.</td>
<td>1 2 3 5</td>
<td></td>
</tr>
</tbody>
</table>

### Notes/Comments:
- Pocket Pentrometer Testing
- Groundwater not encountered.
- Caved at 8.2’. Dry.

---

* Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.

N: Number of blows to drive spoon from 6" to 18" interval.
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
<th>Recov. (in)</th>
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<th>6&quot; Increment Blows *</th>
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<tr>
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<td>0.3</td>
<td>SP-SM</td>
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<td>TOPSOIL (3&quot;)</td>
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<td>ORANGE BROWN TO BROWN FINE TO MEDIUM SAND, TRACE SILT.</td>
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<tr>
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<td>4.0</td>
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<td>8.0</td>
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<td></td>
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<td>SM/SC</td>
<td>9</td>
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<td>12</td>
<td>YELLOW-BROWN FINE TO MEDIUM SAND, TRACE SILT.</td>
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Notes/Comments:
- Pocket Pentrometer Testing

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.

N: Number of blows to drive spoon from 6" to 18" interval.
Project Name: MILTON ELEMENTARY SCHOOL  
Project Location: 512 FEDERAL STREET, MILTON, DE  
Boring No.: IB-07  
Dates(s) Drilled: 01-09-19  
Inspector: M. ESPOSITO  
Surface Elevation: 18.2  
Drilling Method: SPT - ASTM D1586  
Driller: M. HYNES  
Drilling Contractor: HYNES & ASSOC.  
Groundwater Depth (ft): 10.0  
Total Depth (ft): 12.0

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
<th>Description of Materials</th>
<th>6&quot; Increment Blows *</th>
<th>N</th>
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<td>0.0-0.3</td>
<td>0.0-0.3</td>
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<td>4.0</td>
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<td>BROWN CLAYEY FINE SAND.</td>
<td>1 1 2 2 3</td>
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<tr>
<td>3</td>
<td>4.0-6.0</td>
<td>6.0</td>
<td>1.7</td>
<td>SM</td>
<td>GRAYISH BROWN FINE SAND WITH A LITTLE SILT, TRACE FINE</td>
<td>1 1 2 2 4</td>
<td></td>
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<tr>
<td>4</td>
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<td>8.0</td>
<td>1.7</td>
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<td>1 1 2 2 3</td>
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<td>8.0-10.0</td>
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<td>1.8</td>
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<td>1 1 2 1 4</td>
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Notes/Comments:  
Pocket Pentrometer Testing  

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
N: Number of blows to drive spoon from 6" to 18" interval.
## TEST BORING LOG

**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Project No.:** 103IS5178

### Boring Information
- **Boring No.:** IB-08  
- **Dates(s) Drilled:** 01-09-19  
- **Inspector:** M. ESPOSITO  
- **Surface Elevation:** 19.6  
- **Drilling Method:** SPT - ASTM D1586  
- **Driller:** M. HYNES  
- **Drilling Contractor:** HYNES & ASSOC.

### Groundwater Depth
- **Groundwater Depth (ft):** 10.0  
- **Total Depth (ft):** 12.0

### Sample Table

<table>
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<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata Depth (ft)</th>
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<td>10.0</td>
<td>12.0</td>
<td>12.0</td>
<td>17</td>
<td>10.0</td>
</tr>
</tbody>
</table>

### Description of Materials
- **TOPSOIL (4.5")**  
- **GRAYISH BROWN FINE TO MEDIUM SAND, TRACE SILT, TRACE FINE GRAVEL.**
- **SAME.**
- **GRAYISH BROWN FINE SAND WITH A LITTLE SILT.**
- **ORANGE BROWN FINE TO MEDIUM SAND WITH A LITTLE SILT.**
- **LIGHT BROWN TO TAN FINE SAND WITH A LITTLE SILT.**
- **LIGHT GRAY FINE SAND WITH SOME SILT.**
- **WET ON SPOON AT 10'.**
- **WATER LEVEL THROUGH AUGERS AT 11'.**
- **CAVED AT 8.5', MOIST.**

### Notes/Comments:
- **Pocket Pentrometer Testing**

---

**Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.**

* **N:** Number of blows to drive spoon from 6" to 18" interval.

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### Project Information
- **Project Name:** MILTON ELEMENTARY SCHOOL
- **Project Location:** 512 FEDERAL STREET, MILTON, DE
- **Project No.:** 103IS5178
- **Boring No.:** IB-09
- **Dates Drilled:** 01-09-19
- **Inspector:** M. ESPOSITO
- **Surface Elevation:** 20.9
- **Drilling Method:** Hand Augered
- **Driller:** M. HYNES
- **Drilling Contractor:** HYNES & ASSOC.
- **Groundwater Depth:** 12.0 ft
- **Total Depth:** 14.0 ft

### Test Boring Log

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
<th>Description of Materials</th>
<th>6&quot; Increment Blows *</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>3</td>
<td>2.0-5.5</td>
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<tr>
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</tr>
<tr>
<td>5</td>
<td>10.5-14.0</td>
<td>SP-</td>
<td>BROWN FINE TO MEDIUM SAND, TRACE SILT.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Sample 5:** 12.0-14.0 SM
  - Description: GRAYISH BROWN FINE SAND WITH A LITTLE TO SOME SILT.

---

**Notes/Comments:**
- Pocket Pentrometer Testing
- BORING LOCATION COULD NOT BE ACCESSED VIA DRILLING RIG.
- BORING WAS HAND AUGERED.

---

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

- * Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.
- N: Number of blows to drive spoon from 6" to 18" interval.
**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Project No.:** 103IS5178  
**Boring No.:** TB-01  
**Dates(s) Drilled:** 01-10-19  
**Inspector:** M. ESPOSITO  
**Surface Elevation:** 29.7  
**Drilling Method:** SPT - ASTM D1586  
**Driller:** M. HYNES  
**Drilling Contractor:** HYNES & ASSOC.  
**Groundwater Depth:** (ft): 19.5  
**Total Depth:** (ft): 25.5

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
<th>Description of Materials</th>
<th>6&quot; Increment Blows *</th>
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</thead>
<tbody>
<tr>
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<td>0.7</td>
<td>SP-SM</td>
<td>ASPHALT (1&quot;), GRAVEL SUBBASE (7&quot;)</td>
<td>6 8 5</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>3.0</td>
<td>4.5</td>
<td>SM</td>
<td>BROWN FINE TO MEDIUM SAND WITH A LITTLE SILT.</td>
<td>4 2 2</td>
<td>4</td>
</tr>
<tr>
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<td>6.0</td>
<td>7.5</td>
<td>SP-SM</td>
<td>GRAYISH BROWN FINE TO COARSE SAND WITH SOME SILT.</td>
<td>2 4 5</td>
<td>9</td>
</tr>
<tr>
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<td>10.5</td>
<td>SM</td>
<td>ORANGE BROWN TO GRAYISH BROWN FINE TO MEDIUM SAND WITH SOME SILT.</td>
<td>2 3 5</td>
<td>8</td>
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<tr>
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<td>YELLOWISH BROWN FINE TO MEDIUM SAND WITH A LITTLE SILT.</td>
<td>2 3 4</td>
<td>7</td>
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<tr>
<td>6</td>
<td>19.0</td>
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<td>5</td>
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<tr>
<td>7</td>
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<td>25.5</td>
<td>SM</td>
<td>ORANGE BROWN FINE TO MEDIUM SAND WITH A LITTLE SILT.</td>
<td>2 4 5</td>
<td>9</td>
</tr>
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**Notes/Comments:**  
Pocket Pentrometer Testing

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
N: Number of blows to drive spoon from 6" to 18" interval.
**Test Boring Log**

**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Boring No.:** TB-02  
**Surface Elevation:** 29.5

**Drilling Contractor:** HYNES & ASSOC.

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<th>6&quot; Increment Blows *</th>
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<td>To</td>
<td></td>
</tr>
<tr>
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<td>0.0</td>
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<td>9</td>
<td>ASPHALT (3&quot;), GRAVEL SUBBASE (7&quot;)</td>
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<tr>
<td>2</td>
<td>0</td>
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<td>4.5</td>
<td>14</td>
<td>GRAYISH BROWN FINE SAND WITH A LITTLE SILT.</td>
</tr>
<tr>
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<td>14</td>
<td>14</td>
<td>ORANGE BROWN FINE TO MEDIUM SAND WITH A LITTLE SILT.</td>
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<tr>
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<td>9.0</td>
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<tr>
<td>5</td>
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<td>LIGHT GRAY TO ORANGE BROWN FINE SAND WITH SOME SILT.</td>
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<tr>
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<td>ORANGE BROWN FINE TO MEDIUM SAND WITH A LITTLE SILT.</td>
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</table>

- **Notes/Comments:**  
  - Pocket Pentrometer Testing

*Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.

N: Number of blows to drive spoon from 6" to 18" interval.
**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Project No.:** 103/S5178  
**Boring No.:** TB-03  
**Dates(s) Drilled:** 01-10-19  
**Inspector:** M. ESPOSITO  
**Surface Elevation:** 29.5  
**Drilling Method:** SPT - ASTM D1586  
**Driller:** M. HYNES  
**Drilling Contractor:** HYNES & ASSOC.  
**Groundwater Depth (ft):** 20.0  
**Total Depth (ft):** 25.5

<table>
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<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
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<td>7</td>
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<td>3 4 3</td>
<td>7</td>
</tr>
<tr>
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<td>9.0</td>
<td>10.5</td>
<td>14</td>
<td>LIGHT BROWN FINE SAND WITH SOME SILT.</td>
<td>3 4 3</td>
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<tr>
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<td>9</td>
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<tr>
<td>8</td>
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<td>YELLOWISH BROWN FINE TO MEDIUM SAND WITH A TRACE TO A LITTLE SILT.</td>
<td>4 5 7</td>
<td>12</td>
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**Notes/Comments:**  
Pocket Pentrometer Testing  

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
N: Number of blows to drive spoon from 6" to 18" interval.
## Test Boring Log

**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Project No.:** 103IS5178  
**Boring No.:** TB-04  
**Dates(s) Drilled:** 01-10-19  
**Inspector:** M. ESPOSITO  
**Surface Elevation:** 29.5  
**Drilling Method:** SPT - ASTM D1586  
**Driller:** M. HYNES  
**Drilling Contractor:** HYNES & ASSOC.

<table>
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<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
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<th>N</th>
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<td>From</td>
<td>To</td>
<td>From</td>
<td>To</td>
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<td></td>
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</tr>
<tr>
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<td>6.0</td>
<td>8.0</td>
<td></td>
<td>17</td>
<td>GRAYISH BROWN FINE TO MEDIUM SAND WITH A LITTLE SILT.</td>
<td>3</td>
</tr>
<tr>
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<td>11.0</td>
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<tr>
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**Notes/Comments:**
- Pocket Pentrometer Testing

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
* N: Number of blows to drive spoon from 6" to 18" interval.
## TEST BORING LOG

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
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<th>6&quot; Increment Blows</th>
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<tbody>
<tr>
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<td>0.8</td>
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<td></td>
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<td></td>
<td>ASPHALT (3&quot;), GRAVEL SUBBASE (6&quot;)</td>
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<td></td>
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<tr>
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<td>3.0</td>
<td>4.5</td>
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<td>BROWN FINE TO MEDIUM SAND WITH A LITTLE SILT.</td>
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Notes/Comments:

- Pocket Pentrometer Testing

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.

N: Number of blows to drive spoon from 6" to 18" interval.

Pocket Pentrometer Testing

- WET ON SPOON AT 19.0'.
- WATER LEVEL THROUGH AUGERS AT 22'.
- CAVED AT 19.8'. MOIST
### Test Boring Log

**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Boring No.:** TB-06  
**Dates(s) Drilled:** 01-10-19  
**Inspector:** M. ESPOSITO  
**Surface Elevation:** 26.2  
**Drilling Method:** SPT - ASTM D1586  
**Driller:** M. HYNES  
**Drilling Contractor:** HYNES & ASSOC.  
**Groundwater Depth:** 18.0 ft  
**Total Depth:** 26.0 ft

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<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
<th>Description of Materials</th>
<th>6&quot; Increment Blows *</th>
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<tr>
<td></td>
<td>From</td>
<td>To</td>
<td>From</td>
<td>To</td>
<td>Rank</td>
<td>Recov. (in)</td>
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<td>16</td>
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</tbody>
</table>

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
N: Number of blows to drive spoon from 6" to 18" interval.

---

**Notes/Comments:** Pocket Pentrometer Testing

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

- WET ON SPOON AT 18".
- WATER LEVEL THROUGH AUGERS AT 21".
- CAVED AT 17.7' DRY.
### Project Information
- **Project Name:** MILTON ELEMENTARY SCHOOL
- **Project Location:** 512 FEDERAL STREET, MILTON, DE
- **Boring No.:** TB-07
- **Dates Drilled:** 01-10-19
- **Inspector:** M. ESPOSITO
- **Surface Elevation:** 29.3
- **Drilling Method:** SPT - ASTM D1586
- **Driller:** M. HYNES
- **Drilling Contractor:** HYNES & ASSOC.
- **Groundwater Depth (ft):** 20.0
- **Total Depth (ft):** 26.0

### Test Boring Log

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<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
<th>Description of Materials</th>
<th>6&quot; Increment Blows *</th>
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<tr>
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<tr>
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<td>1 3 4 3 7</td>
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</table>

- **Notes/Comments:**
  - Pocket Pentrometer Testing
  - WET ON SPOON AT 20'.
  - WATER LEVEL THROUGH AUGERS AT 22'.
  - CAVED AT 19.9'. DRY

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Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.
N: Number of blows to drive spoon from 6" to 18" interval.
## TEST BORING LOG

**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Project No.:** 103IS5178  
**Boring No.:** PB-01  
**Dates(s) Drilled:** 01-10-19  
**Inspector:** M. ESPOSITO  
**Surface Elevation:** 29.6  
**Drilling Method:** SPT - ASTM D1586  
**Driller:** M. HYNES  
**Drilling Contractor:** HYNES & ASSOC.  
**Groundwater Depth (ft):** NOT ENCOUNTERED  
**Total Depth (ft):** 6.0

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<tr>
<th>Sample No.</th>
<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
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<th>6” Increment Blows *</th>
<th>N</th>
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<tr>
<td></td>
<td>From</td>
<td>To</td>
<td>From</td>
<td>To</td>
<td>Blow</td>
<td>Topsoil (5.0”)</td>
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<tr>
<td>3</td>
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<td>6.0</td>
<td>15</td>
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<td>BROWN FINE SAND WITH A LITTLE SILT.</td>
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</table>

**Notes/Comments:**  
Pocket Penetrometer Testing

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
N: Number of blows to drive spoon from 6” to 18” interval.
### Test Boring Log

**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Boring No.:** PB-02  
**Surface Elevation:** 27.8

**Drilling Contractor:** HYNES & ASSOC.

**Drilling Method:** Hand Augered  
**Driller:** M. HYNES  
**Dates Drilled:** 01-10-19  
**Inspector:** M. ESPOSITO

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Sample Depth (ft)</th>
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<td>6.0</td>
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</table>

**Notes/Comments:**
- Pocket Pentrometer Testing
- BORING WAS HAND AUGERED DUE TO PROXIMITY OF LOCATION TO PLAY AREAS.
- GROUNDWATER NOT ENCOUNTERED.
- CAVED AT 3.7'. DRY.

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.

N: Number of blows to drive spoon from 6" to 18" interval.
### Test Boring Log

**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project No.:** 103IS5178  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Page 1 of 1**  

**Boring No.:** PB-03  
**Dates(s) Drilled:** 01-09-19  
**Inspector:** M. ESPOSITO  
**Surface Elevation:** 27.1  
**Drilling Method:** SPT - ASTM D1586  
**Driller:** M. HYNES  
**Drilling Contractor:** HYNES & ASSOC.  
**Groundwater Depth (ft):** NOT ENCOUNTERED  
**Total Depth (ft):** 6.0

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<th>6” Increment Blows *</th>
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<td>4.0</td>
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<td>5</td>
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**Groundwater:** NOT ENCOUNTERED.  
**Caved at 4.2’:** DRY.

---

**Notes/Comments:**
- Pocket Pentrometer Testing

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**Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.**

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.

N: Number of blows to drive spoon from 6” to 18” interval.
### Field Test Boring Log

**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE

**Boring No.:** PB-04  
**Dates Drilled:** 01-09-19  
**Surface Elevation:** 27.7  
**Drilling Method:** SPT - ASTM D1586  
**Drilling Contractor:** HYNES & ASSOC.

**Surface Elevation:** 27.7  
**Groundwater Depth (ft):** NOT ENCOUNTERED  
**Total Depth (ft):** 6.0  

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<th>Sample No.</th>
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<th>Strata (USCS)</th>
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<th>6&quot; Increment Blows</th>
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<td>2 3 5 6</td>
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**Notes/Comments:**  
* Pocket Pentrometer Testing*  

**Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.**

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
N: Number of blows to drive spoon from 6" to 18" interval.
**PROJECT NAME:** MILTON ELEMENTARY SCHOOL  
**PROJECT LOCATION:** 512 FEDERAL STREET, MILTON, DE  
**BORING NO.:** PB-05  
**DATING(S) DRILLED:** 01-10-19  
**INSPECTOR:** M. ESPOSITO

**SURFACE ELEVATION:** 28.5  
**DRILLING METHOD:** Hand Augered  
**DRILLER:** M. HYNES  
**DRILLING CONTRACTOR:** HYNES & ASSOC.  
**GROUNDWATER DEPTH:** NOT ENCOUNTERED  
**TOTAL DEPTH:** 6.0

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<th>Strata (USCS)</th>
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<td>SM</td>
<td>GRAYISH BROWN FINE SAND, TRACE SILT.</td>
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**NOTES/COMMENTS:**  
Pocket Pentrometer Testing

* Number of blows of 140 lb. hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
N: Number of blows to drive spoon from 6" to 18" interval.

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.
**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Project No.:** 103IS5178  
**Boring No.:** PB-06  
**Dates(s) Drilled:** 01-09-19  
**Inspector:** M. ESPOSITO  
**Surface Elevation:** 26.9  
**Drilling Method:** SPT - ASTM D1586  
**Driller:** M. HYNES  
**Drilling Contractor:** HYNES & ASSOC.  
**Groundwater Depth (ft):** NOT ENCOUNTERED  
**Total Depth (ft):** 6.0

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<th>Groundwater Depth (ft):</th>
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<th>6&quot; Increment Blows *</th>
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<td><strong>SM</strong></td>
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<td>4</td>
</tr>
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<td>4.0</td>
<td></td>
<td><strong>SM</strong></td>
<td>BROWN FINE SAND WITH SOME SILT.</td>
<td>2 2 6 6</td>
<td>8</td>
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<td>6.0</td>
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<td><strong>SP-SM</strong></td>
<td>YELLOW BROWN FINE SAND.</td>
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**Notes/Comments:**  
Pocket Pentrometer Testing

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
N: Number of blows to drive spoon from 6" to 18" interval.
**Project Name:** MILTON ELEMENTARY SCHOOL  
**Project Location:** 512 FEDERAL STREET, MILTON, DE  
**Project No.:** 103IS5178  

**Boring No.:** PB-07  
**Dates(s) Drilled:** 01-09-19  
**Inspector:** M. ESPOSITO  

**Surface Elevation:** 23.2  
**Drilling Method:** SPT - ASTM D1586  
**Driller:** M. HYNES  

**Drilling Contractor:** HYNES & ASSOC.  
**Groundwater Depth (ft): NOT ENCOUNTERED**  
**Total Depth (ft):** 6.0

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<th>Sample Depth (ft)</th>
<th>Strata Depth (ft)</th>
<th>Strata (USCS)</th>
<th>Groundwater Depth (ft)</th>
<th>Description of Materials</th>
<th>6&quot; Increment Blows</th>
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<td>ORANGE BROWN FINE TO MEDIUM SAND, TRACE SILT.</td>
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</tbody>
</table>

**Notes/Comments:**  
Pocket Pentrometer Testing

Strata (USCS) Designations are approximated based on visual review, except where indicated in Description of Materials.

* Number of blows of 140 lb. Hammer dropped 30 in. required to drive 2 in. split-spoon sampler in 6 in. increments.  
N: Number of blows to drive spoon from 6" to 18" interval.  
GROUNDWATER NOT ENCOUNTERED.  
CAVED AT 4.1'. DRY.
APPENDIX C

Laboratory Testing Summary
<table>
<thead>
<tr>
<th>Test Boring No.</th>
<th>Sample No.</th>
<th>Depth of Sample (ft.)</th>
<th>Water Content, % (ASTM D2216)</th>
<th>Percent Silts/Clays, % (ASTM D1140)</th>
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<td></td>
<td>5</td>
<td>12.0 13.0</td>
<td>17.6</td>
<td>20.8</td>
</tr>
</tbody>
</table>

Notes:
1) Sample depths based on feet below grade at time of exploration.
# Unified Soil Classification System [Casagrande (1948)]

<table>
<thead>
<tr>
<th>Major Divisions</th>
<th>Group Symbols</th>
<th>Typical Descriptions</th>
<th>Laboratory Classifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Grained Soils (more than half of material is larger than No. 200 sieve)</td>
<td>GW</td>
<td>Well-graded gravels, gravel-sand mixtures, little or no fines</td>
<td>$C_{u} &gt; \frac{D_{60}}{D_{10}}$ greater than 4: $C_{c} = \frac{(D_{30}/2)}{D_{10} \times D_{60}}$ between 1 and 3</td>
</tr>
<tr>
<td></td>
<td>GP</td>
<td>Poorly graded gravels, gravel-sand mixtures, little or no fines</td>
<td>Not meeting $C_{u}$ or $C_{c}$ requirements for GW</td>
</tr>
<tr>
<td></td>
<td>GM</td>
<td>Silty gravels, gravel-sand-silt mixtures</td>
<td>Limits plotting in hatched zone with $I_{p}$ between 4 and 7 are borderline cases requiring use of dual symbols</td>
</tr>
<tr>
<td></td>
<td>GC</td>
<td>Clayey gravels, gravel-sand-clay mixtures</td>
<td>Atterberg limits below A Line or $I_{p}$ less than 4</td>
</tr>
<tr>
<td></td>
<td>SW</td>
<td>Well graded sands, gravelly sands, little or no fines</td>
<td>Atterberg limits above A line with $I_{p}$ greater than 7</td>
</tr>
<tr>
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<td>SP</td>
<td>Poorly graded sands, gravelly sands, little or no fines</td>
<td>Limits plotting in hatched zone with $I_{p}$ between 4 and 7 are borderline cases requiring use of dual symbols</td>
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<tr>
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<td>SM</td>
<td>Silty sands, sand-silt mixtures</td>
<td>Not meeting $C_{u}$ or $C_{c}$ requirements for SW</td>
</tr>
<tr>
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<td>SC</td>
<td>Clayey sands, sand-clay mixtures</td>
<td>Atterberg limits below A Line or $I_{p}$ less than 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Atterberg limits above A line with $I_{p}$ greater than 7</td>
</tr>
</tbody>
</table>

## Major Divisions

<table>
<thead>
<tr>
<th>Group Symbols</th>
<th>Typical Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML</td>
<td>Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity</td>
</tr>
<tr>
<td>CL</td>
<td>Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays</td>
</tr>
<tr>
<td>OL</td>
<td>Organic silts and organic silty clays of low plasticity</td>
</tr>
<tr>
<td>MH</td>
<td>Inorganic silts, micaeous or diatomaceous fine sandy or silty soils, elastic silts</td>
</tr>
<tr>
<td>CH</td>
<td>Inorganic clays of high plasticity, fat clays</td>
</tr>
<tr>
<td>OH</td>
<td>Organic clays of medium to high plasticity, organic silts</td>
</tr>
<tr>
<td>Pt</td>
<td>Peat and other highly organic soils</td>
</tr>
</tbody>
</table>

---

(1) Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.
APPENDIX D

Infiltration Testing Tables
**Falling Head**  
**Single Ring Infiltration Test**

**Project:** Milton Elementary  
**Date:** 1/12/2019  
**Project No.:** 10/18/493  
**Test Location:** IB-1  

**Depth from top of Casing to Bottom of Boring (D):** 9.17 ft.  
**Height of Casing above Ground Surface (hc):** 1.05 ft.  

**Test Depth:** 8.12 ft.  
**Tester/ Technician Performing Test:** B. Hynes

<table>
<thead>
<tr>
<th>Time (t)</th>
<th>Time Elapsed (min)</th>
<th>Hydraulic Head (h) (in)</th>
<th>Change (Δh) (in)</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
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</tr>
<tr>
<td>4:15</td>
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<tr>
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<td>8.04</td>
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<td>4:45</td>
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<td>2.64</td>
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<td>4:55</td>
<td>10</td>
<td>2.16</td>
<td>3.24</td>
</tr>
<tr>
<td>5:05</td>
<td>10</td>
<td>1.44</td>
<td>0.72</td>
</tr>
<tr>
<td>5:15</td>
<td>10</td>
<td>0.24</td>
<td>1.20</td>
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<tr>
<td><strong>Test 1 Infiltration Rate (in/hr.):</strong></td>
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<td>12.67</td>
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</table>

| **Test 2** | | | |
| 5:25 | - | 10.44 | - |
| 5:35 | 10 | 9.48 | 0.96 |
| 5:45 | 10 | 8.52 | 0.96 |
| 5:55 | 10 | 7.80 | 0.72 |
| 6:05 | 10 | 6.84 | 0.96 |
| **Test 2 Infiltration Rate (in/hr.):** | | | 5.40 |
Falling Head
Single Ring Infiltration Test

Project: Milton Elementary  Date: 1/12/2019
Project No.: 10/18/493

Test Location: IB-2

Depth from top of Casing to Bottom of Boring (D): 9.51 ft.
Height of Casing above Ground Surface (h_c): 1.01 ft.

Test Depth: 8.50 ft.
Tester/Technician Performing Test: B. Hynes

<table>
<thead>
<tr>
<th>Time (t)</th>
<th>Time Elapsed (min)</th>
<th>Hydraulic Head (h) (in)</th>
<th>Change (Åh) (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>Presoak</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:35</td>
<td>-</td>
<td>12.00</td>
<td>-</td>
</tr>
<tr>
<td>3:50</td>
<td>15</td>
<td>11.52</td>
<td>0.48</td>
</tr>
<tr>
<td>4:05</td>
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<td>11.52</td>
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<td>0.00</td>
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Test 1 Infiltration Rate (in./hr.): 0.00
# Falling Head

**Single Ring Infiltration Test**

**Project:** Milton Elementary  
**Date:** 1/10/2019  
**Project No.:** 10/18/493

**Test Location:** IB-3

- **Depth from top of Casing to Bottom of Boring (D):** 10.00 ft.  
- **Height of Casing above Ground Surface (h_c):** 2.14 ft.

**Test Depth:** 7.86 ft.  
**Tester/ Technician Performing Test:** A. Kus

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<th>Time Elapsed (min)</th>
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<th>Change (Δh) (in)</th>
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<td><strong>Presoak</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:07</td>
<td>-</td>
<td>12.12</td>
<td>-</td>
</tr>
<tr>
<td>10:37</td>
<td>30</td>
<td>7.80</td>
<td>4.32</td>
</tr>
<tr>
<td>11:07</td>
<td>1 hr.</td>
<td>5.28</td>
<td>2.52</td>
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<tr>
<td><strong>Test 1</strong></td>
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<td></td>
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</tr>
<tr>
<td>11:25</td>
<td>-</td>
<td>6.36</td>
<td>-</td>
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<tr>
<td>11:35</td>
<td>10</td>
<td>6.36</td>
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<td>11:45</td>
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**Test 1**  
**Infiltration Rate (in./hr.):** 1.20

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<td>6.00</td>
<td>-</td>
</tr>
<tr>
<td>12:35</td>
<td>10</td>
<td>5.88</td>
<td>0.12</td>
</tr>
<tr>
<td>12:45</td>
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</tr>
<tr>
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<td>10</td>
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**Test 2**  
**Infiltration Rate (in./hr.):** 1.68
Falling Head
Single Ring Infiltration Test

Project: Milton Elementary  Date: 1/10/2019
Test Location: IB-4  Project No.: 10/18/493

Depth from top of Casing to Bottom of Boring (D): 9.75 ft.
Height of Casing above Ground Surface (h_c): 1.72 ft.

Test Depth: 8.03 ft.
Tester/Technician Performing Test: A. Kus

<table>
<thead>
<tr>
<th>Time (t)</th>
<th>Time Elapsed (min)</th>
<th>Hydraulic Head (h) (in)</th>
<th>Change (Δh) (in)</th>
</tr>
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<tbody>
<tr>
<td>Presoak</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>11:01</td>
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<tr>
<td>12:01</td>
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<td>6.12</td>
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| Test 1   |                    |                         |                  |
| 13:31    |                    | 7.80                    |                  |
| 13:41    | 10                 | 7.32                    | 0.48             |
| 13:51    | 10                 | 6.96                    | 0.36             |
| 14:01    | 10                 | 6.60                    | 0.36             |
| 14:11    | 10                 | 6.24                    | 0.36             |
| 14:21    | 10                 | 5.76                    | 0.48             |
| 14:31    | 10                 | 5.28                    | 0.48             |

Test 1 Infiltration Rate (in./hr.): 2.52

| Test 2   |                    |                         |                  |
| 14:32    |                    | 7.20                    |                  |
| 14:57    | 15                 | 7.20                    | 0.00             |
| 15:02    | 15                 | 7.08                    | 0.12             |
| 15:17    | 15                 | 6.96                    | 0.12             |
| 15:32    | 15                 | 6.84                    | 0.12             |

Test 2 Infiltration Rate (in./hr.): 0.36
### Falling Head
**Single Ring Infiltration Test**

**Project:** Milton Elementary  
**Date:** 1/10/2019  
**Project No.:** 10/18/493

**Test Location:** IB-5

**Depth from top of Casing to Bottom of Boring (D):** 10.00 ft.  
**Height of Casing above Ground Surface (hₙ):** 1.70 ft.

**Test Depth:** 8.30 ft.  
**Tester/Technician Performing Test:** A. Kus

<table>
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<th>Hydraulic Head (h) (in)</th>
<th>Change (Δh) (in)</th>
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**Test 1 Infiltration Rate (in/hr.): 1.56**

**Test 2 Infiltration Rate (in/hr.): 0.36**
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<th>Change (Δh) (in)</th>
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<td>0.12</td>
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Test 1 Infiltration Rate (in./hr.): 1.92

| Test 2  |                    |                        |                 |
| 14:27   | -                  | 5.88                   | -               |
| 14:42   | 15                 | 5.52                   | 0.36            |
| 14:57   | 15                 | 5.28                   | 0.24            |
| 15:12   | 15                 | 4.92                   | 0.36            |
| 15:27   | 15                 | 4.68                   | 0.24            |

Test 2 Infiltration Rate (in./hr.): 1.20
# Falling Head

## Single Ring Infiltration Test

**Project:** Milton Elementary  
**Date:** 1/10/2019  
**Project No.:** 10/18/493  
**Test Location:** IB-7

- **Depth from top of Casing to Bottom of Boring (D):** 9.90 ft.  
- **Height of Casing above Ground Surface (\(h_s\)):** 3.10 ft.

**Test Depth:** 6.80 ft.  
**Tester/Technician Performing Test:** R. Lovett

<table>
<thead>
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<th>Time Elapsed (min)</th>
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<th>Change ((\Delta h)) (in)</th>
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### Falling Head
**Single Ring Infiltration Test**

**Project:** Milton Elementary  
**Date:** 1/10/2019  
**Project No.:** 10/18/493  
**Test Location:** IB-8  
**Depth from top of Casing to Bottom of Boring (D):** 9.50 ft.  
**Height of Casing above Ground Surface (h₀):** 2.85 ft.  
**Test Depth:** 6.65 ft.  
**Tester/Technician Performing Test:** R. Lovett

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<th>Change (Δh) (in)</th>
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Falling Head  
Single Ring Infiltration Test

**Project:** Milton Elementary  
**Date:** 1/10/2019  
**Project No.:** 10/18/493  
**Test Location:** IB-9  
**Depth from top of Casing to Bottom of Boring (D):** 9.95 ft.  
**Height of Casing above Ground Surface (h_c):** 0.90 ft.  
**Test Depth:** 9.05 ft.  
**Tester/ Technician Performing Test:** R. Lovett

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The Copesland Act (40 U.S.C. 3145) requires contractors and subcontractors performing work on Federally financed or assisted construction contracts to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) Regulations 29 CFR Part 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. Compliance with these requirements is mandatory. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

We estimate that it will take an average of 56 minutes to complete this collection of information, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection of information, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, ESA, U. S. Department of Labor, Room S3502, 200 Constitution Avenue, N. W., Washington, D. C. 20210.
I, ____________________________ (Name of Signatory Party) ____________________________ (Title) do hereby state:

(1) That I pay or supervise the payment of the persons employed by ____________________________ (Contractor or Subcontractor) on the ____________________________ (Building or Work) that during the payroll period commencing on the ______ day of ____________________________, and ending the ______ day of ____________________________, all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said ____________________________ (Contractor or Subcontractor) from the full weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 CFR Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Stat. 108, 72 Stat. 967, 76 Stat. 357, 40 U.S.C. 276c), and described below:


(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, of if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ – In addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in Section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ – Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in Section 4(c) below.

(c) EXCEPTIONS

<table>
<thead>
<tr>
<th>EXCEPTION (CRAFT)</th>
<th>EXPLANATION</th>
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</table>

REMARKS:

NAME AND TITLE ____________________________
SIGNATURE ____________________________

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 31 OF THE UNITED STATES CODE.

*U.S. G.P.O.:
518,981
SECTION 011100 – SUMMARY OF WORK

PART 1 – GENERAL

1.1 Drawings and general provisions of contract, including General and Supplementary Conditions and other Division – 1 Specifications Sections, apply to this Section.

1.2 PROJECT DESCRIPTION

A. This part of the project consists of the Bid Pac A Contracts, No. 1 and 2. The description of the contracts are as follows:

Bid Pac A
Contract 1 Site Work
Contract 2 Demolition

1.3 CONTRACTOR USE OF PREMISES

A. General: During the construction period the contractor will be allowed reasonable use of the premises. However, the contractors use of the premises will not limit the Owners use of premises.

1.4 The Construction Managers scope of work is part of this section and denotes the work to be performed.

1.5 MISCELLANEOUS PROVISIONS

A. Miscellaneous Provision

1. The construction will start in September 2019. Note that weekend and evening work may be required to meet the schedule. All materials may be procured early so that they are readily available. The Owner will pay ninety-five percent (95%) of stored materials providing they are properly insured, stored and can be verified.

B. Project Meetings


2. Progress Meetings: Bi-weekly; attendance by Owner, Architect, Engineers, Construction Manager, Contractor, applicable Subcontractors, and Suppliers.

NOTE: Meetings may be held more frequently as required. Must attend these meetings and missing meetings will not be tolerated from Primary Contractors. Missing meetings will result in a penalty of $200.00 dollars per meeting if your firm was requested to attend at the previous progress meeting.

C. Record Drawings
1. The contractors of the respective Contract 1 thru Contract 18 shall be responsible for maintaining record “as built” throughout construction as indicated in Section 017000.

D. Schedule

    Construction starts September 2019. Project has to be finished by June 2021. Please provide sufficient manpower in your cost to meet the completion date of June 1, 2021.
Bid Pac A

The following parts of the specifications are to be considered part of each and every one of the contracts of Bid Pac A, Contracts No. 1 and 2. However, they shall not be listed with the Scope of Work for each of the Scopes of Work for the contracts. They will be referred to as the Administrative Sections with each of the Scope of Work for the contracts.

**INTRODUCTORY INFORMATION**

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**DIVISION 01 - GENERAL REQUIREMENTS**

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011200 MULTIPLE CONTRACT SUMMARY

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SCOPE OF WORK - Bid Pac A

A. The administrative sections, prints, addendums, and technical specifications 310000, 311000, 311100, 312300, 312500, 313116, 313200, 315000, 321126, 321136, 321216, 321313, 321600, 323000, 323100, 329000, 329100, 329200, 331000, 333000, 334000 & 334700.

B. Provide all layout work required to accomplish this Contract work. A Licensed surveyor must perform the layout work.

C. Provide topsoil stripping as required. Retain and stockpile all topsoil or soil needed to re-grade the site. Any soils not needed will be disposed of offsite by this contract in a proper manner. This is inclusive of all new and renovated building area footprints.

D. Provide all grading and fine grading of sub-grades for swales, berms, walks, pavement and playground fields.

E. Provide all site select fill for the building, site concrete and parking areas. Include excavation and grading of any crawlspace or basements if noted in project documents.

F. Provide all storm drainage and storm water control for a complete system including manholes, ponds and catch basins, nyoplast inlets, pumping pits and catch basins as shown.

G. Provide Sanitary Sewerage System complete including traffic control as need.

H. Provide all crusher run for paving and site concrete.

I. Provide hot mix asphalt paving includes roto mill of existing paving.

J. Provide all stripping of paving and signage required including the painting of curbs and include parking bumpers and bus parking signage.

K. Provide all lawns, grasses, hydro seeding, sodding, turf relocation and erosion control materials complete. Provide lawn maintenance (grass cutting) within the limits of disturbance for the entire construction schedule.

L. Provide all sediment and erosion control, including the installation, maintenance, and removal after construction of the silt fence and construction entrance. Restore areas where sediment and erosion control has been removed after construction. Also, provide all bio-retention areas, detention basins complete. Maintain the construction entrance and a clean roadway and street.

M. Provide all water lines, fire water lines, and site fire hydrants. Provide lines to within five (5) feet of the building with the exception of the fire water line. The fire water line is to be provided with the flange 8” above the finish floor in the fire pump room and other locations. See location on the architectural prints. Restore all areas disturbed by the installation of the new water lines. Coordinate the work with Bid Pac B Contract No. 16 Sprinkler System. Provide flushing and testing of fire water line from street to floor flange. Flange must be capped after flushing to maintain a clean system. Provide tie bolts from underground to flange above the floor. Also, provide identification of fire hydrants per the Fire Marshal requirements. Provide temporary water for other trades during construction. Provide water meter pit and meter complete. Provide
the disinfection of the domestic water system. Provide relocation of fire hydrants. Provide water tap and traffic control.

N. Provide any temporary seeding required for erosion control.

O. Coordinate all construction work with other utilities and notify Miss Utility prior to the start of work to locate existing underground utilities. All other existing utilities on site to be located under this contract, including data communication lines if any. Any damage to the existing utilities will be repaired under this contract at no additional cost to the owner.

P. Provide all excavation and backfill required to accomplish the work of this Contract, including the proper compaction of all backfill materials. Provide the removal off site of any and all excess fill. Provide compaction testing. Provide all final grading of site.

Q. Each prospective bidder must visit the site to familiarize themselves with the current existing conditions.

R. Provide all of gas lines, valves, meters complete.

S. Provide the relocation or adjustment of existing utility lines as necessary to install new lines or need to be relocated due to the construction of the new building.

T. Install all bollards furnished by Bid Pac B Contract No.5 Steel Work. Include concrete in fill as required.

U. Provide all site concrete work as shown. Run all concrete work to the face of the buildings to meet interior concrete work performed by the Bid Pac B Contract No. 3 Concrete Work. Provide all stone bases and preparation work to install the site concrete. Provide all slab work and frost walls at exterior, as well as any necessary demolition to install pads and frost walls if under a canopy roof. Provide colored and patterned concrete if noted in contract documents.

V. This Contract is responsible for all concrete pads and frost walls up to the face of building including all exterior steps, ramps and loading dock. Any foundation footers for columns or walls to be provided by Bid Pac B Contract No. 3 Concrete Work.

W. This contract is to provide the building, step and ramp fill to an elevation of plus or minus one (1") inch.

X. Construction Manager will provide all temporary fencing.

Y. Provide flag poles, base, and flag complete. Including demolition of existing flag pole and foundation base.

Z. Provide exterior caulking of expansion joints at all concrete locations including sidewalks and curbs.

AA. Electrical service to your construction trailer to be provided by this contract.

BB. Provide all highway entrances per DelDot specifications complete, including traffic control. Replace or relocate any existing obstructions in the roadway including mail boxes, signs, etc.
CC. Provide all underground roof and gutter drain lines, and roof drain curb outlets complete, including connections to downspouts and splash blocks. Provide the rainwater conductor and the cast iron rainwater boots. Also provide removal of drain lines where portion of the building is being demolished and relocate where needed.

DD. Provide the demolition of all trees, shrubs and existing stumps as required. Provide offsite deposit of all demolition material.

EE. Provide CCR Reports, soil testing and all license and permits to perform the Site Work scope of work. Owner will obtain the building permit.

FF. Provide site furnishings including bike racks, gates, trash receptors, benches and all associated foundations for a complete installation.

GG. All electric lines, data lines, phone lines, etc., are to be provided by Bid Pac B Contract No. 18 Electrical.

HH. This contract is responsible for all demolition that pertains to your scope of work.

II. Provide all demolition required to install new work and shown on drawings including curbs sidewalks, paving, signage, striping, storm sewer, piping, storm drainage, manholes, catch basins, fencing, tree and shrub removal, etc. Provide the demolition of anything that gets removed outside of the footprint of the main existing building to build the new building including canopies, walkway covers, concrete work, foundation, ramps, loading docks and miscellaneous steel. We suggest that the site work bidders visit the job site and note the extent of the demolition required to erect the new addition, and new site work. Also protect existing trees.

JJ. Provide the relocation or adjustment of existing utility lines as necessary to install new lines.

KK. Provide demolition and replacement of pad play areas and playground equipment and ground cover.

LL. Provide assistance of all testing and inspections for your work. Owner will provide an inspection agency to do the testing. If testing fails, contractor will pay for additional testing.

MM. Provide all fencing complete including all footings and hardware complete. Also provide all gates as shown. Provide fencing and gates for trash enclosures complete. Electric will be provided by Bid Pac B Contract No. 18 Electrical.

NN. Provide testing of trenches that are opened and backfilled pertaining to your scope of work.

OO. Provide dewatering if needed for your scope of work.

PP. Provide swing arm and sliding gates and all associated foundations for a complete system.

QQ. Provide any boring under roadways for sewer, water, gas and storm sewer systems.

RR. Provide all fine grading of landscape beds.
SS. Provide all soil amendments and fertilizers and the blending of these items into the top soil.

TT. Provide weed-control barriers and mulches complete.

UU. Provide all landscaping, trees and shrubs and the planting and pruning of these items complete. Provide protection of existing landscaping that is not to be removed.

VV. Provide plant maintenance and watering of landscaping for a period noted in the project documents.

WW. Provide planting bed irrigation complete if noted.

XX. Provide grading for truck loading dock. Concrete contract will provide concrete wall, foundation and concrete pads.

YY. Provide shared use path complete if shown.

ZZ. Provide concrete wash out station for your concrete work, including removal once complete.

AAA. Provide street sign complete.

BBB. Provide new playground equipment and relocation of existing playground equipment. Also include playground padding and ground cover complete.

CCC. Furnish and install removable bollards complete and installation only of all other steel bollards. Bid Pac B Contract No. 5 Steel Work will furnish steel bollards.

DDD. Provide temporary orange safety fencing around areas noted on bid documents.

EEE. Provide pavers and all sub bases for a complete system.

FFF. Coordinate retaining wall to be provided by Bid Pac B Contract 3 Concrete Work.

GGG. See section 012300 Alternates and bid form for your responsibility for the alternates.

HHH. The intent of the scope is NOT to denote every minute detail but to create an awareness of the scope of work for the project.

III. **It is the contracts responsibility to review all other contract scopes of work**
SCOPE OF WORK - Bid Pac A
CONTRACT NO. 2 DEMOLITION

A. The administrative sections, prints, addendums, and technical specifications 024000 & 310000.

B. Provide the complete demolition of a portion of the existing Milton Elementary School as shown on civil and architectural plans and associated structures, including all exterior and interior finishes, structural steel and masonry, concrete, roofing, windows and doors, mechanical and electrical complete. Provide building demolition of all buildings on site and noted on documents.

C. Provide demolition of all footer, foundation and existing utilities below ground level. All concrete and masonry footers and foundations are to be removed in its entirety.

D. Provide select fill of demolished area back to new grade as shown on the civil plans.

E. Provide proper compaction including testing of fill lifts as noted on documents.

F. Provide removal and disposal of PCB ballasts per local and federal codes and guild lines. Cost will be determined by unit price and amount of ballast that are encountered during the demolition phase.

G. Provide removal off site of all debris in a required manner meeting all local, state and federal laws.

H. Provide documentation the proper removal and disposal of universal waste such as mercury thermostats, mercury containing fluorescent light bulbs, and lead acid batteries from emergency lighting.

I. Provide temporary closures to the existing school of any areas that are open to exterior from the result of demolition of portions of the building.

J. Provide disconnecting and safing of existing building electrical system before building demolition starts; disconnect and remove service not limited to meter aerial and underground service complete to source point if required.

K. Provide any temporary seeding required for erosion control.

L. Coordinate all construction work with other utilities and notify Miss Utility prior to the start of work to locate existing underground utilities. All other existing utilities on site to be located under this contract, including data communication lines if any.

M. Provide all excavation and backfill required to accomplish the work of this Contract, including the proper compaction of all backfill materials. Provide the removal off site of any and all excess fill. Provide compaction testing. Provide all final grading of site.

N. Each prospective bidder must visit the site to familiarize themselves with the current existing conditions.

O. Construction Manager will provide all temporary fencing. This contract is responsible for the moving and closing up the fencing on a daily basis to ensure the site is secure.
P.  Provide disconnection and capping of all the existing utilities in the existing buildings to five (5) feet outside the building envelope; including mechanical and plumbing systems; unless noted otherwise on plans. Coordinate with Chesapeake Utilities to safely terminate gas line. Coordinate with Delmarva Power to safely terminate existing electrical services and removal of transformer. Coordinate with the Town of Milton for water and sewer disconnections. This contract is to provide all disconnecting and capping of utilities per utility company guidelines.

Q.  All demolition shown on construction documents is to be done keeping land disturbance to a minimum.

R.  Provide removal of all underground utilities within the limit of disturbance including storm drain laterals, telephone lines, gas lines, water lines, sewer lines, grease trap, electrical lines, phone and cable lines, etc..

S.  All specifications, drawings and notes on drawings pertain to Contract A-1 Demolition complete.

T.  Provide removal of plaster on lath and furring back to original facade including brick facade.

U.  Provide removal of doors, frames and hardware as noted.

V.  Provide removal of bushes and landscaping along front of 1921 section of building.

W.  Provide demolition of existing chimney down to three courses above highest structural bracket.

X.  Provide the disconnect and removal of any site lighting shown on construction documents.

Y.  Provide removal of foundation of Western Sussex Building as noted on construction documents.

Z.  Provide all suitable fill, topsoil and seeding to meet finished grade as shown on construction documents.

AA.  Provide protection of any trees not labeled to be demolished with the limit of disturbance.

BB.  Provide removal of all furniture, trash, supplies, etc.; that is in the building at time of the mandatory pre-bid meeting complete.

CC.  Provide demolition of building site sign. Salvage parts of sign to the owner as noted.

DD.  Provide demolition of exterior stairs, landings and ramps complete.

EE.  Areas of demolition note an approx 24,500 sf one story steel/masonry/concrete building section, an approx. 2,600 sf two story steel/masonry/concrete building section, an approx. 4,600 sf one story wood framed on concrete slab building, an 100 sf wood framed shed and a masonry sign. Salvage graphics from sign.

FF.  Note all select demo in the existing building that remains will be done by another contract.

GG.  Provide the demolition permit and all soil testing and license to perform the demolition scope of work.
HH. Provide the draining and proper removal of all HVAC fluids, Freon and gas before the starting of demolition.

II. See section 012300 Alternates and bid form for your responsibility for the alternates.

JJ. The intent of this scope is NOT to denote every minute detail but to create an awareness of the scope of work for the project.

KK. It is this contractor’s responsibility to review all other contract scopes of work.

END OF SECTION 011100
SECTION 011200 – MULTIPLE CONTRACT SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. This section describes certain responsibilities of the Contractors. These instructions shall be strictly followed unless more stringent requirements are contained within other Specification sections or written directions from the Construction Manager state otherwise.

- Protection of Existing Conditions
- Project Supervision
- Project Coordination
- Protection of Existing Conditions
- Systems Coordination Drawings
- Field Engineering
- Testing
- Fees, Licenses, and Permits
- Sleeves, Hangers, and Inserts
- Chases and Recesses
- New and Existing Openings
- Penetrations
- Fireproof Repair
- Equipment Foundations
- Cutting and Patching
- Access Doors and Panels
- Touch-up Painting
- Starters and Disconnects
- Final Cleaning

1.2 PROTECTION OF EXISTING CONDITIONS

A. Existing finished surfaces to remain in place in the existing site, shall be protected by the Trade Contractor performing the work in that area, by whatever materials and means are required to prevent any damage. Other surfaces shall be protected with tarpaulins, drop cloths, and similar coverings, as required.

B. At the completion of the work, or when protection is no longer required, temporary enclosures, tarpaulins, building paper, drop cloths and other temporary materials, shall be removed and existing work and finishes in altered portions of the existing site shall be cleaned and left in condition acceptable to the Owner, Architect, and the Construction Manager.

1.3 PROJECT SUPERVISION

A. Every Trade Contractor shall be responsible for the supervision of their work. Adequate supervision as required to maintain the progress schedule, shall be required within the scope of work within the contracts. When more than one major building phase is being constructed at different locations on the project site, separate supervision must be assigned to each phase when work of that contract is being performed. When performing construction work to maintain the progress schedule requires extended hours, multiple shifts, and/or additional work days, adequate
separate supervision shall be required for each Trade Contractor during these times. The competence level and ability of supervisory personnel must be adequate to perform the construction activities involved.

B. Although these various second level supervision personnel may be reassigned from time to time, each contractor shall retain one superintendent with full responsibility while performing work on the project.

C. The Construction Manager shall have the authority to direct the Trade Contractor to assign additional supervisory personnel to ensure compliance with the contract schedule and quality requirements at no addition to the contract price.

1.4 PROJECT COORDINATION

A. Every Trade Contractor shall be responsible for the coordination of the progress of their work with the progress of all other Trade Contractors work.

B. Inasmuch as Project completion within the time limit is dependent upon cooperation of those engaged therein, it is imperative that each Trade Contractor perform his work at such time and in such a manner as not to delay or otherwise interfere with work progress of other Trade Contractors. If any Trade Contractor’s work depends upon proper execution or results of another Trade Contractor’s work, the former shall inspect the work and report any defects therein to the Construction Manager.

C. Trade Contractors shall afford each other every reasonable opportunity for installation of their work, and shall work in conjunction with each other in order to facilitate proper and intelligent execution of work.

D. Plans are generally diagrammatic, and each Trade Contractor shall coordinate his work with the work of others, so that interference between mechanical, electrical, architectural and structural work does not occur. Each Trade Contractor shall furnish and install offsets, bends, turns, and the like in connection with his work to avoid interference with work of other Trade Contractors, to conceal work where required, and to secure necessary clearance and access for operation and maintenance. In case of interference or lack of clearance and access, the Construction Manager will be notified immediately, and shall, in turn, notify the Architect. The Architect will decide which work shall be relocated, regardless of which was installed first.

E. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

F. Verify utility requirements and characteristics of operating equipment are compatible with utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.

G. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner’s partial occupancy.

H. After Owner occupancy, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner’s activities.
1.5 FIELD ENGINEERING

H. Inspection:

1. Each Trade Contractor shall confirm locations of survey control points prior to starting work. Promptly notify Construction manager of any discrepancies discovered.

2. The Trade Contractor shall verify all measurements of the site and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of differences between actual dimensions and the measurements indicated on the Drawings; any difference which may be found should be submitted to the Architect for consideration before proceeding with the work.

I. The Owner shall secure a professional engineer or surveyor licensed in the State of Delaware to perform the following:

1. Provide benchmark elevation to serve as the basis for the construction layout of the project.

J. Construction Layout:

1. The Sitework Trade Contractor shall be responsible to perform the layout and elevations required to complete his work.

2. The Site Concrete Work Trade Contractor shall layout to complete the scope of their work.

3. Each Trade Contractor shall layout the remainder of his own work and be responsible for all lines, levels, grades, elevations, and measurements.

1.6 TESTING

A. The owner shall employ and pay for the services of a testing agency to perform the required construction material testing for specification divisions 1 through 3. Refer to section 014000 Quality Control for testing agency qualifications and test reporting requirements.

1.8 FEES, LICENSES, AND PERMITS

A. The following permits shall be purchased by the Owner:

1. Building Permit

B. All remaining fees, licenses, and permits shall be obtained and paid for by the trade contractor requiring them at no additional cost to the Owner to complete their work.

1. All Trade Contractors are advised that the Owner has reached an agreement with the County of Sussex and the City of Rehoboth Beach to pay for the following permit fees: Building Construction.

2. Each respective contractor will still be required to obtain license from the County of Sussex and the City of Rehoboth Beach.

3. Additionally, all contractors are still responsible to coordinate required applicable inspections.
1.9 SLEEVES, HANGERS, AND INSERTS
   A. Each Trade Contractor shall furnish sleeves and inserts required to accommodate his work, together with instructions regarding their placement and location in the structure. Sleeves and inserts shall be furnished promptly in accordance with the established construction schedule so that they may be built-in as construction progresses.
   
   B. Trade Contractors to furnish all embeds, sleeves, inserts, etc., that are to be cast in concrete or built in masonry to the appropriate Trade Contractor for installation.
   
   C. Each Trade Contractor shall furnish and install hangers required to accommodate his work.

1.10 CHASES AND RECESSES
   A. Each Trade Contractor shall provide all blockouts shown on the Contract Documents and having either or both dimensions greater than 10" to the appropriate Trade Contractor for installation into his work. Any openings with dimensions smaller than 10" or not shown on drawings but required by a Trade Contractor shall be furnished and installed by the Trade Contractor requiring the same.
   
   B. It is the responsibility of the Trade Contractors requiring openings, chases, etc., to furnish information regarding size and location promptly in accordance with the established construction schedule, so that they may be built-in as construction progresses and avoid delays. Failure to provide the information promptly will result in the responsible Trade Contractor incurring any cost associated with the delay and the installation.
   
   C. Trade Contractors shall cooperate fully with each other in the performance of above work, as cutting and patching of new work is neither contemplated nor will it be tolerated.

1.11 NEW AND EXISTING OPENINGS
   A. Upon removal of existing work, which penetrates floors, walls, or ceilings, openings shall be immediately closed with material matching that adjacent to the opening. This shall include whatever structural support is required. The closing of existing openings shall be performed by the Trade Contractor who is responsible to perform this work as if it is new construction.
   
   B. Each Trade Contractor shall be responsible to install any new openings required to install his works in any existing construction and to furnish and install any additional structural support. All cutting and patching must be performed by journeymen or master trade mechanics for the trade work of the cutting/patching. Costs for all patching work are the responsibility of the trade contractor requiring the new opening.
   
   C. This structural support shall maintain the structural integrity of the building.
   
   D. Prior to cutting or drilling of any new openings that require additional structural support, the contractor shall submit a shop drawing to the Construction manager for review and acceptance by the Architect prior to demolition.
E. Openings required by any Trade Contractor in new construction shall be coordinated with the Trade Contractor(s) performing adjacent work.

1.12 PENETRATIONS

A. Each Trade Contractor shall be responsible to seal his own penetrations in walls, floors, and ceilings, using fire resistant materials, as required.

B. All roofing work shall be performed by the Roofing Trade Contractor, including patching penetrations made by the other Trade Contractors. Unless assigned specifically in section 011100 the cutting of roof openings, structural reinforcement, roof curbs, and counter flashing, shall be provided and installed by each Trade Contractor whose work penetrates the roofing surface, including all additional blocking associated with penetration.

1.13 FIREPROOF REPAIR

A. Existing and new spray-on fireproofing which is damaged by Trade Contractors shall be repaired by the Trade Contractor who caused the damage. The repair work shall be performed by tradesman qualified and certified to perform the repair.

1.14 EQUIPMENT FOUNDATIONS

B. The Concrete Work Trade Contractor shall provide all interior foundations and housekeeping pads indicated on the Contract Documents. The Sitework Concrete Contractor shall place all exterior equipment foundations and housekeeping pads indicated on the Contract Documents. All other foundations, equipment, and housekeeping pads not shown, but required, shall be by the Trade Contractor requiring the same.

C. Each Trade Contractor shall furnish anchor bolts and other accessories required to anchor his equipment in place, together with instructions regarding their placement and location in the foundation. Anchor bolts and other accessories shall be furnished promptly in accordance with the established construction schedule so that they may be built-in as construction progresses.

1.15 CUTTING AND PATCHING

A. Responsibility: A Trade Contractor requiring the cutting of openings in new work, or in the existing work installed by others shall have such openings cut and patched by the trade which installed the original work and such cutting and patching shall be at the expense of the Trade Contractor requiring the opening.

B. Approval: Approval to do such cutting and patching shall be received from the Architect through the Construction Manager prior to proceeding with the work. Approval of any structural cutting must be received from the structural engineer and architect before proceeding.

C. Inspection:

1. Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

2. After uncovering, inspect conditions affecting performance of work.

3. If, in the course of cutting and patching the existing building for alteration work, a material is
uncovered which appears to contain asbestos, the Contractor shall immediately notify the Construction Manager. Contractors shall perform other construction activities until the area in question can be cleared.

D. Preparation:

1. Provide supports to assure structural integrity of surroundings, devices, and methods, to protect other portions of Project from damage.
2. Provide protection from elements for areas which may be exposed by uncovering work.

E. Performance:

1. Execute work by methods to avoid damage to other work and which provide proper surfaces to receive patching and finishing.
2. Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements and sight-exposed surfaces.
3. Restore work with new products in accordance with requirements of Contract Documents.
4. Fit work tightly to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
5. At penetrations of fire-rated wall, ceiling or floor construction, completely seal voids with fire-resistant materials as required to achieve fire-rating indicated.
6. Where fire protection materials are damaged or removed, reapply fire protection materials to achieve a rating equivalent to existing construction or as noted.
7. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

1.16 ACCESS DOOR AND PANELS

A. Access doors and panels, shown on architectural drawings, shall be furnished and installed by each Trade’s Contractor whose product needs to be accessible.

B. Access doors and panels shall be furnished by the trade contractor requiring access and delivered to the Drywall and Metal Studs Trade Contractor for installation.

1.17 FINAL CLEANING

A. Trade Cleaning: Each contractor is responsible for final cleaning their own work as outlined in Section 011100 - Summary of Work. This initial cleaning must be completed before requesting inspection for Certification of Substantial Completion. This cleaning shall include, but not be limited to:

1. Clean surfaces exposed to view; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces.
2. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned. Comply with Product manufacturer instruction and recommendations.
3. Within limits of Contract, clean site, sweep paved areas, rake clean landscaped surfaces.
4. Provide additional cleaning as required within individual Specification sections.
5. Remove waste and surplus materials, rubbish and construction facilities from the site. Dispose of in a legal manner.
6. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective
8. Wipe down all walls, equipment, fixtures, casework and shelving to a dust-free sanitary condition.
9. Sweep, vacuum and mop all floors.
10. Clean all windows, glass and glazing.

1.18 TOUCH-UP PAINTING

A. The Caulking and Painting Contractor shall coordinate and schedule his final coat as directed by the Construction Manager to reduce the amount of touch-up painting required.

B. After the final coat has been applied, all touch-up paint and patching required to repair damage caused by other trade shall be reviewed by the Construction Manager and paid for from the construction contingency or back charged to the Trade Contractor who the Construction Manager determines is responsible.

1.19 STARTERS AND DISCONNECTS

A. The Electrical Contractor shall furnish and install starters, power and starter control wiring per the electrical drawings and the specifications. The Electrical Contractor shall furnish and install starters in the motor control center.

B. Individual starters and disconnects shown on other drawings and specifications shall be furnished by that Trade Contractor and will be installed and connected by the Electrical Contractor.

END OF SECTION 011200
SECTION 011216 - ALTERATION PROJECT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Products and installation for patching and extending work.
B. Transition and adjustments.
C. Repair of damaged surfaces, finishes, and cleaning.

1.2 RELATED SECTIONS

A. Section 013100 – Project Management and Coordination: Work sequence, owner occupancy, maintenance of utility services.
B. Section 017329 - Cutting and Patching: Cutting and patching.
C. Section 015000 – Temporary Construction Facilities and Temporary Controls: Temporary enclosures, protection of installed work, and cleaning during construction.
D. Section 024119 – Selective Demolition

PART 2 - PRODUCTS

2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

A. New Materials: As specified in product sections; match existing Products and work for patching and extending work.
B. Type and Quality of Existing Products: Determine by inspecting and testing Products where necessary, referring to existing Work as a standard.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that demolition is complete and areas are ready for installation of new Work.
B. Beginning of restoration Work means acceptance of existing conditions.

3.2 PREPARATION

A. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
C. Remove debris and abandoned items from area and from concealed spaces.

D. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

E. Close openings in exterior surfaces to protect existing work and salvage items indicated from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.

3.3 INSTALLATION

A. Coordinate work of alterations and renovations to expedite completion sequentially and to accommodate Owner occupancy.

B. Remove, cut and patch work in a manner to minimize damage and to provide a means of restoring Products and finishes to original condition in accordance with Section 024500.

C. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes in accordance with Section 024500.

D. Project, Designated Areas, Rooms and Spaces, and Finishes: Complete including operational mechanical and electrical work.

E. In addition to specified replacement of equipment and fixtures, restore existing plumbing, heating, ventilation, air conditioning, electrical, and other systems to full operational condition.

F. Re-cover and refinish work that exposes mechanical and electrical work exposed accidentally during the work.

G. Install Products as specified in individual sections.

3.4 TRANSITIONS

A. Where new work abuts or aligns with existing, perform a smooth and even transition. Patch Work to match existing adjacent work in texture and appearance.

B. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect/Engineer.

3.5 ADJUSTMENTS

A. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.

B. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition for Architect/Engineer review.
C. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
D. Fit work at penetrations of surfaces as specified in Section 01045.

3.6 REPAIR OF DAMAGED SURFACES
A. Patch or replace portions or existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
B. Repair substrate prior to patching finish.

3.7 FINISHES
A. Finish surfaces as specified in individual Product sections.
B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

3.8 CLEANING
A. In addition to cleaning specified in Section 015000, clean Owner occupied areas of work.

END OF SECTION 011216
SECTION 011400 - WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 USE OF PREMISES

A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.

1. Owner Occupancy: Allow for Owner occupancy of site.

2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
   a. Schedule deliveries to minimize use of driveways and entrances.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.3 OCCUPANCY REQUIREMENTS

A. Partial Owner Occupancy: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.

2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.

3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will provide, operate, and maintain mechanical and electrical systems serving occupied portions of building.

4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011400
SECTION 012000 – PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1  SECTION INCLUDES

A. Measurement and payment criteria applicable to portions of the Work performed under a unit price payment method.

B. Defect assessment and non-payment for rejected work.

1.2  AUTHORITY

A. Measurement methods delineated in the individual specification sections complement the criteria of this section.

B. Take all measurements and compute quantities. The Construction Manager will verify measurements and quantities.

C. Assist by providing necessary equipment, workers, and survey personnel as required.

1.3  UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form as defined in individual Specification sections are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Construction Manager shall determine payment.

B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices contracted.

C. If the actual Work requires a 10 percent or greater change in quantity than those quantities indicated, the Owner may claim for a Contract Price adjustment.

1.4  MEASUREMENT OF QUANTITIES

A. Measurement Devices:

1. Weigh Scales: Inspected, tested and certified by the applicable state Weights and Measures department within the past year.

2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.

3. Metering Devices: Inspected, tested and certified by the applicable State department within the past year.

B. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.

C. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
D. Measurement by Area: Measured by square dimension using mean length and width or radius.

E. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.

F. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

1.5 PAYMENT

A. Payment Includes: Full compensation for all required labor, Products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item or the Work; overhead and profit.

B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Architect/Engineer multiplied by the unit sum/price for Work which is incorporated in or made necessary by the Work.

1.6 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of the Architect, it is not practical to remove and replace the Work, the Architect will direct one of the following remedies:

1. The defective Work may remain, but the unit sum/price will be adjusted to a new sum/price at the discretion of the Architect.

2. The defective Work will be partially repaired to the instructions of the Architect, and the unit sum/price will be adjusted to a new sum/price at the discretion of the Architect.

C. The individual specification sections may modify these options or may identify a specific formula or percentage sum/price reduction.

D. The authority of the Architect to assess the defect and identify payment adjustment is final.

1.7 NON-PAYMENT FOR REJECTED PRODUCTS

A. Payment will not be made for any of the following:

1. Products wasted or disposed of in a manner that is not acceptable.

2. Products determined as unacceptable before or after placement.

3. Products not completely unloaded from the transporting vehicle.

4. Products placed beyond the lines and levels of the required Work.

5. Products remaining on hand after completion of the Work.

1.8 SCHEDULE OF UNIT PRICES

UNIT PRICE No. 1.01: Satisfactory fill in place per cubic yard.
UNIT PRICE No. 1.02: Stone in place per cubic yard.
UNIT PRICE No. 1.03: Geo-fabric in place per square yard.
UNIT PRICE No. 1.04: Undercut and disposal (mass) per cubic yard.
UNIT PRICE No. 1.05: Undercut and disposal (trench) per cubic yard.
UNIT PRICE No. 1.06: Select (trench) backfill per cubic yard.
UNIT PRICE No. 1.07: Topsoil per cubic yard.
UNIT PRICE No. 1.08: Removal of unsuitable soil and replacement of suitable soil per cubic yard.
UNIT PRICE No. 1.09: Removal of PCB contaminated ballasts

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 012000
SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements due to unknown conditions or to defer selection of actual materials and equipment and/or installation to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Unit-cost allowances.
3. Quantity allowances.
4. Contingency allowances.
5. Testing and inspecting allowances.

C. Related Sections include the following:

1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders for allowances.
2. Division 1 Section "Unit Prices" for procedures for using unit prices.
3. Division 1 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.
4. Divisions 2 through 35 Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.
1.4 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 LUMP-SUM ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials selected by Architect or specified herein and shall include taxes, freight, and delivery to Project site.

B. Related costs for Supervision, field operation and temporary facilities; general overhead; profit; bond premiums; and taxes. Costs are part of the Contract Sum.

1.7 TESTING AND INSPECTING ALLOWANCES

A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.

B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.

C. Costs of services not required by the Contract Documents are not included in the allowance.

D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.

1.8 UNUSED MATERIALS

A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Architect, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Architect, deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 1. Include the unit cost of liquid asphalt cement of $510.00 per ton as noted in the Delaware Posted Asphalt price for June of 2019 per Del DOT Program. At the time of production lay down of product, cost will be adjusted per current cost of Delaware Posted Asphalt price. Contractor to provide the amount of tons of liquid asphalt cement to perform the complete project based on the project documents. See attachment: Delaware Posted Asphalt Price Sheet.

______________ total tons of liquid asphalt cement to be provided by Contract No.1 Site Work to complete the project scope.

END OF SECTION 012100
SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

B. Related Sections include the following:

1. Division 1 Section "Allowances" for procedures for using unit prices to adjust quantity allowances.
2. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased. Owner reserves the right to reject unit prices submitted with bid deemed unreasonable.

B. Unit prices include necessary material, overhead, profit and applicable taxes.

C. Unit price shall include all costs related or required for the complete installation, including the cost of material and delivery; installation labor including fringe benefits, insurance, social security, workmens' compensation; rental value of equipment and machinery; incidental expense, supervision, field operation and temporary facilities; general overhead; profit; bond premiums; and taxes.

D. Material only unit price shall include the cost of material and shipping. All other Contractor's costs including storage, handling, labor; equipment and machinery; supervision; temporary facilities; general overhead; profit; bond premiums; and taxes shall be included in the contract sum and not the allowance.

E. Refer to individual Sections for construction activities requiring establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A "Unit Price Schedule" is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials and methods described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. Unit Price No. 1.01, Satisfactory fill in Place: Indicate cost to provide satisfactory fill in place, furnished, placed and compacted according to Section 310000, Earthwork. Unit of Measurement: cubic yards

B. Unit Price No. 1.02, Stone in place: Indicate cost to provide stone in place and compacted according to Section 310000, Earthwork. Unit of Measurement: cubic yards

C. Unit Price No. 1.03, Geo-Fabric in place: Indicate cost to provide Geo-Fabric in place according to Section 310000, Earthwork. Unit of Measurement: Square yards

D. Unit Price No. 1.04, Undercut & disposal (mass): Indicate cost for mass excavation & disposal according to Section 312300, Excavation and Backfill for Pipelines and Structures. Unit of Measurement: Cubic yards

E. Unit Price No. 1.05, Undercut & disposal (trench): Indicate cost for trench excavation & disposal according to Section 312300, Excavation and Backfill for Pipelines and Structures. Unit of Measurement: Cubic yards.

F. Unit Price No. 1.06, Select (trench) Backfill: Indicate cost to provide satisfactory trench fill furnished, placed and compacted according to Section 312300, Excavation and Backfill for Pipelines and Structures. Unit of Measurement: cubic yards.
G. Unit Price No. 1.07, **Top soil**: Indicate cost to provide top soil in place and compacted according to Section 329200, Turf and Grasses. Unit of Measurement: cubic yards.

H. Unit price 1.08, **Removal of unsuitable soil and replacement of suitable soil**, Indicate cost to remove, disposed of unsuitable unclassified materials, and to provide, place and compact suitable soil according to Section 310000, Earthwork. Unit of Measurement: cubic yards.

I. Unit Price No. 1.09: **Removal of PCB contaminated ballasts** Indicate additional cost for removal and proper disposal of ballasts which are not labeled as PCB free. Unit of Measurement: Per ballast

END OF SECTION 012200
SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS
A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES
A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
   1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
   2. Include as part of each alternate all costs of related coordination, modification or adjustment.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. ADD ALTERNATE No. 1: LANDSCAPING PLANTING SCHEDULE
   1. BASE BID: No not landscaping, only the removal of trees and shrubs as depicted on Sheet L-101
   2. ALTERNATE: Provide specified landscaping as shown.

B. ADD ALTERNATE No. 2: REAR TREE LANDSCAPING
   1. BASE BID: No not provide rear tree landscaping.
   2. ALTERNATE: Provide specified rear tree landscaping as shown.

C. ADD ALTERNATE No. 3: REAR UNDERSTORY AND EVERGREEN TREE LANDSCAPING
   1. BASE BID: No not provide rear understory and evergreen tree landscaping.
   2. ALTERNATE: Provide specified rear understory and evergreen tree landscaping as shown.

D. ADD ALTERNATE No. 4: REAR SHRUB LANDSCAPING
   1. BASE BID: No not provide rear shrub landscaping.
   2. ALTERNATE: Provide specified rear shrub landscaping as shown.

END OF SECTION 012300
SECTION 012500 – SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

1. Multiple Prime Contracts: Provisions of this Section apply to the construction activities of each prime contractor.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Reference Standards and Definitions" specifies the applicability of industry standards to products specified.
2. Division 1 Section "Submittals" specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.
3. Division 1 Section "Materials and Equipment" specifies requirements governing the Contractor's selection of products and product options.

1.3 DEFINITIONS

A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:

1. Substitutions requested during the bidding period, and accepted by Addendum prior to award of the Contract, are included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
2. Revisions to the Contract Documents requested by the Owner or Architect.
3. Specified options of products and construction methods included in the Contract Documents.
4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

A. Substitution Request Submittal: The Architect will consider requests for substitution if received within 60 days after commencement of the Work. Requests received more than 60 days after commencement of the Work may be considered or rejected at the discretion of the Architect.
1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and according to procedures required for change-order proposals.
2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
   a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors that will be necessary to accommodate the proposed substitution.
   b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
   c. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.
   d. Samples, where applicable or requested.
   e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
   f. Cost information, including a proposal of the net change, if any in the Contract Sum.
   g. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
   h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
4. Architect's Action: If necessary, the Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. The Architect will notify the Contractor of acceptance or rejection of the substitution within 2 weeks of receipt of the request, or one week of receipt of additional information or documentation, whichever is later. Acceptance will be in the form of a change order.
   a. Use the product specified if the Architect cannot make a decision on the use of a proposed substitute within the time allocated.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Architect will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Architect. If the following conditions are not satisfied, the Architect will return the requests without action except to record noncompliance with these requirements.

1. Extensive revisions to the Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of the Contract Documents.
3. The request is timely, fully documented, and properly submitted.
4. The specified product or method of construction cannot be provided within the Contract Time. The Architect will not consider the request if the product or method cannot be provided as a result of
failure to pursue the Work promptly or coordinate activities properly.

5. The request is directly related to an "or-equal" clause or similar language in the Contract Documents.

6. The requested substitution offers the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. The Owner's additional responsibilities may include compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner, and similar considerations.

7. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.

9. The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.

10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.

11. Where a proposed substitution involves more than one prime contractor, each contractor shall cooperate with the other contractors involved to coordinate the Work, provide uniformity and consistency, and assure compatibility of products.

B. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 012500
**SUBSTITUTION REQUEST**

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<th>Trade Name:</th>
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<th>Installer:</th>
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**History:**

- [ ] New product
- [ ] 2-5 years old
- [ ] 5-10 yrs old
- [ ] More than 10 years old

**Differences between proposed substitution and specified product:**

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- [ ] Point-by-point comparative data attached - REQUIRED BY A/E

**Reason for not providing specified item:**

<table>
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<tr>
<th>Project:</th>
<th>Architect:</th>
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<th>Address:</th>
<th>Owner:</th>
<th>Date Installed:</th>
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**Proposed substitution affects other parts of Work:**

- [ ] No
- [ ] Yes; explain

**Savings to Owner for accepting substitution:**

- ($__________)

**Proposed substitution changes Contract Time:**

- [ ] No
- [ ] Yes
  - [Add] __________
  - [Deduct] __________
  - days

**Supporting Data Attached:**

- [ ] Drawings
- [ ] Product Data
- [ ] Samples
- [ ] Tests
- [ ] Reports
- [ ]

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[CSI Form 13.1A]
The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: ____________________________

Signed by: ________________________________

Firm: __________________________

Address: ______________________________

Telephone: ____________________________

Attachments: ____________________________

A/E's REVIEW AND ACTION

[ ] Substitution approved - Make submittals in accordance with Specification Section 01330.
[ ] Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
[ ] Substitution rejected - Use specified materials.
[ ] Substitution Request received too late - Use specified materials.

Signed by: ________________________________ Date: ________________________________

Additional Comments: [ ] Contractor [ ] Subcontractor [ ] Supplier [ ] Manufacturer [ ] A/E [ ] ________
SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY
A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
B. Related Sections include the following:
   1. Division 1 Section "Unit Prices" for administrative requirements for using unit prices.
   2. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK
A. Architect or Construction Manager will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 PROPOSAL REQUESTS
A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.


1.5 CHANGE ORDER PROCEDURES


1.6 CONSTRUCTION CHANGE DIRECTIVE


1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600
SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Sections include the following:

1. Division 1 Section "Unit Prices" for administrative requirements governing use of unit prices.
2. Division 1 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
3. Division 1 Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

   a. Application for Payment forms with Continuation Sheets.
   b. Submittals Schedule.

2. Submit the Schedule of Values to Architect through the construction manager at earliest possible date but no later than 14 days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

   a. Project name and location.
   b. Name of Architect.
   c. Architect's project number.
   d. Contractor's name and address.
   e. Date of submittal.
2. Arranged the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value.

   1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.

4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if required.

6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

1.4 APPLICATIONS FOR PAYMENT

   A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and Construction Manager and paid for by Owner.

      1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

   B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.


   D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Construction Manager will return incomplete applications without action.

      1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last
day of construction period covered by application.

E. Transmittal: Submit 4 signed and notarized original copies of each Application for Payment to
Construction Manager by a method ensuring receipt within 24 hours. One copy shall include
waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate
information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's
liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by
the previous application.

1. Submit partial waivers on each item for amount requested, before deduction for retainage,
on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit
waivers.
4. Waiver Delays: Submit each Application for Payment with Contractor's waiver of
mechanic's lien for construction period covered by the application.

a. Submit final Application for Payment with or proceed by final waivers from
every entity involved with performance of the Work covered by the application
who is lawfully entitled to a lien.

5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to
Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or
coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Products list.
5. Submittals Schedule (preliminary if not final).
6. List of Contractor's staff assignments.
7. List of Contractor's principal consultants.
9. Copies of authorizations and licenses from authorities having jurisdiction for
performance of the Work.
10. Initial progress report.
12. Certificates of insurance and insurance policies.

H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial
Completion, submit an Application for Payment showing 100 percent completion for portion of
the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900
SECTION 012973 – SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-0 Specification Sections, apply to this section.

1.2 CONTRACT SUM BREAKDOWN

A. Within ten (10) days of receipt of Contract, each Trade Contractor shall submit to the Construction Manager for review a Contract Sum Breakdown, the total of which shall be equal to the initial contract sum.

B. The General Trade Contractor shall list quantities and unit prices that correspond to the activities he is responsible for. All unit prices should include labor, tools, equipment, overhead, and profit required to perform a complete installation.

1.3 FORM AND CONTENT

A. The breakdown shall be prepared on the forms provided with this Section. The schedule shall also indicate:

1. Title of project and location
2. Architect's name
3. Name and address of Contractor
4. Date of submission

B. Provide a separate line item for General Conditions which would include home office support, bonds, insurance premiums, mobilization, field supervision, temporary construction utilities, facilities, and controls.

1. Contractor must include line item amounts for General Condition Requirements as follows:

   Submittals
   Progress Meetings
   Clean up
   Progress Schedule Development
   Coordination Drawing
   Project Record Drawings

2. Breakdown of major construction activities shall be submitted per building wing, per floor, separating labor and material values.

END OF SECTION 012973
SECTION 013100 – PROJECT MANAGEMENT AND COORDINATION

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Coordination.
B. Field engineering.
C. Preconstruction meeting.
D. Site mobilization meeting.
E. Progress meetings.
F. Preinstallation meetings.
G. Examination.
H. Preparation.

1.2 RELATED SECTIONS

A. Section 011200 – Multiple Contract Summary
B. Section 013113 – Project Coordination
C. Section 017329 – Cutting and Patching

1.3 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Verify utility requirements and characteristics of operating equipment are compatible with utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

E. Coordinate completion and clean up of work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner’s partial occupancy.

F. After Owner occupancy, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner’s activities.

1.4 FIELD ENGINEERING

A. Contractor to locate and protect survey control and reference points.

B. Control datum for survey is that established by Owner and shown on drawings.
C. Verify set-backs and easements, confirm drawing dimensions and elevations.

D. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

1.5 PRECONSTRUCTION MEETING

A. Construction Manager will schedule a meeting after Notice of Award.

B. Attendance Required: Owner, Architect/Engineer, Contractors.

C. Agenda:
   1. Submission of executed bonds and insurance certificates.
   3. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule not previously required.
   5. Procedures and processing of field decisions, submittals, substitutions, Applications for Payments.
   7. Scheduling activities of inspection and testing service.

D. Construction Manager will record minutes and distribute copies within two days after meeting to participants, with copies to those affected by decisions made.

1.6 SITE MOBILIZATION MEETING

A. Construction Manager shall schedule a meeting at the project site prior to Contractor occupancy.

B. Attendance Required: Owner, Architect/Engineer, Special Consultants, Contractor, Contractors Superintendent, major Subcontractors, and other parties as required.

C. Agenda:
   1. Use of premises by Owner and Contractor.
   2. Owner’s requirements and occupancy.
   3. Construction facilities and controls provided by Owner.
   4. Temporary utilities provided by Owner.
   5. Survey and layout.
   7. Schedules.
   8. Procedures for testing.
   10. Requirements for start-up of equipment.
   11. Inspection and acceptance of equipment put into service during construction period.
D. Construction Manager shall record minutes and distribute copies within two days after meeting to participants, with copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

1.7 PROGRESS MEETINGS

A. Construction Manager shall schedule and administer meetings throughout progress of the work at weekly intervals unless otherwise required by the work.

B. Construction Manager shall make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.

C. Attendance Required: Job superintendents, Prime Trade Contractors, Owner, Architect/Engineer, Special Consultants as required and parties as appropriate to agenda topics for each meeting.

D. Agenda

1. Review minutes of previous meetings.
2. Review work progress.
3. Field observations, problems, and decisions.
4. Identification of problems which impede planned progress.
5. Review of submittals schedule and status of submittals.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Current safety changes.
14. Other business relating to Work.

E. Construction Manager shall record minutes and distribute copies within two days after meeting to participants, with copies to Architect / Engineer, Owner, participants, and those affected by decisions made

1.8 PREINSTALLATION MEETING

A. When required in individual specification sections, the respective Contractor shall convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting or affected by, work of the specific section.

C. Notify Architect, Owner and Construction Manager four days in advance of meeting date.

D. Contractor shall prepare agenda and preside at meeting:

1. Review conditions of installation, preparation and installation procedures.
2. Review coordination with related work.
E. Record minutes and distribute copies within five days after meeting to participants, with copies to Architect, Owner, Construction Manager, participants, and those affected by decisions made.

1.9 ADDITIONAL MEETING

A. The Construction Manager may conduct additional meetings as required by the Project conditions or changes. All contractors must attend these meetings at no additional cost to the Owner.

B. Daily Coordination meeting of approximately 15 minute duration will be conducted by the Construction Manager for all Contractor’s superintendents on site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Beginning new work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specifications sections.

D. Verify that utility services are available, of the correct characteristics, and in the correct location.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply any manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION 013100
SECTION 013113- PROJECT COORDINATION

PART I - GENERAL

1.1 SECTION INCLUDES
   A. Project coordination by the Project Coordinator.
   B. Construction Mobilization.
   C. Schedules.
   D. Submittals.
   E. Coordination drawings.
   F. Closeout procedures.

1.2 RELATED SECTIONS
   B. Document 007300- Supplementary Conditions of the Contract.
   D. Section 013100 – Project Management and Coordination: Project meetings. Pre-construction Meetings. Progress meetings.
   E. Section 013300 - Submittals: Submittal procedures.

1.3 PROJECT COORDINATOR
   A. Project Coordinator: Construction Manager.

1.4 CONSTRUCTION MOBILIZATION
   A. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field office and sheds, for construction and Owner access, traffic, and parking facilities.
   B. During construction, coordinate use of site and facilities through the Project Coordinator.
   C. Comply with Project Coordinator’s procedures for intraproject communications; submittals, reports and records, schedules, coordination drawings and recommendations; and resolution of ambiguities and conflicts.
   D. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
F. Coordinate field engineering and layout work under instructions of the Project Coordinator.

1.5 SCHEDULES

A. Submit preliminary manpower loaded bar chart schedule in accordance with Section 01310.

B. After review, revise and resubmit schedule to comply with revised Project schedule.

C. During progress of work, revise and resubmit with Applications for Payment or as directed.

1.6 SUBMITTALS

A. Provide submittals to Project Coordinator for review and transmittal to Architect / Engineer.

B. Submit requests for interpretation of Contact Documents, and obtain instructions through the Project Coordinator.

C. Process requests for substitutions, and change orders, through the Project Coordinator.

D. Deliver closeout submittals for review and preliminary inspection reports, for transmittal to

1.7 COORDINATION DRAWINGS

A. Provide information required by Project Coordinator for preparation of coordination drawings.

B. Systems Coordination Drawings are required from the Mechanical, Electrical, Plumbing and General Trade Contractors with the lead role assigned to the Mechanical Trade Contractor.

C. The Mechanical Trade Contractor shall prepare 1/4” = 1 ft. scale Reproducible Systems Drawings for all areas with piping and ductwork. Drawings to indicate spatial relationship HVAC piping and ductwork.

D. The Mechanical Trade Contractor shall prepare and submit to the Construction Manager a regularly updated schedule indicating the development and review of these drawings with other Trade Contractors. The drawing development and review schedule must follow the project construction schedule.

E. The Mechanical Trade Contractor shall provide the Reproducible Systems Coordination to the other Trade Contractors for their input and review. The routing is as follows: HVAC Ductwork / Piping, Plumbing, General Trades with the drawings being reamed to be Contractor.
F. Each Trade Contractor will add the work of his Contract on the Systems Coordination Drawings to avoid interferences. All piping, equipment, light fixtures and in-ceiling equipment, such as rolling gates, must be shown on these drawings to include elevations and dimensions.

G. Prior to forwarding the Systems Coordination Drawings to the next Trade Contractor, an approval stamp, initialed and dated, should be affixed by the reviewing Trade Contractor. This approval by the reviewing Trade Contractor will install his work accordingly.

H. During the Systems Coordination Drawing process, the Construction Manager will conduct regularly scheduled meetings. Each Trade Contractor is required to attend these meetings. The Construction Manager is responsible for recording and distributing meeting minutes to all Trade Contractors and the Architect / Engineer. The purpose of the meetings will be to review and discuss interferences and conflicts as well as any modifications to the Systems Coordination Drawings. All resolutions of interferences and conflicts which required modifications shall be initiated by the appropriate Trade Contractors on the Systems Coordination Drawings. At each meeting, the General Trade Contractors will review and update the Systems Coordination Drawing Schedule.

I. Once reviewed and approved by each General Trade Contractor, the Mechanical Trade Contract will prepare the Final Reproducible Systems Coordination Drawings with the work of all trades included. Submit the Reproducible Drawings along with two (2) prints to the Construction Manager who will forward to the Architect for his review.

J. The Mechanical Trade Contractor shall indicate any unresolved conflicts or interferences on the Systems Coordination Drawings. Those should be delineated by clouding, numbering and referencing to he affected contract drawings.

K. Review drawings prior to submission to Architect / Engineer.

L. The Architect will review and return drawings to the Construction Manager. The Construction Manager will distribute the number of drawings to the Trade Contractors for installation of their work.

M. The Systems Coordination Drawings DO NOT REPLACE any fabrication and layout drawings required by individual Specification Sections.

1.8 CLOSEOUT PROCEDURES

A. Notify Project Coordinator when work is considered ready for Substantial Completion. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in Contractors Notice of Substantial Completion.

B. Comply with Project Coordinator’s instructions to correct items of work listed in executed Certificates of Substantial Completion and for access to Owner occupied areas.

C. Notify Project Coordinator when Work is considered finally complete. Accompany
Project Coordinator on preliminary final inspection.

D. Comply with Project Coordinators instructions for completion of items of Work determined by Architect / Engineers final inspection.

PART 2 - PRODUCTS – (NOT USED)

PARTS - EXECUTION— (NOT USED)

END OP SECTION 013113
SECTION 013216 - CONSTRUCTION SCHEDULE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Scheduling requirements and coordination.

B. Construction Phasing Plans

C. Construction Milestone Schedules (by Phase and by Trade)

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this section.

1.3 DEFINITIONS

A. Activity: An activity is any single identifiable step in the Project. It depends upon preceding and succeeding activities.

1.4 CONSTRUCTION SCHEDULE

A. The Construction Schedule, as reviewed by the Construction Manager and Owner, will be an integral part of the Contract, and will establish interim work completion dates for the various activities. Each Trade Contractor shall be responsible to achieve Starting Dates, Milestones or Target Dates, and Completion Dates established for each Phase of the overall Project.

B. The Construction Schedule may vary in accordance with construction conditions. Each Contractor shall delay or expedite material and equipment deliveries, and modify the required labor forces to accommodate these varying conditions.

C. This is a phased project. Multiple trips may be required to complete this Project.

D. Within fifteen (15) days after receipt of Notice of Intent to Award, each Contractor shall submit a preliminary Construction Schedule, in accordance with the milestone construction schedule included in these documents under the summary of work, to the Construction Manager. The schedule will include breakdowns of total man days of field labor into major categories of work, time estimates of various categories of work, crew size for each category, and quantity and type of equipment to be utilized.

E. Each Contractor shall provide to the Construction Manager a separate list of critical submittal dates for Shop Drawings, Product Data, and Samples, indicating delivery dates/lead times that may impact the construction schedule or completion of the Work. The critical submittal list shall accompany the Preliminary Submittal List as identified in Section 013300 - Submittals.

F. Each Contractor shall organize his Construction Schedule per Phase, Building, Wing, Floor, and Area as required by the Construction Manager.
G. The Construction Manager shall schedule a meeting with the Contractors, to review the contents of each Contractor’s preliminary Construction Schedule, review the sequence of Work, and make all revisions required. The Construction manager shall have the final authority concerning the sequence of Work and durations of each activity. Each Contractor shall revise his schedule in accordance with that meeting and submit his schedule to the Construction Manager for review. The Construction Manager will then develop the Project Construction Schedule. Each Contractor shall schedule and perform his work in compliance with the Construction Manager’s Project Construction Schedule.

H. The Schedule shall be the basis for the dates to start and complete Work for the various portions of each Contract, and to complete Work (including changes) for the Project. IT shall be the duty of the Contractor to conform to the current Schedule and to arrange his work in such a manner that it will be installed in accordance with the Schedule.

I. Each Contractor shall submit two (2) copies of a monthly updated Construction Schedule comparing the original schedule to actual work in progress and project work along with the Application for Payment.

J. As required, a representative of each Contractor shall meet with the Construction Manager and furnish to him information necessary for such re-evaluating and updating of the Project schedule. Information with regard to changes in the work and the Contractor’s proposed effort to overcome any delays incurred shall be provided (in writing) to the Construction Manager.

K. Two (2) days after the Contractor has failed to Start on Schedule, Meet Assigned Milestone or Target Dates, or Completion of items such as Shop Drawing Submissions, Material - Equipment Deliveries, or Tasks according to the Master Construction Schedule or Revised Master Construction Schedule, the Construction Manager will forward a letter of Non-Conformance, via Facsimile Transmission and/or Express Mail, to the Contractor and a copy to the Owner. Upon receipt of this notice, the Contractor is required to execute whatever measures as so directed by the Contract Manager including, but not specifically, assigning additional labor, shifts, overtime, materials, expediting of submittals or deliveries, equipment, scaffold, or any combination of these as deemed appropriate and necessary by the Construction Manager to return the above referenced activities back on schedule, without additional compensation to the Contractor.

L. Costs incurred by the Construction Manager in connection with maintaining the Construction Schedule, caused by the Contractor’s noncompliance with the scheduling requirements, shall be reimbursed to the Construction Manager by the Contractor.

M. It is expressly understood and agreed that failure by the Construction Manager to exercise the option to either order the Contractor to expedite work, or to expedite the work by other means, shall not be considered precedent-setting for any other activities.

1.5 SCHEDULE COMPUTERIZATION

A. All Trade Contractors shall provide all their scheduling information via a computer assisted scheduling program, acceptable to the Construction Manager. Format to be Bar Chart.
B. All schedule information and updates for the above Contractors shall be provided to the Construction Manager on 3.5" diskettes in format and density as required.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

PART 4 – SCHEDULE

Construction starts September 2019. Project has to be finished by June 2021. Please provide sufficient manpower in your cost to meet the completion date of June 1, 2021.

END OF SECTION 013216
SECTION 013233 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Preliminary Construction Schedule.
2. Contractor's Construction Schedule.
4. Daily construction reports.
5. Field condition reports.
6. Special reports.
7. Construction photographs.

B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for submitting the Schedule of Values.
2. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
3. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
4. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
2. Predecessor activity is an activity that must be completed before a given activity can be started.

B. Event: The starting or ending point of an activity.

C. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the
   early start of the following activity.
3. Total float is the measure of leeway in starting or completing an activity without
   adversely affecting the planned Project completion date.

D. Fragment: A partial or fragmentary network that breaks down activities into smaller activities
   for greater detail.
E. Major Area: A story of construction, a separate building, or a similar significant construction
   element.
F. Milestone: A key or critical point in time for reference or measurement.
G. Network Diagram: A graphic diagram of a network schedule, showing activities and activity
   relationships.

1.4 SUBMITTALS

A. Qualification Data: For firms and persons specified in "Quality Assurance" Article and in-
   house scheduling personnel to demonstrate their capabilities and experience. Include lists of
   completed projects with project names and addresses, names and addresses of architects and
   owners, and other information specified.
B. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a
   tabular format:
   1. Scheduled date for first submittal.
   2. Specification Section number and title.
   3. Submittal category (action or informational).
   4. Name of subcontractor.
   5. Description of the Work covered.
   6. Scheduled date for Architect's and Construction Manager’s final release or approval.
C. Preliminary Construction Schedule: Submit three printed copies.
D. Contractor's Construction Schedule: Submit two printed copies of initial schedule, one a
   reproducible print and one a blue- or black-line print, large enough to show entire schedule for
   entire construction period.
E. Daily Construction Reports: Submit two copies at weekly intervals.
F. Field Condition Reports: Submit two copies at time of discovery of differing conditions.
G. Special Reports: Submit two copies at time of unusual event.

1.5 QUALITY ASSURANCE

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and
   reporting.
B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review software limitations, content, and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including phasing, work stages, area separations, and interim milestones.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review time required for review of submittals and resubmittals.
7. Review requirements for tests and inspections by independent testing and inspecting agencies.
8. Review time required for completion and startup procedures.
9. Review and finalize list of construction activities to be included in schedule.
10. Review submittal requirements and procedures.
11. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

C. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities including temporary lighting.

D. Each trade contractor is to submit preliminary manpower loaded bar chart schedule in accordance with section 013100.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead-time for manufacture or fabrication.

   a. At Contractor's option, show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

   A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

   B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

      1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

   C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:

      1. Activity Duration: Define activities so no activity is longer than 120 days, unless specifically allowed by Architect.

      2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

      3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.

      4. Startup and Testing Time: Include not less than 7 days for startup and testing.

      5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect and Construction Manager's administrative procedures necessary for certification of Substantial Completion.

   D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

      1. Phasing: Arrange list of activities on schedule by phase.

      2. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.

      3. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 1 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
4. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
   a. Subcontract awards.
   b. Submittals.
   c. Purchases.
   d. Mockups.
   e. Fabrication.
   f. Sample testing.
   g. Deliveries.
   h. Installation.
   i. Tests and inspections.
   j. Adjusting.
   k. Curing.
   l. Startup and placement into final use and operation.

5. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
   a. Structural completion.
   b. Permanent space enclosure.
   c. Completion of mechanical installation.
   d. Completion of electrical installation.
   e. Substantial Completion.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

F. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.

1. Refer to Division 1 Section "Payment Procedures" for cost reporting and payment procedures.

G. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragments to demonstrate the effect of the proposed change on the overall project schedule.

H. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.

2.3 PRELIMINARY CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within 14 days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60
days of construction. Include skeleton diagram for the remainder of the Work and a cash
requirement prediction based on indicated activities.

2.4 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type,
Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed.
Base schedule on the Preliminary Construction Schedule and whatever updating and feedback
was received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of
each week with a continuous vertical line.

1. For construction activities that require 3 months or longer to complete, indicate an
estimated completion percentage in 10 percent increments within time bar.

2.5 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following
information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. High and low temperatures and general weather conditions.
5. Accidents.
6. Meetings and significant decisions.
7. Unusual events (refer to special reports).
8. Stoppages, delays, shortages, and losses.
9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of authorities having jurisdiction.
12. Change Orders received and implemented.
13. Construction Change Directives received.
14. Services connected and disconnected.
15. Equipment or system tests and startups.
16. Partial Completions and occupancies.
17. Substantial Completions authorized.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions
and the Contract Documents, prepare a detailed report. Submit with a request for information.
Include a detailed description of the differing conditions, together with recommendations for
changing the Contract Documents.

2.6 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute
copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at
Project site, whether or not related directly to the Work, prepare and submit a special report.
List chain of events, persons participating, and response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013233
SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for submitting Applications for Payment.
2. Division 1 Section "Project Coordination" for submitting Coordination Drawings.
3. Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
4. Division 1 Section "Quality Control" for submitting test and inspection reports and Delegated-Design Submittals.
5. Division 1 Section "Closeout Procedures" for submitting warranties Project Record Documents and operation and maintenance manuals.
6. Division 1 Section "Closeout Procedures" for submitting Record Drawings, Record Specifications, Record Product Data, and operation and maintenance manual requirements.
7. Division 1 Section "Substitutions for submitting products substitutions during bidding and after Award of Contract.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's approval. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. General: Upon request, Architect will provide electronic copies of CAD Drawings of the Contract Drawings for Contractor's use in preparing submittals. Contractor shall sign a release form provided by the Architect and payment of $200 processing fee for each consultant’s CADD files. Only plan drawings and backgrounds to be provided.
B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
3. All submittals by suppliers and fabricators shall be reviewed by Installing Contractor for compliance and coordination with other work prior to submission to the architect. Contractor’s failure to review shop drawings and product data will be cause for rejection.

C. Submittals Schedule: Comply with requirements in Division 1 Sections "Construction Progress Documentation" and “Construction Schedules” for list of submittals and time requirements for scheduled performance of related construction activities.

D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal.

1. Initial Review: Allow not less than 15 working days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Concurrent Review: Where concurrent review of submittals by Architect's consultants, Owner, or other parties is required, allow not less than 21 working days for initial review of each submittal.
3. If intermediate submittal is necessary, process it in same manner as initial submittal.
4. Allow 15 working days for processing each re-submittal.
5. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
6. All contractors to provide all submittals and color samples to the Construction Manager within 45 days of your contract date. Any rejected submittals to be resubmitted within 15 days. A penalty of $100.00 per calendar day will be accessed for late submittals and color samples.

E. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 4 by 5 inches (100 by 125 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information on label for processing and recording action taken:
a. Project name.
b. Date.
c. Name and address of Architect.
d. Name and address of Contractor.
e. Name and address of subcontractor.
f. Name and address of supplier.
g. Name of manufacturer.
h. Submittal tracking number based on specification section
i. Number and title of appropriate Specification Section.
j. Drawing number and detail references, as appropriate.
k. Other necessary identification.

F. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

G. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.

1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.
2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.

H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, received from sources other than Contractor.

1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
3. Transmittal Form: Provide locations on form for the following information:

   a. Project name.
   b. Date.
   c. Destination (To:).
   d. Source (From:).
   e. Names of subcontractor, manufacturer, and supplier.
   f. Submittal tracking number based on specification section
   g. Category and type of submittal.
   h. Submittal purpose and description.
   i. Submittal and transmittal distribution record.
   j. Remarks.
   k. Signature of transmitter.
I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals with mark indicating action taken by Architect in connection with construction.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Number of Copies: Submit number of copies requested but not less than seven copies of each submittal, unless otherwise indicated. Architect will return two copies plus copies for maintenance binders. Mark up and retain one returned copy as a Project Record Document.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
   a. Manufacturer's written recommendations.
   b. Manufacturer's product specifications.
   c. Manufacturer's installation instructions.
   d. Standard color charts.
   e. Manufacturer's catalog cuts.
   f. Wiring diagrams showing factory-installed wiring.
   g. Printed performance curves.
   h. Operational range diagrams.
   i. Mill reports.
   j. Standard product operating and maintenance manuals.
   k. Compliance with recognized trade association standards.
   l. Compliance with recognized testing agency standards.
   m. Application of testing agency labels and seals.
   n. Notation of coordination requirements.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:
   a. Dimensions.
   b. Identification of products.
   c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
f. Shopwork manufacturing instructions.
g. Templates and patterns.
h. Schedules.
i. Design calculations.
j. Compliance with specified standards.
k. Notation of coordination requirements.
l. Notation of dimensions established by field measurement.

2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1000 mm).

D. Coordination Drawings: Comply with requirements in Division 1 Section "Project Management and Coordination."

E. Samples: Prepare physical units of materials or products, including the following:

1. Comply with requirements in Division 1 Section "Quality Requirements" for mockups.
2. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

3. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect's sample where so indicated. Attach label on unexposed side that includes the following:
   a. Generic description of Sample.
   b. Product name or name of manufacturer.
   c. Sample source
   d. Project Name
   e. Date.

4. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.

   a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least three sets of paired units that show approximate limits of the variations.
   b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections,
operation, and similar construction characteristics.

5. Number of Samples for Verification: Submit minimum three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
   a. Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

6. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

F. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
2. Number and name of room or space.
3. Location within room or space.
4. Project identification as described in submittal procedures above.

G. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Project identification as described in submittal procedures above.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Architect will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements in Division 1 Section "Quality Requirements."

B. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that installer complies with requirements and, where required, is authorized for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

J. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.

K. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

L. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

M. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
N. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section "Closeout Procedures Operation and Maintenance Data."

P. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.
S. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

T. Within 15 working days of award of contract and notice to proceed each prime the contractor shall provide written confirmation that Contractor shall comply with requirements contained herein. Architect of record shall then provide (1) six pack of beer as selected by the contractor.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.

C. Informational Submittals: Architect will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 013300
USE AND INDEMNIFICATION AGREEMENT

Please be aware that Tetra Tech charges contractor(s) for electronic files (this applies to files in AutoCAD (or similar) format).

PDF’s, which are simply an electronic scan of the drawings, do not require the use of the indemnification form; however we charge $50 per PDF to cover our expenses. Tetra Tech must receive the contractor’s check prior to sending PDF’s.

For AutoCAD type files, the cost is $100 per electronic drawing, regardless of the number of drawings they are requesting. The Use and Indemnification Agreement is to be signed by the Prime Contractor. Should a subcontractor, such as a steel fabricator, ductwork detailer, desire electronic files, they would need to pursue this request through their Prime Contractor who has the contract with the Client.

Due to the inherent value to the company of our typical details and our other standards, we limit the drawings types that we will release via this indemnification form to plan type drawings. Typical detail sheets are not to be released in the form of an electronic AutoCAD drawing file.

In addition, our internal individual Base Plans will not be released; we limit what the contractor can purchase to the actual individual contract drawings.

After the Prime Contractor has determined the number of drawings that they will need, fill out the following two pages. The second page of the form, marked Use and Indemnification Agreement – Business Office, needs to be sent to the Business Office with the Contractor check made out to Tetra Tech. We will not release electronic files until we receive this form and the check.
Use and Indemnification Agreement

Re: Cape Henlopen School District – Milton Elementary School Demo - Sitework
Tt Project No. 200-81485-16004

Whereas, ______________ (hereinafter the “Contractor”), acknowledges that it has requested certain electronic files and/or media of the Drawings and/or Specifications for the above-referenced Project which are the property of Tetra Tech Engineers, Architects & Landscape Architects, P.C. d/b/a Tetra Tech Architects & Engineers (hereinafter “Tetra Tech”).

Whereas, Contractor further acknowledges all requests for electronic files require a pre-payment of $100/file (Each individual drawing in the set of Contract Documents represents 1 file), regardless of the number of files requested, prior to receiving said files from Tetra Tech.

Now, therefore, Contractor hereby warrants and covenants that it will abide by the following provisions:

A. Indemnification

1. In consideration of permission to use electronic files or media, including but not limited to electronic files of drawings created by use of computer, for the Work of this Project only, and which the Contractor has requested from Tetra Tech, the Contractor, to the fullest extent permitted by law, hereby agrees to indemnify and hold harmless Tetra Tech, its agents, employees, officers, directors and consultants from and against any and all claims, damages, losses and expenses, including any attorneys’ fees, arising out of, resulting from or in connection with any and all use of said electronic materials, but only if such claim, damage, loss or expense is caused in whole or in part by the Contractor, its employees, agents, officers, directors, or any other party directly or indirectly employed by any of them or any party for whose acts any of them may be liable, regardless of whether or not it is caused by a party indemnified hereunder. Such obligation shall not be construed to reduce or negate any other right or obligation of indemnification that would otherwise exist as to any party hereto. This indemnification shall not apply to the liability of the indemnitee arising out of its own negligence. This indemnification shall not be limited in any way because of any limitation on damages, compensation or benefits under any statute, law or governmental requirement of any sort.

2. The following shall be included within the definition of “expenses” herein: (a) any time expended by the indemnified party of its employees, agents, officers and directors at their usual and customary billing rates, as well as all out-of-pocket expenses such as long-distance telephone calls, costs of reproduction, expenses of travel and lodging; (b) all costs and expenses of experts, consultants, engineers, and any other party retained by the indemnified party reasonably required to defend the claim; (c) all costs, including reasonable attorneys’ fees, incurred in bringing any action to enforce the provisions of this indemnification. The following shall be included within the definition of “action” herein: any case brought in any state or federal court, any arbitration, any mediation, and any similar forum for resolution of any dispute herein, and shall also include any counterclaim or third-party action in any such forum.

B. Use and Compatibility

1. Tetra Tech’ instruments of service are furnished without guarantee of compatibility with the Contractor’s software or hardware, and Tetra Tech’ sole responsibility for the electronic media is to furnish a replacement for defective disks within thirty (30) days after delivery to Contractor.

2. Because data stored on electronic media can deteriorate undetected or be modified without Tetra Tech’ knowledge, the Contractor agrees that Tetra Tech will not be held liable for the completeness or correctness of the electronic media after an acceptance period of thirty (30) days after delivery of the electronic files. Tetra Tech does confirm the accuracy of the final sealed hard copy drawings, previously submitted pursuant to the Prime Agreement for this Project.

3. The electronic files are submitted to the Contractor for a thirty (30) day acceptance period. During this period, the Contractor may review and examine these files, and any errors detected during this time will be corrected by Tetra Tech. Any changes requested after the acceptance period will be considered additional services to be performed on a time and materials basis, at Tetra Tech’s standard cost plus terms and conditions.

4. Tetra Tech retains ownership of the printed hard copy Drawings and Specifications and the electronic media. The Contractor is granted a license for their use, but only in the operation and maintenance of the Project. Use of these materials for modification, extension, or expansion of this Project or on any other project, unless under the direction of Tetra Tech, shall be without liability to Tetra Tech and Tetra Tech’s consultants.

IN WITNESS WHEREOF:

Contractor: ____________________________________________
Signed name:___________________________________________
Printed Name:__________________________________________
Title:_________________________________________________
Date:_________________________________________________
Electronic Drawing Files

Prime Contractor Name

Prime Contractor Address

Contact to Receive Invoices

Project Name          Cape Henlopen School District – Milton Elementary School
                      Demo – Sitework

Project Number        200-81485-16004

Number of Drawing Files (Each individual drawing in the set of Contract Documents represents 1 file)

List each Drawing # Requested

Contractor Signature   

If transmission is not received as noted, kindly notify us at once.
SECTION 013319 FIELD ENGINEERING

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work on this section.

B. Throughout the specifications, types of materials may be specified by manufacturer’s name and catalogue number in order to establish standards of quality and performance and not for the purpose of limiting competition. Alternate methods and/or materials may be submitted to the Architect for consideration. Those judged to be equal to that specified will receive written approval.

C. Delaware Department of Transportation Specifications for Road and Bridge Construction, August 2001 and as amended.

D. Delaware Department of Natural Resources and Environmental Control (DNREC) Sediment and Stormwater Regulations.

1.2 SUMMARY

Work included: Provided at the Contractor’s expense, such field engineering services as are required for proper completion of the Work including, but not necessarily limited to:

A. The Contractor shall be responsible for all stakeouts and elevation checks required for construction. All such Work shall be performed by a professional land surveyor. The surveyor shall verify adequacy of benchmarks before starting construction.

B. Before the start of any building construction, the Contractor shall have a professional land surveyor locate and stake building corners, driveway entrances, driveways, parking areas and playfields. If there are any discrepancies between the actual layout and the project site plan, they shall be brought to the attention of the Architect and resolved before Work proceeds. A building and site stake out drawing stamped and signed by a professional land surveyor may be submitted in lieu of this preliminary stake out.

C. After the corners of the exterior walls have been started, the Contractor shall obtain a wall check survey certificate made by a professional land surveyor. This survey shall show the accurate location of the building with reference to property lines.

D. After the first sections of slab-on-grade have been placed in the building, the Contractor shall have a professional land surveyor verify and record the finish floor elevations on the wall check survey.

E. At the end of the project, the Contractor shall have a professional land surveyor prepare and certify an as-built survey showing the accurate horizontal and vertical locations of all building corners, paved areas, sidewalks, utilities (including inverts), fencing, site walls, etc. located within the project area.
F. As-Built survey shall be included in a standard C.A.D. format such as AutoCad and/or MicroStation and shall include 2-foot contours within the project limits.

G. A complete stormwater management as-built shall also be completed in accordance with DNREC’s Standard Stormwater Management checklist. The Contractor’s shall have a professional land surveyor prepare and certify an interim and final as-built, and the testing and inspection agent shall have a professional engineer certify the construction checklist at the interim and final stages of stormwater management facility construction.

H. The contractor will be responsible for preparing and submitting to the project engineer five (5) copies of the interim and final stormwater management facility as-built, and additional facility information in accordance with the requirements set forth by DNREC.

1.3 RELATED WORK

A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

B. Additional requirements for field engineering also may be described in other Sections of these Specifications.

1.4 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.5 SUBMITTALS

A. Comply with pertinent provisions of Section 013300-Submittals.

B. Upon request of the Architect, submit;

1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.

2. Documentation verifying accuracy of field engineering work.

3. Certifications, signed by the Contractor’s retained field engineer, certifying that elevations and locations of improvements are in conformance with requirements of the Contract Documents.

4. All certifications and surveys described in the Summary section of this specification.
1.6 PROCEDURES

A. In addition to procedures directed by the Contractor for the proper performance of the Contractor’s responsibilities:

1. Locate and protect control points before starting Work on the site.
2. Preserve permanent reference points during process of the Work.
3. Do not change or relocate reference points or items of the Work without specific approval from the Architect.
4. Promptly advise the Architect when a reference point is lost or destroyed, or requires relations because of other changes in the Work.
   a) Upon direction of the Architect, require the field engineer to replace reference stakes or markers.
   b) Locate such replacements according to the original survey control.

PART 2 PRODUCTS

Not Applicable

PART 3 EXECUTION

Not Applicable

END OF SECTION 013319
SECTION 013500 - SAFETY

1.1 SAFETY REQUIREMENTS

A. All work shall be performed in accordance with rules, regulations, procedures and safe practices and/or OSHA and all other Government agencies having jurisdiction over the project.

1.2 SAFETY PRECAUTIONS AND PROGRAMS:

A. Each Contractor shall be responsible for initiating, maintaining and supervising safety precautions and programs in connection with the work. The name of the safety officer for each contractor shall be provided to the Construction Manager.

B. All Contractors shall comply with the provisions of the "Occupational Safety and Health Act" and Federal, State and local requirements.

C. If a Contractor fails to maintain the safety precautions required by law or directed by the Construction Manager, the Construction Manager may take such action as necessary and charge the Contractor therefore. The failure of the Construction Manager to take any such action shall not relieve the Contractor of his obligations.

D. The Contractor individually shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods and for any damage which may result from their failure or their improper construction, maintenance or operation.

E. Prior to mobilizing to the job, the Contractor shall submit to the Construction Manager in writing, a description of his safety program for review and comment. Failure of the Construction Manager to make any changes shall not relieve the contractor of his obligations. During the conduct of the work, the Contractor shall immediately notify the Construction Manager in writing of all accidents and shall submit a written report describing in detail the circumstances of each accident within 24 hours of its occurrence.

F. All Contractors shall notify the Construction Manager of any flammable, combustible and/or toxic materials intended for use on the project and shall furnish the Construction Manager with literature pertinent to the use and control of all materials, including, but not limited to M.S.D.S. sheets.

G. Each Contractor shall delegate one representative who shall be responsible to maintain all safety requirements of the Contractor, and shall attend all project meetings scheduled by the Construction Manager.

1.3 SAFETY OF PERSONS AND PROPERTY:

A. The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage or loss to:

1. All Cape Henlopen School District personnel and all other persons who may be affected thereby.
2. All the work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-Subcontractors.

3. Other property at the site or adjacent thereto, including but not limited to trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction and underground property.

B. The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority, including the Owner's requirements bearing on the Safety of persons or property or their protection from damage, injury or loss.

C. The Contractor shall erect and maintain, as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection, including danger signs and other warnings against hazards. He shall comply with safety regulations and notify the Construction Manager, until he is in compliance.

D. The Contractor shall promptly remedy all damage or loss to any property caused in whole or in part by the Contractor, his Subcontractors, his Sub-Subcontractors, or anyone directly employed by any of them, or by anyone for whose acts any of them be liable.

E. The Contractor shall not load or permit any part of the work to be loaded so as to endanger its integrity and safety.

F. Contractors using a method of blasting to perform work on the project shall use all proper methods, including adequate safety matting and/or overburden, progressive time sequences and scaled distances, in accordance with all governmental regulations.

G. The use of audio equipment and headsets will not be permitted on the construction site.

1.4 PERSONAL PROTECTION REQUIREMENTS

A. All persons entering the project shall wear hard hats in good condition and meet ANSI Z89.1-1981 and ANSI Z89.2-1971. The hats shall be worn in the proper manner.

B. All persons entering the project shall wear proper work boots, clothing attire including long trousers and shirts.

C. All job site personnel are expected to strictly adhere to the following rules and regulations:

1. Use of approved eye protection by all Company personnel shall be required during all types of percussions and reciprocating work or when owner requirements govern.

2. Approved respiratory equipment shall be worn by all personnel exposed to hazardous volumes of toxic or noxious dusts, fumes, mists, or gases. Check
1. Personal protective equipment is to be used under unusual conditions, such as high temperature work, handling caustic or corrosive liquids, or molten metals.

2. When lifting material, keep back straight, bend knees, and lift with your legs. Get help if the load is too heavy.

3. Work clear of suspended loads. If a load is moved above where you are working or walking, stand clear until it has passed.

4. Unless it is part of your regular work, do not attempt to repair or adjust any electrical equipment.

5. Kill any circuit before attempting to work on it. Even voltages lower than 110 will cause death under certain conditions.

6. Treat all electric wires as live. Do not touch exposed wires. Report them immediately to your supervisor.

7. The Contractor is responsible for providing safety training to all of his employees.

8. All shipments to the site shall have the required documentation and labels attached and the documentation and labels shall be maintained while the material is on site.

9. As defined in the occupational Safety & Health Act, safety belts, complete with lanyards, or parachute-style harness, complete with lanyard, are to be used where there is a danger of falling.

1.5 HOUSEKEEPING

A. Materials and equipment must be piled up or stored in a safe manner. Aisles must be kept clear.

B. All drop cables/extension cords shall be elevated above the ground or protected in such a way to allow traffic to pass.

C. Smoking will only be permitted in designated areas.

D. Consumption of food and beverages in other than Company-designated areas and at specified times.

E. Glass-bottled refreshments will not be allowed in the workplace.

F. Graffiti will not be tolerated on the jobsite.

G. All compressed gas cylinders must be stored in an upright position and tied off with the
cap placed on top.

H. The cords and connections at temporary panels must be maintained in an orderly fashion at all times to prevent tripping.

I. Welding stubs and shells from explosive activated tools shall be collected and properly disposed of by Contractor.

J. Nails are to be bent over and/or removed from wood.

K. Aisles and stairwells as well as base areas of ladders are to be kept clear at all times.

1.6 M.S.D.S.-CONTROLLED PRODUCTS

A. The Contractor is responsible for notifying R.Y. Johnson & Son, Inc. of any controlled products that they bring or cause to have brought onto the site. The Contractor shall provide R.Y. Johnson & Son, Inc. with a copy of the Material Safety Data Sheet (M.S.D.S.) for the controlled product, and the Contractor shall retain a copy of the M.S.D.S. on site for their reference. The legal storage, use, and disposal of any controlled product is the responsibility of the Contractor.

B. The Contractor shall comply with OSHA Communications’ Standards 29 CFR 1910-1200 for hazardous materials. The Contractor shall maintain a Material Safety Data Sheet on file at the jobsite for each chemical brought to the site. M.S.D.S. sheets shall be submitted to R.Y. Johnson & Son, Inc. for record purposes.

C. Temporary storage of hazardous materials shall be located in containment dikes provided by the Contractor requiring same in area identified by the Construction Manager. All tanks, drums, and containers are to be labeled with appropriate warnings (i.e., flammable, no smoking). Periodic inspections for leakage shall be the responsibility of the Contractor. Final cleanup and removal shall be by the Contractor.

1.7 EMERGENCIES

A. In any emergency affecting the safety or persons or property, the Contractor shall act, at his discretion, to prevent threatened damage, injury or loss and shall immediately notify the Construction Manager of such emergency conditions. Any claims made by the Contractor for additional compensation or extension of time on account of emergency work shall be processed in accordance with Article 7, of the Supplementary Conditions.

1.8 ACCIDENT INVESTIGATION AND REPORTING

A. All accident/incidents shall be reported.

B. The Contractor shall submit an accident/incident report to R.Y. Johnson & Son, Inc. no later than 10 hours on the working day following the incident. A detailed report is to follow within 24 hours.
1.9 FIRST AID PROCEDURE

A. The Contractor is to provide his own First Aid service.

B. Each Contractor shall supply to R.Y. Johnson & Son, Inc. a list of their qualified First Aid personnel. Each Contractor is to have a minimum of one full-time qualified First Aid personnel on site. Contractor First Aid certificates shall be posted in the Contractor's site office and photocopies supplied to R.Y. Johnson & Son, Inc.

1.10 INDEMNIFICATION

A. Contractors shall indemnify and hold harmless the Owner, the Construction Manager and the Architect/Engineer, all municipal authorities, and their agents and employees from and against all claims, damages, losses, and expenses including, but not limited to attorney's fees arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other work than the work itself) including the loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not is caused in part by a party indemnified hereunder.

B. In any and all claims against the Owner, the Construction Manager or the Architect/Engineer or any of their agents or employees by any employee of a Contractor, and Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the type of damages, compensation or any Subcontractor under workmen's compensation acts, disability benefit acts or other employee benefit acts.

C. To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Construction Manager, the Owner, and the Architect and their agents and employees from and against all claims, including citations and penalties imposed by the Occupational Safety and Health Administration, damages, losses, expenses and judgments including, but not limited to attorneys' fees, arising out of or resulting from performance of the work in an area which is unsafe, harmful, dangerous, or hazardous and which is caused in whole or in part by any act or omission of the Contractor, anyone directly or indirectly employed by it, or anyone for whose acts it may be liable, regardless of whether the claim, citation, penalty, damage, loss, expense or judgment results from unsafe, harmful, dangerous, hazardous or toxic materials or substances or whether from any other unsafe, harmful, dangerous or hazardous conditions.

D. The obligations of the Contractor under this paragraph shall not extend to the liability of the Architect/Engineer or the Construction Manager, his agents or employees arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, design or specifications, or (2) the giving of or the failure to give directions or instructions by the
Architect/Engineer of the Construction Manager, their agents or employees provided such giving or failure to give is the primary cause of the injury or damage.

E. No provision of this Subparagraph shall give rise to any duties on the part of the Architect or the Construction Manager not otherwise provided for by contract or by law.

F. In the event that any party is requested but refuses to honor the indemnity obligations hereunder, then the party refusing to honor such requests shall, in addition to all other obligations, pay the cost of bringing any such action, including attorney's fees to the party requesting indemnity.

END OF SECTION 013500
SECTION 014000 - QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality-control services.

B. Quality-control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Architect.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.

D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.

3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

E. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Cutting and Patching" specifies requirements for repair and restoration of construction disturbed by inspection and testing activities.

2. Division 1 Section "Submittals" specifies requirements for development of a schedule of required tests and inspections.

1.3 RESPONSIBILITIES

A. Contractor Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, Contractor shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. Costs for these services are included in the Contract Sum.

1. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform quality-control services. Costs for these services are included in the Contract Sum.
B. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.

1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.

C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:

1. Provide access to the Work.
2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
4. Provide facilities for storage and curing of test samples.
5. Deliver samples to testing laboratories.
6. Provide the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
7. Provide security and protection of samples and test equipment at the Project Site.

D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Architect and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Architect and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
3. The agency shall not perform any duties of the Contractor.

E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

1.4 SUBMITTALS

A. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
   a. Date of issue.
   b. Project title and number.
   c. Name, address, and telephone number of testing agency.
   d. Dates and locations of samples and tests or inspections.
   e. Names of individuals making the inspection or test.
   f. Designation of the Work and test method.
   g. Identification of product and Specification Section.
   h. Complete inspection or test data.
   i. Test results and an interpretation of test results.
   j. Ambient conditions at the time of sample taking and testing.
   k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
   l. Name and signature of laboratory inspector.
   m. Recommendations on retesting.

1.5 QUALITY ASSURANCE

A. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are prequalified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 1 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.

C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION 014000
SECTION 014100- REGULATORY REQUIREMENTS

PART I - GENERAL

1.1 SECTION INCLUDES

A. Safety and Health Regulations.
B. Housekeeping.
C. M.S.D.S. Controlled Products.
D. Emergencies.
E. Employment Policy.
F. Environmental Statutes and Regulations.
G. Miscellaneous Regulations.
I. Standard of Quality.

1.2 RELATED SECTIONS

A. General and Supplementary Conditions of the Contract.

1.3 SAFETY AND HEALTH REGULATIONS

A. These Contract Documents and the joint and several phases of construction hereby contemplated are to be governed, at all times by applicable provisions of the Federal law(s), including but not limited to, the latest amendments of the following:


B. Nothing contained in these Contract Documents for construction shall be construed by the Contractor as relieving him in any way of his responsibility for strict compliance with the rules and regulations contained in the above mentioned Occupational Safety and Health Act.

C. The use of products containing asbestos will not be permitted.

D. All work shall be performed in accordance with rules, regulations, procedures and safe practices and/or OSHA and all other Government Agencies having jurisdiction over the project.
E. Each Contractor shall be responsible for initiating, maintaining and supervising safety precautions and programs in connection with the work. The name of the safety officer for each contactor shall be provided to the Construction Manager.

F. All Contractors shall comply with the provisions of the Occupational Safety and Health Act and Federal, State and local requirements.

G. If a Contractor fails to maintain the safety precautions required by law or directed by the Construction Manager, the Construction Manager may take such action necessary and charge the Contractor therefore. The failure of the Construction Manager to take any such action shall not relieve the Contractor of his obligations.

H. The Contractor individually shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods and for any damage which may result from their failure or their improper construction, maintenance or operation.

I. Prior to mobilizing to the job, the Contractor shall submit to the Construction Manager in writing, a description of his safety program for review and comment. During the conduct of the work, the Contractor shall immediately notify the Construction Manager in writing of all accidents and shall submit a written report describing in detail the circumstances of each accident within 24 hours of its occurrence.

J. All Contractors shall notify the Construction Manager of any flammable, combustible and/or toxic materials intended for use on the project and shall furnish the Construction Manager with literature pertinent to the use and control of all materials, including, but not limited to M.S.D.S sheets.

K. Each Contractor shall delegate one representative who shall be responsible to maintain all safety requirements of the Contractor, and shall attend all project meetings scheduled by the Construction Manager.

L. The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage or loss to:

1. All school personnel, employees on the work site and all other persons who may be affected thereby.
2. All the work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-Subcontractors.
3. Other property at the site or adjacent thereto, including but not limited to trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction and underground property.

M. The Contractor shall give all notices and comply with all applicable laws, ordinances,
rules, regulations and lawful orders of any public authority, including the Owner’s requirements bearing on the Safety of persons or property or their protection from damage, injury or loss.

N. The Contractor shall erect and maintain, as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection, including danger signs and other warnings against hazards. He shall comply with safety regulations and notify the Construction Manager, until he is in compliance.

O. The Contractor shall promptly remedy all damage or loss to any property caused in whole or in part by the Contractor, his Subcontractors and his Sub-Subcontractors or anyone directly employed by any of them, or by anyone for whose acts any of them be liable.

P. The Contractor shall not load or permit any part of the work to be loaded so as to endanger its integrity and safety.

Q. Contractors using a method of blasting to perform work on the project shall use all proper

R. The use of audio equipment and headsets will not be permitted on the construction site.

S. All persons entering the project shall wear hard hats in good condition and meet ANSI Z89.1-1981 and ANSI Z89.2-1971. The hats shall be worn in the proper manner.

T. All persons entering the project shall wear proper work boots, clothing attire including long trousers and shirts.

U. All job site personnel are expected to strictly adhere to the following rules and regulations:

1. Use of approved eye protection by all company personnel shall be required during all types of percussions and reciprocating work or when owner requirements govern.
2. Approved respiratory equipment shall be worn by all company personnel exposed to hazardous volumes of toxic or noxious dusts, fumes, mists, or gases. Check M.S.D.S. if not sure.
3. Personal protective equipment is to be used under usual conditions, such as high temperature work, handling caustic or corrosive liquids or molten metals.
4. When lifting material, keep back straight, knees bent, and lift with your legs. Get help if the load is too heavy.
5. Work clear of suspended loads. If a load is moved above where you are working or walking, stand clear until it has passed.
6. Unless it is part of your regular work, do not attempt to repair or adjust any electrical equipment.
7. Kill any circuit before attempting to work on it. Even voltages lower than 110 will cause death under certain conditions.
8. Treat all electric wires as live. Do not touch exposed wires; report them immediately to your supervisor.
9. The Contractor is responsible for providing safety training to all of his employees.
10. All shipments to the site shall have the required documentation and labels attached.
and the documentation and labels shall be maintained while the material is on site.

11. As defined in the Occupational Safety & Health Act, safety belts, complete with lanyards or parachute style harness, complete with lanyards, are to be used where there is a danger of falling.

1.4 HOUSEKEEPING

A. Materials and equipment must be piled up or scored in a safe manner. Aisles must be kept clear.

B. All drop cables/extension cords shall be elevated above the ground or protected in such a way to allow traffic to pass.

C. Smoking will only be permitted in designated areas.

D. Consumption of food and beverages in other than Company-designated areas and at specified times are prohibited.

E. Glass-bottled refreshments will not be allowed in the workplace.

F. Graffiti will not be tolerated on the job-site.

G. All compressed gas cylinders must be stored in an upright position and tied off with the cap placed on top.

H. The cords and connections at temporary panels must be maintained in an orderly fashion at all times to prevent tripping.

I. Welding stubs and shells from explosive activated tools shall be collected and properly disposed of by the Contractor.

J. Nails are to be bent over and/or removed from wood,

K. Aisles and stairwells as well as base areas of ladders are to be kept clear at all times.

1.5 M.S.D.S.-CONTROLLED PRODUCTS

A. The Contractor is responsible for notifying R.Y. Johnson Construction Management of any controlled products that they bring or cause to have brought onto the site. The Contractor shall provide RY. Johnson Construction Management with a copy of the Material Safety Sheet (M.S.D.S.) for the controlled product and the Contractor shall retain a copy of the M.S.D.S. on site for their own reference. The legal storage, use, and disposal of any controlled product is the responsibility of the Contractor.

B. The Contractor shall comply with OSHA Communication Standards 29 CFR 1910-1200 for hazardous materials. The Contractor shall maintain a Material Safety Data Sheet on file at the job-site for each chemical brought to the site, M.S.D.S. sheets shall be
submitted to R.Y. Johnson Construction Management for record purposes

C. Temporary storage of hazardous materials shall be located in containment dikes provided by the Contractor requiring same in area identified by the Construction Manager. All tanks, drums, and containers are to be labeled with appropriate warnings (i.e., flammable, no smoking). Periodic inspections for leakage shall be the responsibility of the Contractor. Final clean-up and removal shall be by the Contractor.

1.6 EMERGENCIES

A. In any emergency affecting the safety or persons or property, the Contractor shall act, at his discretion, to prevent threatened damage, injury or loss and shall immediately notify the Construction Manager of such emergency conditions. Any claims made by the Contractor for additional compensation or extension of time on account of emergency work shall be processed in accordance with Article 7, of the Supplementary Conditions.

1.7 EMPLOYMENT POLICY

A. Acceptance of a contract based on these specifications constitutes agreement by the Contractor to comply with State Policy as established by joint Resolution No. 16 of the General Assembly of 1958, which is: That on all public works being paid for in whole or in part with State or other public funds, preference shall be given to available persons who have been residents of Delaware for a period of at least six (6) months immediately prior to availability of positions for employment of laborers, mechanics and others, not including supervisor personnel not to exceed ten percent (10%) of the total working force.

B. Competent Workmen: No person shall be employed to perform any work under the Contract who is not a competent and first-class workman or mechanic, as applicable. For purposes of this section, no workman or mechanic, as applicable, shall be regarded as competent and first class unless he shall be duly skilled in the applicable branch of labor and shall be paid not less than such rates of wages and for such hours work as shall be established and current rates of wages paid for such hours by employers of organized labor in performance of similar work in the locality where the work is to be performed.

C. It is understood that the provisions of Title VI of the Civil Rights Act 1964 are hereby included in this contract to the end that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or otherwise subjected to discrimination under this Agreement.

The Contractor agrees to make such reports and to maintain and make available, such records as may be required to ensure compliance with ART.38, par. b and c. - this means permitting access by appropriate State or Federal officials during normal business hours to such facilities, records and other sources of information as may be pertinent to ascertain compliance with the regulations.

D. All Contractors shall be subject to, and responsible for all costs relating to Contractor licensing ordinances and regulations.
1.8 ENVIRONMENTAL STATUTES AND REGULATIONS

A. Contractor shall comply with all applicable provisions of federal and state laws dealing with the prevention of environmental pollution and the preservation of natural resources, including but not limited to Act No 247 approved October 26, 1962; the Federal Air Quality Act of 1967; the Clean Air Act; the Clean Water Restoration Act; the Water Pollution Control Act Amendments of 1956; the Water Quality Act of 1965; the Water Quality Improvement Act of 1970; The Water Pollution Control Act Amendments of 1972; The Water Facilities Act (see Consolidated Farmer’s Home Administration Act of 1961); the Watershed Protection and Flood Prevention Act; the Pennsylvania Air Pollution Control Act; the Clean Streams Law; the Solid Waste Management Act; the Municipal Waste Planning, Recycling and Waste Reduction Act; A.H.E.R.A.; and all rules and regulations there under, including, but not limited to, those formulated by the United States Environmental Protection Agency, the Pennsylvania Department of Environmental Resources and the Department of Environmental Protection. Nothing contained in the Contract shall be construed as relieving Contractor in anyway of Contractors responsibility for strict compliance with all governmental requirements pertaining to environmental protection.

B. These Contract Documents and the joint and several phases of construction hereby contemplated are to be governed, at all times, by applicable provisions of Federal and State Law(s) dealing with the prevention of environmental pollution and the preservation of public natural resources, including but not limited to the latest amendments of the following:


C. Pursuant to Act No. 247 of the 1972 Pennsylvania General Assembly, all proposals will be subject to all the provisions of all Federal and State statutes dealing with the prevention of pollution and preservation of public natural resources including, but not limited to; the Federal Air Quality Act 1967; Clean Air Act, as amended: Clean Water Restoration Act; Water Pollution Control Act Amendments of 1956, Water Quality Act or 1965, Water Quality improvement Act of 1970. and Water Pollution Control Mf Amendments of 1972; the Water Facilities Act (see Consolidated Farmers Home Administration Act of 1961); the Watershed Protection and Flood Prevention Act; the Pennsylvania Air Pollution Control Act; Clean Streams Law; Solid Waste Management Act; Sewerage Facilities Act; and all rules and regulations there under including, but not limited to, those formulated by the United States Environmental Protection Agency and the Pennsylvania Department of Environmental Resources.

D. Act No. 247 provides that if the successful bidder must undertake additional work due to enactment of new or the amendment of existing statues, rules or regulations occurring after the submission of the successful proposal, the Authority shall issue a change order setting for the additional work that must be
undertaken, which shall not invalidate the contract. The cost of such a change order to the Authority shall be determined in accordance with the provisions of the contract for change orders or force accounts, or if no such provision is set forth in the contract, then the cost to the Authority shall be the contractors costs for wages, labor costs other than wages, wage taxes, materials, equipment rentals, insurance and subcontractors attributable to the additional activity plus a reasonable sum for overhead and profit; provided however, that such additional costs to undertake work not specified in the invitation for proposal shall not be approved unless written authorization is given the successful bidder prior to his undertaking such additional activity. In the event of a dispute between the Authority and the successful bidder, arbitration procedures maybe commenced under the applicable terms of the construction contract, or, if the contract contains no such provision for arbitration, the then obtaining rules of the American Arbitration Association.

E. Nothing contained in the Contract Documents for construction shall be construed by the Contractor as relieving him in any way of his responsibility for strict compliance with the statutes, rules and regulations contained in the above mentioned Environmental Protection Act.

1.9 MISCELLANEOUS REGULATIONS

A. Standard of Quality: The various materials and products specified in the specification by name or description are given to establish a standard of quality and of cost for bid purposes. It is not the intent to limit the acceptance to any one material or product specified, but rather to name or describe it as the absolute minimum standard that is desired and acceptable. A material or product of lesser quality would not be acceptable. Where proprietary names are used, whether or not followed by the words Approved equal®, they shall be subject to equals only as approved by the Architect and/or Engineer.

PART 2 -- PRODUCTS (NOT USED)

PART 3- EXECUTION (NOT USED)

END OF SECTION 014100
SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": The term "approved," when used to convey Architect's action on Contractor's submittals, applications, and requests, is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by Architect, requested by Architect, and similar phrases.

D. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on Drawings or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.

E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": The term "install" describes operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, and protecting, cleaning, and similar operations.

H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.

I. "Installer": An installer is the Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

J. The term "experienced," when used with an entity, means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

K. "Project site" is the space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

C. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.

E. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

F. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

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<table>
<thead>
<tr>
<th>Organization</th>
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<tr>
<td>AA</td>
<td>Aluminum Association, Inc. (The)</td>
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<td><a href="http://www.aluminum.org">www.aluminum.org</a></td>
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<td>AAADM</td>
<td>American Association of Automatic Door Manufacturers</td>
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<td><a href="http://www.taol.com/aaadm">www.taol.com/aaadm</a></td>
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<td>AABC</td>
<td>Associated Air Balance Council</td>
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<td><a href="http://www.aabchq.com">www.aabchq.com</a></td>
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<td>AAMA</td>
<td>American Architectural Manufacturers Association</td>
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<td>AAN</td>
<td>American Association of Nurserymen</td>
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<td>AASHTO</td>
<td>American Association of State Highway and Transportation Officials</td>
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<td>AATCC</td>
<td>American Association of Textile Chemists and Colorists (The)</td>
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<td><a href="http://www.aatcc.org">www.aatcc.org</a></td>
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<td>ABMA</td>
<td>American Bearing Manufacturers Association</td>
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<td>ACI</td>
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<td>ACPA</td>
<td>American Concrete Pipe Association</td>
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<td><a href="http://www.concrete-pipe.org">www.concrete-pipe.org</a></td>
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<tr>
<td>ADC</td>
<td>Air Diffusion Council</td>
</tr>
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<td>(312) 201-0101</td>
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<td>AEIC</td>
<td>Association of Edison Illuminating Companies, Inc. (The)</td>
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<td>AFPA</td>
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<td>AGA</td>
<td>American Gas Association</td>
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<td>AHA</td>
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<td><a href="http://www.ahardbd.org">www.ahardbd.org</a></td>
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<td>AHAM</td>
<td>Association of Home Appliance Manufacturers</td>
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<td><a href="http://www.aham.org">www.aham.org</a></td>
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Tetra Tech

REFERENCES

014200-3
AI: Asphalt Institute
   www.asphaltinstitute.org
   (606) 288-4960

AIA: American Institute of Architects (The)
   www.aiaonline.org
   (202) 626-7300

AISC: American Institute of Steel Construction, Inc.
   www.aisc.org
   (800) 644-2400 (312) 670-2400

AISI: American Iron and Steel Institute
   www.steel.org
   (202) 452-7100

AITC: American Institute of Timber Construction
   (303) 792-9559

ALA: American Laminators Association
   (See LMA)

ALCA: Associated Landscape Contractors of America
   www.alca.org
   (800) 395-2522 (703) 736-9666

ALSC: American Lumber Standard Committee
   (301) 972-1700

   www.amca.org
   (847) 394-0150

ANLA: American Nursery & Landscape Association
   (Formerly: AAN - American Association of Nurserymen)
   www.anla.org
   (202) 789-2900

ANSI: American National Standards Institute
   www.ansi.org
   (212) 642-4900

AOSA: Association of Official Seed Analysts
   www.zianet.com/AOSA
   (402) 476-3852

APA: APA-The Engineered Wood Association
   www.apawood.org
   (253) 565-6600

APA: Architectural Precast Association
   www.archprecast.org
   (941) 454-6989

API: American Petroleum Institute
   www.api.org
   (202) 682-8000

ARI: Air-Conditioning & Refrigeration Institute
   www.ari.org
   (703) 524-8800

ASCA: Architectural Spray Coaters Association
   www.ascassoc.com
   (856) 848-6120

Tetra Tech

REFERENCES

014200-4
ASCE  American Society of Civil Engineers
       www.asce.org
       (800) 548-2723
       (703) 295-6300

ASHRAE  American Society of Heating, Refrigerating and
        Air-Conditioning Engineers
        www.ashrae.org
        (800) 527-4723
        (404) 636-8400

ASME  ASME International
       (The American Society of Mechanical Engineers
        International)
       www.asme.org
       (800) 843-2763

ASSE  American Society of Sanitary Engineering
      www.asse-plumbing.org
      (440) 835-3040

ASTM  American Society for Testing and Materials
      www.astm.org
      (610) 832-9585

AWCI  AWCI International
      (Association of the Wall and Ceiling Industries
       International)
      www.awci.org
      (703) 534-8300

AWCMA  American Window Covering Manufacturers Association
       (See WCMA)

AWI  Architectural Woodwork Institute
      www.awinet.org
      (800) 449-8811
      (703) 733-0600

AWPA  American Wood-Preservers' Association
      www.awpa.com
      (817) 326-6300

AWS  American Welding Society
     www.aws.org
     (800) 443-9353
     (305) 443-9353

AWWA  American Water Works Association
       www.awwa.org
       (800) 926-7337
       (303) 794-7711

BHMA  Builders Hardware Manufacturers Association
      www.buildershardware.com
      (212) 661-4261

BIA  Brick Industry Association (The)
     www.bia.org
     (703) 620-0010

BIFMA  BIFMA International
       (Business and Institutional Furniture Manufacturer's
        Association International)
       www.bifma.com
       (616) 285-3963
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<tr>
<td>CSI</td>
<td>Construction Specifications Institute (The)</td>
<td>(800) 689-2900, (703) 684-0300</td>
<td><a href="http://www.csinet.org">www.csinet.org</a></td>
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<td>CSSB</td>
<td>Cedar Shake &amp; Shingle Bureau</td>
<td>(604) 462-8961</td>
<td><a href="http://www.cedarbureau.org">www.cedarbureau.org</a></td>
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<td>CTI</td>
<td>Cooling Tower Institute</td>
<td>(281) 583-4087</td>
<td><a href="http://www.cti.org">www.cti.org</a></td>
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<td>DHI</td>
<td>Door and Hardware Institute</td>
<td>(703) 222-2010</td>
<td><a href="http://www.dhi.org">www.dhi.org</a></td>
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<td>EIA/TIA</td>
<td>Electronic Industries Alliance/Telecommunications Industry Association</td>
<td>(703) 907-7500</td>
<td><a href="http://www.eia.org">www.eia.org</a></td>
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<td>EIMA</td>
<td>EIFS Industry Members Association</td>
<td>(800) 294-3462, (770) 968-7945</td>
<td><a href="http://www.eifsfacts.com">www.eifsfacts.com</a></td>
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<td>EJMA</td>
<td>Expansion Joint Manufacturers Association, Inc.</td>
<td>(914) 332-0040</td>
<td><a href="http://www.ejma.org">www.ejma.org</a></td>
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<td>FCI</td>
<td>Fluid Controls Institute</td>
<td>(216) 241-7333</td>
<td><a href="http://www.fluidcontrols">www.fluidcontrols</a> institute.org</td>
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<tr>
<td>FGMA</td>
<td>Flat Glass Marketing Association</td>
<td>(Formerly: FGMA - Flat Glass Marketing Association)</td>
<td><a href="http://www.glasswebsite.com/gana">www.glasswebsite.com/gana</a></td>
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<td>FM</td>
<td>Factory Mutual System</td>
<td>(See FMG)</td>
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<td>FMG</td>
<td>FM Global</td>
<td>(401) 275-3000</td>
<td><a href="http://www.fmgglobal.com">www.fmgglobal.com</a></td>
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<td>GA</td>
<td>Gypsum Association</td>
<td>(202) 289-5440</td>
<td><a href="http://www.gypsum.org">www.gypsum.org</a></td>
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<tr>
<td>GANA</td>
<td>Glass Association of North America</td>
<td>(785) 271-0208</td>
<td><a href="http://www.glasswebsite.com/gana">www.glasswebsite.com/gana</a></td>
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<tr>
<td>GRI</td>
<td>Geosynthetic Research Institute</td>
<td>(610) 522-8440</td>
<td><a href="http://www.drexel.edu/gri">www.drexel.edu/gri</a></td>
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<td>GTA</td>
<td>Glass Tempering Division of Glass Association of North America</td>
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<tr>
<td>HI</td>
<td>Hydraulic Institute</td>
<td>(888) 786-7744 (973) 267-9700</td>
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<td>HI</td>
<td>Hydronics Institute, Division of Gas Appliance Manufacturers Association</td>
<td>(908) 464-8200</td>
<td><a href="http://www.gamanet.org">www.gamanet.org</a></td>
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<td>HMMA</td>
<td>Hollow Metal Manufacturers Association, Division of National Association of Architectural Metal Manufacturers (See NAAMM)</td>
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<td>HPVA</td>
<td>Hardwood Plywood &amp; Veneer Association</td>
<td>(703) 435-2900</td>
<td><a href="http://www.hpva.org">www.hpva.org</a></td>
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<tr>
<td>HPW</td>
<td>H. P. White Laboratory, Inc.</td>
<td>(410) 838-6550</td>
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<td>IAS</td>
<td>International Approval Services (See CSA International)</td>
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<td>ICEA</td>
<td>Insulated Cable Engineers Association, Inc.</td>
<td>(508) 394-4424</td>
<td><a href="http://www.icea.net">www.icea.net</a></td>
</tr>
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<td>ICRI</td>
<td>International Concrete Repair Institute</td>
<td>(703) 450-0116</td>
<td><a href="http://www.icri.org">www.icri.org</a></td>
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<td>IEC</td>
<td>International Electro technical Commission</td>
<td>41 22 919 02 11</td>
<td><a href="http://www.iec.ch">www.iec.ch</a></td>
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<tr>
<td>IEEE</td>
<td>Institute of Electrical and Electronics Engineers, Inc. (The)</td>
<td>(212) 419-7900</td>
<td><a href="http://www.ieee.org">www.ieee.org</a></td>
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<tr>
<td>IESNA</td>
<td>Illuminating Engineering Society of North America (The)</td>
<td>(212) 248-5000</td>
<td><a href="http://www.iesna.org">www.iesna.org</a></td>
</tr>
<tr>
<td>IGCC</td>
<td>Insulating Glass Certification Council</td>
<td>(315) 938-7444</td>
<td><a href="http://www.igcc.org">www.igcc.org</a></td>
</tr>
<tr>
<td>ILI</td>
<td>Indiana Limestone Institute of America, Inc.</td>
<td>(812) 275-4426</td>
<td><a href="http://www.iliai.com">www.iliai.com</a></td>
</tr>
<tr>
<td>IRI</td>
<td>HSB Industrial Risk Insurers</td>
<td>(800) 520-7300 (860) 520-7300</td>
<td><a href="http://www.industrialrisk.com">www.industrialrisk.com</a></td>
</tr>
<tr>
<td>ITS</td>
<td>Intertek Testing Services</td>
<td>(800) 345-3851 (607) 753-6711</td>
<td><a href="http://www.itsglobal.com">www.itsglobal.com</a></td>
</tr>
<tr>
<td>IWS</td>
<td>Insect Screening Weavers Association (Now defunct)</td>
<td></td>
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</table>

Tetra Tech  REFERENCES  014200-8
KCMA  Kitchen Cabinet Manufacturers Association
       www.kcma.org
       (703) 264-1690

LGSI  Light Gage Structural Institute
       www.loseke.com
       (972) 625-4560

LMA  Laminating Materials Association
     (Formerly: ALA - American Laminators Association)
     www.lma.org
     (201) 664-2700

LPI  Lightning Protection Institute
     www.lightning.org
     (800) 488-6864
     (847) 577-7200

LSGA  Laminated Safety Glass Association
      (See GANA)

MBMA  Metal Building Manufacturers Association
       www.mbma.com
       (216) 241-7333

MFMA  Maple Flooring Manufacturers Association
       www.maplefloor.org
       (847) 480-9138

MFMA  Metal Framing Manufacturers Association
       (312) 644-6610

MHIA  Material Handling Industry of America
       www.mhia.org
       (800) 345-1815
       (704) 676-1190

MIA  Marble Institute of America
     www.marble-institute.com
     (614) 228-6194

ML/IFA  Metal Lath/Steel Framing Association
       (See SSMA)

MSS  Manufacturers Standardization Society of The Valve and Fittings Industry, Inc.
     www.mss-hq.com
     (703) 281-6613

NAAMM  National Association of Architectural Metal Manufacturers
        www.naamm.org
        (312) 332-0405

NAAMM  North American Association of Mirror Manufacturers
        (See GANA)

NACE  NACE International
       (National Association of Corrosion Engineers International)
       www.nace.org
       (281) 228-6200

NAIMA  North American Insulation Manufacturers Association
        (The)
        www.naima.org
        (703) 684-0084

Tetra Tech  REFERENCES
            014200-9
<table>
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<th>Reference</th>
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<th>Description</th>
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<tr>
<td>NAMI</td>
<td>National Accreditation and Management Institute, Inc.</td>
<td>(304) 258-5100</td>
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<td>NAPM</td>
<td>National Association of Photographic Manufacturers (See PIMA)</td>
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<tr>
<td>NBGQA</td>
<td>National Building Granite Quarries Association, Inc.</td>
<td>(800) 557-2848</td>
<td><a href="http://www.nbgqa.com">www.nbgqa.com</a></td>
<td></td>
</tr>
<tr>
<td>NCMA</td>
<td>National Concrete Masonry Association</td>
<td>(703) 713-1900</td>
<td><a href="http://www.ncma.org">www.ncma.org</a></td>
<td></td>
</tr>
<tr>
<td>NCPI</td>
<td>National Clay Pipe Institute</td>
<td>(414) 248-9094</td>
<td><a href="http://www.ncpi.org">www.ncpi.org</a></td>
<td></td>
</tr>
<tr>
<td>NCTA</td>
<td>National Cable Television Association</td>
<td>(202) 775-3669</td>
<td><a href="http://www.ncta.com">www.ncta.com</a></td>
<td></td>
</tr>
<tr>
<td>NEBB</td>
<td>National Environmental Balancing Bureau</td>
<td>(301) 977-3698</td>
<td><a href="http://www.nebb.org">www.nebb.org</a></td>
<td></td>
</tr>
<tr>
<td>NECA</td>
<td>National Electrical Contractors Association</td>
<td>(301) 657-3110</td>
<td><a href="http://www.necanet.org">www.necanet.org</a></td>
<td></td>
</tr>
<tr>
<td>NeLMA</td>
<td>Northeastern Lumber Manufacturers' Association</td>
<td>(207) 829-6901</td>
<td><a href="http://www.nelma.org">www.nelma.org</a></td>
<td></td>
</tr>
<tr>
<td>NEMA</td>
<td>National Electrical Manufacturers Association</td>
<td>(703) 841-3200</td>
<td><a href="http://www.nema.org">www.nema.org</a></td>
<td></td>
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<tr>
<td>NETA</td>
<td>International Electrical Testing Association</td>
<td>(303) 697-8441</td>
<td><a href="http://www.electricnet.com/neta">www.electricnet.com/neta</a></td>
<td></td>
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<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
<td>(800) 344-3555</td>
<td>(617) 770-3000</td>
<td><a href="http://www.nfpa.org">www.nfpa.org</a></td>
</tr>
<tr>
<td>NFRC</td>
<td>National Fenestration Rating Council</td>
<td>(301) 589-6372</td>
<td><a href="http://www.nfrc.org">www.nfrc.org</a></td>
<td></td>
</tr>
<tr>
<td>NGA</td>
<td>National Glass Association</td>
<td>(703) 442-4890</td>
<td><a href="http://www.glass.org">www.glass.org</a></td>
<td></td>
</tr>
<tr>
<td>NHLA</td>
<td>National Hardwood Lumber Association</td>
<td>(901) 377-1818</td>
<td><a href="http://www.natlhwd.org">www.natlhwd.org</a></td>
<td></td>
</tr>
<tr>
<td>NLGA</td>
<td>National Lumber Grades Authority</td>
<td>(604) 524-2393</td>
<td><a href="http://www.nlga.org">www.nlga.org</a></td>
<td></td>
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<tr>
<td>NOFMA</td>
<td>National Oak Flooring Manufacturers Association</td>
<td>(901) 526-5016</td>
<td><a href="http://www.nofma.org">www.nofma.org</a></td>
<td></td>
</tr>
</tbody>
</table>
NPA  National Particleboard Association  
(See CPA) 

NRCA  National Roofing Contractors Association  
www.nrca.net  
(800) 323-9545  
(847) 299-9070 

NRMCA  National Ready Mixed Concrete Association  
www.nrmca.org  
(301) 587-1400 

NSA  National Stone Association  
www.aggregates.org  
(800) 342-1415  
(202) 342-1100 

NSF  NSF International  
(National Sanitation Foundation International)  
www.nsf.org  
(800) 673-6275  
(734) 769-8010 

NTMA  National Terrazzo & Mosaic Association (The)  
www.ntma.com  
(800) 323-9736  
(703) 779-1022 

NWWDA  National Wood Window and Door Association  
(See WDMA) 

PCI  Precast/Prestressed Concrete Institute  
wwwpci.org  
(312) 786-0300 

PDCA  Painting and Decorating Contractors of America  
wwwpdca.com  
(800) 332-7322  
(703) 359-0826 

PDI  Plumbing & Drainage Institute  
wwwpdionline.org  
(800) 589-8956  
(508) 230-3516 

PGI  PVC Geomembrane Institute/Technology Program  
University of Illinois-Urbana Champaign  
/pgi-tpce.uiuc.edu  
(217) 333-3929 

PIMA  Photographic & Imaging Manufacturers Association  
(Formerly: NAPM - National Association of Photographic Manufacturers)  
www.pima.net  
(914) 698-7603 

RCSC  Research Council on Structural Connections  
c/o AISC  
wwwboltcouncil.org 

RFCI  Resilient Floor Covering Institute  
(Contact by mail only) 

RIS  Redwood Inspection Service  
Division of the California Redwood Association  
wwwcalredwood.org  
(888) 225-7339  
(415) 382-0662
<table>
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<th>Acronym</th>
<th>Organization Name</th>
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<th>Tel. 2</th>
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<tr>
<td>RMA</td>
<td>Rubber Manufacturers Association</td>
<td>(800) 220-7620</td>
<td>(202) 682-4800</td>
</tr>
<tr>
<td>SAE</td>
<td>SAE International</td>
<td>(724) 776-4841</td>
<td>(724) 776-4960</td>
</tr>
<tr>
<td>SDI</td>
<td>Steel Deck Institute</td>
<td>(847) 462-1930</td>
<td></td>
</tr>
<tr>
<td>SDI</td>
<td>Steel Door Institute</td>
<td>(440) 899-0010</td>
<td></td>
</tr>
<tr>
<td>SEFA</td>
<td>Scientific Equipment and Furniture Association</td>
<td>(843) 689-6878</td>
<td></td>
</tr>
<tr>
<td>SGCC</td>
<td>Safety Glazing Certification Council</td>
<td>(315) 938-7444</td>
<td></td>
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<td>SIGMA</td>
<td>Sealed Insulating Glass Manufacturers Association</td>
<td>(312) 644-6610</td>
<td></td>
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<tr>
<td>SJI</td>
<td>Steel Joist Institute</td>
<td>(843) 626-1995</td>
<td></td>
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<tr>
<td>SMA</td>
<td>Screen Manufacturers Association</td>
<td>(561) 533-0991</td>
<td></td>
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<tr>
<td>SMACNA</td>
<td>Sheet Metal and Air Conditioning Contractors' National Association</td>
<td>(703) 803-2980</td>
<td></td>
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<tr>
<td>SPI</td>
<td>The Society of the Plastics Industry, Inc.</td>
<td>(202) 974-5200</td>
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<tr>
<td>SPIB</td>
<td>Southern Pine Inspection Bureau (The)</td>
<td>(850) 434-2611</td>
<td></td>
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<tr>
<td>SPI/SPFD</td>
<td>The Society of the Plastics Industry, Inc. Spray Polyurethane Foam Division</td>
<td></td>
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<tr>
<td>SPRI</td>
<td>SPRI (Single Ply Roofing Institute)</td>
<td>(781) 444-0242</td>
<td></td>
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<tr>
<td>SSINA</td>
<td>Specialty Steel Industry of North America</td>
<td>(800) 982-0355</td>
<td>(202) 342-8630</td>
</tr>
<tr>
<td>SSMA</td>
<td>Steel Stud Manufacturers Association</td>
<td>(312) 456-5590</td>
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REFERENCES

014200-12
<table>
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<tbody>
<tr>
<td>SSPC</td>
<td>SSPC: The Society for Protective Coatings</td>
<td>(800) 837-8303</td>
<td><a href="http://www.sspc.org">www.sspc.org</a></td>
<td></td>
</tr>
<tr>
<td>STI</td>
<td>Steel Tank Institute</td>
<td>(847) 438-8265</td>
<td><a href="http://www.steeltank.com">www.steeltank.com</a></td>
<td></td>
</tr>
<tr>
<td>SWI</td>
<td>Steel Window Institute</td>
<td>(216) 241-7333</td>
<td><a href="http://www.steelwindows.com">www.steelwindows.com</a></td>
<td></td>
</tr>
<tr>
<td>SWRI</td>
<td>Sealant, Waterproofing &amp; Restoration Institute</td>
<td>(816) 472-7974</td>
<td><a href="http://www.swrionline.org">www.swrionline.org</a></td>
<td></td>
</tr>
<tr>
<td>TCA</td>
<td>Tile Council of America, Inc.</td>
<td>(864) 646-8453</td>
<td><a href="http://www.tileusa.com">www.tileusa.com</a></td>
<td></td>
</tr>
<tr>
<td>TPI</td>
<td>Truss Plate Institute</td>
<td>(608) 833-5900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TPI</td>
<td>Turfgrass Producers International</td>
<td>(800) 405-8873</td>
<td><a href="http://www.turfgrasssod.org">www.turfgrasssod.org</a></td>
<td></td>
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<tr>
<td>UFAC</td>
<td>Upholstered Furniture Action Council</td>
<td>(336) 885-5065</td>
<td><a href="http://www.ufac.org">www.ufac.org</a></td>
<td></td>
</tr>
<tr>
<td>UL</td>
<td>Underwriters Laboratories Inc.</td>
<td>(800) 704-4050</td>
<td><a href="http://www.ul.com">www.ul.com</a></td>
<td></td>
</tr>
<tr>
<td>UNI</td>
<td>Uni-Bell PVC Pipe Association</td>
<td>(972) 243-3902</td>
<td>//members.aol.com/unibell</td>
<td></td>
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<tr>
<td>USG</td>
<td>United States Gypsum Company</td>
<td>(800) 874-4968</td>
<td><a href="http://www.usg.com">www.usg.com</a></td>
<td></td>
</tr>
<tr>
<td>USITT</td>
<td>United States Institute for Theatre Technology, Inc.</td>
<td>(800) 938-7488</td>
<td><a href="http://www.culturenet.ca/usitt">www.culturenet.ca/usitt</a></td>
<td></td>
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<tr>
<td>USP</td>
<td>U.S. Pharmacopeia</td>
<td>(800) 822-8772</td>
<td><a href="http://www.usp.org">www.usp.org</a></td>
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<tr>
<td>WASTEC</td>
<td>Waste Equipment Technology Association</td>
<td>(800) 424-2869</td>
<td><a href="http://www.wastec.org">www.wastec.org</a></td>
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<tr>
<td>WCLIB</td>
<td>West Coast Lumber Inspection Bureau</td>
<td>(800) 283-1486</td>
<td><a href="http://www.wclib.org">www.wclib.org</a></td>
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<tr>
<td>WCMA</td>
<td>Window Covering Manufacturers Association</td>
<td>(212) 661-4261</td>
<td>(Formerly: AWCMA - American Window Covering Manufacturers Association) <a href="http://www.windowcoverings.org">www.windowcoverings.org</a></td>
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REFERENCES

014200-13
G. Abbreviations and Acronyms for Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Name</th>
<th>Telephone Number</th>
<th>Website Address</th>
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<tbody>
<tr>
<td>CABO</td>
<td>Council of American Building Officials (See ICC)</td>
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<tr>
<td>IAPMO</td>
<td>International Association of Plumbing and Mechanical Officials (The)</td>
<td>(909) 595-8449</td>
<td><a href="http://www.iapmo.org">www.iapmo.org</a></td>
</tr>
<tr>
<td>ICBO</td>
<td>International Conference of Building Officials</td>
<td>(800) 284-4406</td>
<td><a href="http://www.icbo.org">www.icbo.org</a></td>
</tr>
<tr>
<td>ICC</td>
<td>International Code Council (Formerly: CABO - Council of American Building Officials)</td>
<td>(703) 931-4533</td>
<td><a href="http://www.intlcode.org">www.intlcode.org</a></td>
</tr>
</tbody>
</table>

H. Abbreviations and Acronyms for Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

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<th>Abbreviation</th>
<th>Name</th>
<th>Telephone Number</th>
<th>Website Address</th>
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<tr>
<td>CE</td>
<td>Army Corps of Engineers CRD Standards</td>
<td>(601) 634-2355</td>
<td><a href="http://www.access.gpo.gov/nara/cfr">www.access.gpo.gov/nara/cfr</a></td>
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<tr>
<td>DOC</td>
<td>Department of Commerce</td>
<td>(202) 482-2000</td>
<td><a href="http://www.doc.gov">www.doc.gov</a></td>
</tr>
<tr>
<td>DOD</td>
<td>Department of Defense</td>
<td>(215) 697-6257</td>
<td>DOD Specifications and Standards&lt;br&gt;/astimage.daps.dla.mil/online</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
<td>(202) 260-2090</td>
<td><a href="http://www.epa.gov">www.epa.gov</a></td>
</tr>
<tr>
<td>FAA</td>
<td>Federal Aviation Administration</td>
<td>(202) 366-4000</td>
<td><a href="http://www.faa.gov">www.faa.gov</a></td>
</tr>
<tr>
<td>FDA</td>
<td>Food and Drug Administration</td>
<td>(888) 463-6332</td>
<td><a href="http://www.fda.gov">www.fda.gov</a></td>
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<tr>
<td>FED-STD</td>
<td>Federal Standard (See FS)</td>
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<td>FS</td>
<td>Federal Specification (Available from DOD, GSA, and NIBS)</td>
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<td>FTMS</td>
<td>Federal Test Method Standard (See FS)</td>
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<td>GSA</td>
<td>General Services Administration</td>
<td>(202) 708-5082</td>
<td><a href="http://www.gsa.gov">www.gsa.gov</a></td>
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<tr>
<td></td>
<td></td>
<td>(202) 619-8925</td>
<td>(Federal Specifications)</td>
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<td>HUD</td>
<td>Department of Housing and Urban Development</td>
<td>(202) 401-0388</td>
<td><a href="http://www.hud.gov">www.hud.gov</a></td>
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<tr>
<td>LBL</td>
<td>Lawrence Berkeley Laboratory</td>
<td></td>
<td>(See LBNL)</td>
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<tr>
<td>LBNL</td>
<td>Lawrence Berkeley National Laboratory</td>
<td>(510) 486-5605</td>
<td><a href="http://www.lbl.gov">www.lbl.gov</a></td>
</tr>
<tr>
<td>MILSPEC</td>
<td>Military Specification and Standards (See DOD)</td>
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<tr>
<td>NCHRP</td>
<td>National Cooperative Highway Research Program (See TRB)</td>
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<td>Tetra</td>
<td>Tetra Tech</td>
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<td>REFERENCES</td>
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<td>Refernces</td>
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<td>014200-15</td>
</tr>
</tbody>
</table>
NIST  National Institute of Standards and Technology  (301) 975-2000
      www.nist.gov

OSHA  Occupational Safety & Health Administration  (202) 219-5000
      (See CFR 29)
      www.osha.gov

RUS  Rural Utilities Service  (202) 720-9540
      (See USDA)

TRB  Transportation Research Board  (202) 334-2933
      www.nas.edu/trb

USDA  Department of Agriculture  (202) 720-8732
      www.usda.gov

USPS  Postal Service  (202) 268-2000
      www.usps.gov

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200
SECTION 014219 – REFERENCE STANDARDS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Specification Format.

B. Specification Language and Form.

1.2 RELATED SECTIONS

A. The specifications have been arranged in accordance with CSI / CSC “masterformat” master list of titles and numbering system.

1.3 FORMAT

A. The imperative language of the technical sections of the specifications is directed to the Contractor unless specifically noted otherwise.

B. Portions of the specifications have been derived from an automated master specification production system and may include minor deviations from traditional writing forms. Such deviations must be recognized as a normal result of this production technique and no other meaning will be implied or permitted.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 014219
SECTION 015000 - TEMPORARY CONSTRUCTION UTILITIES, FACILITIES & CONTROLS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-0 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies requirements for temporary construction, utilities, facilities, and controls required to support the successful construction of the project and maintain services until the permanent utilities, facilities, and controls are complete. They shall be installed, maintained, and removed subject to the Construction Manager's approval.

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<table>
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<tr>
<th>PART 1 - General</th>
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<td>1.3 Quality Assurance</td>
</tr>
<tr>
<td>1.4 Project Conditions</td>
</tr>
<tr>
<td>1.5 Existing Utilities and Systems</td>
</tr>
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</table>

PART 2 - Products

| 2.1 Materials |
| 2.2 Equipment |

PART 3 - Execution

| 3.1 Installation |
| 3.2 Temporary Utility Installation |
| 3.3 Use Charges |
| 3.4 Water Service |
| 3.5 Electrical Power |
| 3.6 Lighting |
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1.3 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:

Municipal and Labor & Industry Building Code requirements
Health and safety regulations
Utility company regulations
Police, Fire Department and Rescue Squad rules
Environmental protection regulations

B. Inspections: Arrange for authorities, having jurisdiction, to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.4 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous, dangerous or unsanitary conditions, or public nuisances to develop or persist on the site. They shall be removed, relocated as required by the progress of the work, or directed by the Construction Manager.

1.5 EXISTING UTILITIES AND SYSTEMS

A. Precaution must be taken to protect existing sanitary sewer, electrical, water and gas lines that cross the site. All existing building utility systems such as electrical, water, gas will be demolished and reconstructed during this project.

B. Trade Contractors interrupting services due to their construction operations shall provide temporary utility lines, as required, to maintain services.
PART 2 PRODUCTS

2.1 MATERIALS

A. General: Provide new materials; if acceptable to the Construction Manager, undamaged, previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

B. Lumber and Plywood: Comply with requirements in Division-6 Section "Rough Carpentry."

C. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.

D. Water: Provide potable water approved by local health authorities.

E. Open-Mesh Fencing: Provide 11-gauge, galvanized two (2) inch, chain link fabric fencing, six (6) feet high with galvanized steel pipe posts, 1-1/2" I.D. for line posts and 2-1/2" I.D. for corner posts. Drive posts 30" into the ground at no less than 15' spacing.

2.2 EQUIPMENT

A. General: Provide new equipment; if acceptable to the Construction Manager, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.

B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light, for connection of power tools, equipment, and GFI breakers.

D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress.

E. Electrical Welding Outlets: These will not be provided. Each Trade Contractor will be responsible for his own welding power.

F. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
G. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.

H. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.

I. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber, reinforced polyester shell or similar nonabsorbent material.

J. First Aid Supplies: Comply with governing regulations.

K. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.

Comply with NFPA 10 classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 EXECUTIONS

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.

1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.

2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

3. Obtain easements to bring temporary utilities to the site, where the Owner's easements cannot be used for that purpose.

3.3 USE CHARGES
A. Cost for temporary facilities are to be paid by the Trade Contractor requiring or providing the temporary facility unless noted otherwise.

B. Owner will pay utility consumption costs during construction.

3.4 WATER SERVICE

A. The Plumbing Contractor shall install water service and distribution piping of sizes and pressures adequate for construction. As a minimum, provide a manifold pipe with two 3/4" hose bibs at the building water riser point of entrance until portions of the permanent piping system can be used to support construction activities. Water service may be run from a temporary or permanent source. Coordinate needs with Construction Manager.

1. Sterilization: Sterilize temporary water piping prior to use.
2. Protect system from freezing.
3. Utilize City water pressure.

3.5 ELECTRICAL POWER

A. After start of work at project site, when requested by the Construction Manager, the Electrical Contractor shall provide a temporary electrical power distribution system sufficient to accommodate temporary lighting and construction operations, including the use of power tools, and start-up of specified building equipment which must be tested, started or placed into use prior to completion of its permanent power connections. Provide weatherproof, grounded wiring with overload protection; with direct wired connections, where feasible, and for voltages up to 220/208 volts. Locate multiple outlets for 120 volt power, not less than 4 gang, at each story of construction, spaced so that the entire area of construction can be reached by power tools on a single extension cord of 100’ maximum length. Maximum 20 Amp circuit breaker, four (4) receptacles per circuit breaker.

B. The Electrical Trade Contractor shall provide and pay for all maintenance, servicing, operation, and supervision of lines installed.

C. Provide service with ground fault circuit interrupter feature, as per NEC and OSHA requirements. The Electrical Trade Contractor shall have a cord inspection program in place. He shall maintain the inspection records on site.

D. As permanent power distribution system is accepted as substantially complete, either entire system or usable portions thereof, the Electrical Trade Contractor shall make suitable provisions for temporary use thereof, and remove unused portions of temporary system.

E. If required, provide meters for electrical power.

F. When temporary electrical lines are no longer required, they shall be removed by the Electrical Trade Contractor and any part, or parts, of the grounds or buildings disturbed or damaged shall be brought back to their original condition.

G. Electricity from existing lines may be used at no charge to the Trade Contractor, except for heating units, temporary offices, or storage. Each trade shall provide extension cords from the existing facilities, as required, for the execution of the Work. Electrical power for
welding equipment will not be available.

H. The Electrical Trade Contractor shall maintain and operate permanent electrical supply and distribution system until time of final acceptance and transfer of operation to Owner's personnel.

I. The Electrical Trade Contractor shall install switching controls for all lighting which will enable turning off temporary lighting during off-construction hours. The Electrical Trade Contractor shall provide manpower to control light switching and be responsible for it.

J. Temporary power supplies to the Construction Manager's Office Conference/Office Complex shall be installed with service connection by the Electrical Trade Contractor.

K. The Electrical Trade Contractor will provide power for oil or gas fired temporary heaters, if required by the Construction Manager. It will be connected so that it can remain "live" when the lighting has been turned off.

L. The Electrical Trade Contractor will provide 24-hour temporary power to any heat tape (installed by others) on temporary water and/or fire line. All temporary heat work will comply with existing OSHA requirements.

M. Construction circuits shall be separate and independent from temporary lighting.

N. The Electrical Trade Contractor will extend a temporary electrical service and provide a termination box in the Trade Contractor's office trailer area for hook-up of the Trade Contractor's trailers. Cost for individual Trade Contractor trailer hook-up will be born by the Trade Contractor requiring this service. Use of electric heaters in those trailers and shanties will not be permitted.

3.6 LIGHTING

A. Whenever overhead floor or roof deck has been installed, the Electrical Trade Contractor shall provide temporary lighting with local switching. The Electrical Trade Contractor shall provide sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight and general lighting as stated below:

1. Provide uniformly spaced general lighting utilizing one (1) 150 watt incandescent lamp equivalent to 1.0 watts/sq. ft. of floor areas, and one (1) 100 watt lamp per 50' of corridor or per flight of stairs. General lighting to have a minimum of 5' candles measured at floor level.

2. Limit lighting installations to intensities which will accommodate normal access and workmanship requirements, recognizing that each entity performing work requiring higher intensity lighting will provide supplementary plug in temporary lighting and localized areas where such work is in progress.

3. As permanent lighting system is substantially complete for each story or usable portion thereof, the Electrical Trade Contractor shall make suitable provisions for temporary use thereof and remove unused portions of temporary lighting system.
4. The Electrical Trade Contractor shall maintain and operate permanent lighting system until time of final acceptance and transfer of operation to Owner's personnel, including turning off lighting during off-construction hours.

5. The Electrical Trade Contractor shall replace bulbs that are burned out or substantially dimmed by substantial hours of use.

6. Special lighting required for construction activities shall be provided by contractor requiring it.

7. The Electrical Trade Contractor shall provide safety lighting in the stairways, hallways, and exterior security lighting on a 24-hour basis.

8. Furnish and install dusk to dawn type security lights on poles as shown on the site construction staging plan.

9. If more lighting is necessary to install finishes, drywall, painting, etc., the contractor needing the extra lighting will provide.

3.7 TELEPHONES

A. The Construction Manager shall be responsible to provide telephone service to a demarcation point in the Trade Contractor office trailer area. Temporary phone service must support 10 office trailers that require phone and/or fax service. Cost for individual hook ups, telephones, and use fees, shall be the responsibility of each Trade Contractor.

B. The Construction Manager shall make arrangements for one (1) public telephone to be installed on the site and include monthly service cost for the duration of the project.

3.8 SANITARY FACILITIES

A. The Construction Manager shall provide temporary toilets. Comply with regulations and health codes for the type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.

Provide toilet tissue for each facility.

B. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted. Provide means of locking facilities when construction is not in progress.

Provide one unit for use of Construction Manager=s office/conference meeting complex.

C. Drinking Water Facilities: Each trade contractor shall provide drinking water for it=s own personnel.

3.9 STORM SEWERS

A. If storm sewers are available, the Sitework Trade Contractor shall provide temporary
connections to remove effluent that can be discharged lawfully. If sewers are not available, or cannot be used, the Sitework Trade Contractor shall provide drainage ditches, dry wells, stabilization ponds and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off the site in a lawful manner.

B. Filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminants that might clog sewers or pollute waterways before discharge.

C. Comply with the soil erosion and sedimentation control plan and local authorities having jurisdiction.

3.10 DEWATERING FACILITIES

A. For temporary drainage and dewatering facilities, and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division-2 Sections. Where feasible, utilize the same facilities. The Sitework Trade Contractor shall be responsible to maintain the site, excavations and construction free of water.

B. In the event that storm drain piping is not completed when needed for roof drain tie in, then the Plumbing Trade Contractor shall provide temporary storm water drainage from the building, and the Sitework Trade Contractor shall control roof drainage from building onto the site.

C. Sitework Trade Contractor shall be responsible to drain or pump water and remove debris from the site so as not to delay his continuous work or progress. This shall include operating pumps during second shift in order to facilitate next-day continuation of work.

D. Sitework Trade Contractor shall excavate in a manner that prevents all surface water from flowing into the building area. Sitework Trade Contractor shall be responsible to remove any runoff water or debris which enters the building area.

E. Sitework Trade Contractor shall continue to drain site and remove debris until designed grades are obtained.

F. Once building excavation grades are complete, the Concrete Work Contractor shall be responsible to remove all water and debris to install and backfill the building foundations.

G. Upon completion of building foundations, each Trade Contractor shall be responsible to remove water and debris required to complete his work.

3.11 HEATING AND VENTILATION

A. Temporary heating shall be provided and maintained by the Trade Contractor performing the work if the outside temperature falls below 40°F at anytime during the day or night for all exterior work or work performed prior to the building being enclosed by walls and roof.

B. The Trade Contractor shall furnish temporary heat by acceptable means to provide sufficient heat to maintain a temperature of 55°F, 24 hours a day throughout the entire
area of the work for which the Trade Contractor is responsible prior to the building being enclosed by walls and roof.

C. Except where use of the permanent system is authorized, provide vented, self-contained LP gas or fuel oil heaters with individual space thermostatic control. Use of gasoline-burning space heaters, open flame, or salamander type heating units is prohibited. Temporary heating may not be provided using electrical heating equipment if using electrical power supplied by the Owner.

D. As soon as the building, or portions thereof, is generally enclosed with walls and roof and temporary heat is required for scheduled work, or required to facilitate proper workmanship, and permanent heating system is not yet operable or authorized for use, the HVAC Contractor shall arrange and provide temporary heat service for every entity authorized to do work at the project site. The HVAC Contractor shall maintain temperatures as indicated by other Specification Sections for each type of work to be performed. The Construction Manager shall be the sole arbiter of when the building is considered generally enclosed.

E. Refer to paragraph 3.14 in section 01500 for responsibilities to install, maintain, and remove temporary enclosure of windows and doors until the permanent materials are in place.

F. After the conditions of construction require continuous 24 hour heat in the building, the HVAC Contractor shall provide, operate, and maintain temporary radiation or unit heaters to provide required temperatures (minimum 55°F) for the conduct of work. This service shall be continued until the permanent heating system has been completely installed and in operation. The HVAC Contractor shall furnish and pay for all fuel as required for providing temporary heat after the building is generally enclosed.

G. As permanent heating/cooling system is substantially complete and operational for each story or usable portion thereof, the HVAC Trade Contractor shall make suitable provisions for use thereof in temporary heating and cooling. The HVAC Trade Contractor shall maintain and operate permanent system for temporary heating/cooling purposes, including service to occupied areas, if any, until time of final acceptance or transfer of operation to Owner's personnel, for major parts of system if not for entire heating system and air conditioning. The Owner shall pay for all fuel costs incurred by the permanent HVAC systems after acceptance of systems.

H. Warranty: The warranty as required by the contract specifications will not begin until final acceptance of the system has been given by the architect for all or part of a system. The warranty period does not start with the use of the equipment for temporary heating and cooling.

I. All permanent heating and air conditioning equipment used to supply temporary heat and air conditioning shall be completely cleaned and reconditioned by the HVAC Trade Contractor prior to final acceptance. Radiator traps and valves used in the heating system during the period of its operation to supply temporary heat shall not be reinstalled in the permanent system. Install new disposable filters and clean non-disposable filters prior to final acceptance. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
J. PARAGRAPH OMITTED

K. Temporary Ventilation: A Trade Contractor requiring ventilation for work shall provide fans or other necessary equipment to condition air, provided prior approval has been obtained from the Construction Manager.

L. Humidification: Where control of ambient humidity is required for proper performance of the work, or for curing/drying of installed work or for protection of installed work from deterioration due to variations in ambient conditions, each Trade Contractor shall provide his own temporary humidification or dehumidification equipment to maintain the required conditions. Coordinate the use of the equipment with temporary heating to produce the required conditions with a minimum overall use of energy.

M. Permanent electrical power needed to operate permanent heating system must be provided by the Electrical Trade Contractor in conjunction with building enclosure, or the Electrical Trade Contractor shall furnish adequate temporary power to operate permanent heating system.

N. In the event of permanent installed equipment failure, repairs or alternate equipment must be in place within 24 hours of failure or the Construction Manager will take action necessary to restore the heat to the design temperature and will deduct any and all charges from the HVAC Contractor.

O. If additional heating above 55 degrees F or cooling below 80 degrees F is required by a Contractor to properly install and maintain his work, he shall be responsible to provide the additional heating and cooling.

P. Connections for temporary electric to the temporary heat will be provided by the Electrical Contractor.

3.12 FIELD OFFICES

A. Trade Contractors shall provide offices for their own personnel. All type and location of jobsite offices and equipment will be approved by the Construction Manager.

B. Storage and Fabrication Sheds: Each Trade Contractor shall provide storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces. All steps and platforms connected to shelters must be per OSHA regulations.

C. All offices and sheds must have the Trade Contractor's identification on them.

3.13 ROADS AND PARKING

A. Sitework Trade Contractor shall construct and maintain temporary roads, construction parking and paving to adequately support the indicated loading and to withstand exposure to traffic during the construction period, in conjunction with the site logistics plan bound into this specification. Locate temporary paving for roads, storage areas and parking where
the same permanent facilities will be located.

B. Sitework Trade Contractor shall be responsible for providing stable parking area for all construction personnel on the jobsite by use of crushed stone/binder paving, including permanent parking areas.

C. The Sitework Trade Contractor shall maintain truck tire wash facility at the construction entrance.

D. Snow removal will be performed by the Sitework Contractor.

3.14 ENCLOSURES

A. All temporary enclosures required for protection of exterior construction in progress and completed from exposure, bad weather, other construction operations, and similar activities and to maintain the progress schedule, shall be provided by each contractor as necessary to protect their work.

B. General Trades Contractor shall provide temporary building enclosure for protection of construction in progress, and completed, from exposure, foul weather, other construction operations, and similar activities. The extent of temporary enclosures will be as necessary to maintain the progress schedule.

C. Where heat is needed and the permanent building enclosure is not complete, the General Trades Contractor shall provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.

The Aluminum, Storefront, Windows, Canopies, Glass and Glazing Trade Contractor shall be responsible to remove the temporary entrance enclosures and install the permanent entrances or reinstall parts of the temporary enclosures in such a manner that the building security is maintained at the end of each workday shift.

The Aluminum, Storefront, Windows, Canopies, Glass and Glazing Trade Contractor shall be responsible to provide temporary window enclosures, in the event that aluminum window rough openings are fully prepared to receive finish window installation and the finish materials are not ready for prompt installation to maintain the construction schedule.

The General Trade Contractor shall furnish and install temporary entrance doors and maintain them until such time the permanent entrances are installed.

D. Install tarpaulins securely with noncombustible wood framing and other materials. Close openings of 25 sq. ft. or less with plywood or similar materials.

E. Dust partitions and enclosures if indicated on the drawings shall be constructed, maintained, and removed by the General Trades Contractor.

F. Each Trade Contractor is required to construct, maintain, and remove dust partitions required to prevent dust from entering occupied areas due to the performance of his work.
3.15 LIFTS AND HOISTS

A. Lifting and hoisting of all materials and equipment will be the responsibility of each Trade Contractor.

B. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and shall be provided by contractor requiring same.

C. Each Trade Contractor shall be responsible to provide all site and subsurface modification preparation and replacement required to use his lifting and hoisting equipment.

3.16 ELEVATORS

A. Existing Elevator to be demolished.

3.17 PROJECT IDENTIFICATION

A. The Construction Manager shall prepare project identification and other signs, as approved by the Owner, of the size indicated; install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative treated wood or steel. See attached sketches at end of this section.

B. The Construction Manager shall provide one (1) sign erected on the site, where directed, to identify the project. Sign shall include Project name, Owner's name, Architect's name, and Construction Manager's name. Size shall be 4' x 8'; color and lettering style shall be as designed by the Architect. See attached sketches at end of this section.

C. Engage an experienced sign painter to apply graphics.

D. Temporary Signs: The Construction Manager shall prepare signs to provide directional information to construction personnel and visitors as required by the Construction Manager. See attached sketches at end of this section.

E. No other signs allowed on site unless approved by the Construction Manager.

3.18 WASTE DISPOSAL AND CLEANUP

A. The construction manager shall provide trash collection containers for construction debris, exclusive of roofing tear off debris, rock, earth, site work demolition waste, masonry and concrete debris and pay for all debris disposal cost for them. Each trade contractor on the project will be required to clean up and deposit in the dumpster, all debris generated by his trade contract work on a daily basis. Roofing contractor, Site work contractor, Masonry contractor and Concrete contractor must pay their own solid waste removal costs. All other contractors will be provided with collection containers for their use at no cost to the contractor.

This requirement shall be enforced by the Construction Manager and will result in cost
assessment against a Trade Contractor who fails to perform daily clean-up within 48 hours of verbal or written notice from the Construction Manager. Each Trade Contractor will be responsible for flattening or crushing all trash as necessary when placed into the dumpster. Hazardous material shall not be placed in the collection container.

B. Contractors may be required to place salvageable and recyclable materials and debris in separate designated dumpsters or dispose of properly for their own salvage value.

C. All Contractors are to participate in a monthly eight (8) hour general clean up which will be coordinated by the Construction Manager. Each Contractor shall provide a minimum of one (1) clean-up person for every 15 or less people on the Contractor's average work force for the month with the appropriate brooms, shovels, and wheel barrows. Clean up will be supervised by the Construction Manager.

D. The Trades Contractors shall be responsible for weekly broom cleaning of all floor surfaces, for dust, dirt and general trash.

E. The Construction Manager will be responsible for providing trash receptacles, "55 gallon capacity". Emptying them with weekly cleanup or when filled to capacity, shall be done by the Contractors performing the work in that area.

F. The General Trades Contractor shall determine with the Construction Manager, a location for a enclosed trash chute to control dust for debris from second floor levels to the dumpster container. General Trades Contractor shall also erect a dimensional lumber guard railing around the trash chute to prevent jobsite personnel from exposure to falling debris.

3.19 CONSTRUCTION AIDS AND PROTECTION

A. The General Trades Contractor shall provide wood handrails and barricades on all stairs and landings, according to OSHA regulations. Provide barricades at all elevator shafts.

B. The Steel Work Trades Contractor shall furnish, install and remove at completion, all perimeter guard rails for elevated surfaces.

C. The General Trades Contractor shall install safety coverings, handrail around all recessed areas and openings on all floors. Building perimeters, roof, wall, or shaft openings shall have perimeter protection as required by OSHA. This work shall comply with all OSHA requirements and remain in place until permanent construction fills those openings.

D. The Roofing Trades Contractor shall install roof edge perimeter protections and guard rails or coverings, at all roof openings.

E. Each Trade Contractor, upon working in any of the areas named in the above paragraph, shall remove the safety covering and handrail to perform his work. Upon completion of his work for the day, lunch, or breaks, or any time when the individual Trade Contractor is not working in that opening, the safety covering and handrail must be replaced by the Trade Contractor removing it. At the end of each day, the General Trades Contractor will inspect the site and install all safety coverings and handrails. He shall report to the Construction Manager if coverings and handrails are not being reinstalled by other contractors.
At the end of the project, or in order to install permanent construction, the General Trades Contractor shall remove all coverings and handrails.

F. The Trade Contractors requiring access to above grade work are responsible for providing ladders, scaffolding and appropriate methods to access their work. Trade Contractor desiring use of in place above grade work platforms must arrange directly with the party that owns the equipment and make all rental and insurance arrangements directly with that party.

G. All work platforms, scaffolding, etc., on the project shall be available for access by the Owner, Architect, Municipal Authority, Testing Agency and/or Construction Manager.

3.20 FIRE SAFETY

A. Existing fire protection shall be maintained in place until permanent sprinklered fire protection system is available for use. The Sprinkler System Trades Contractor shall provide the permanent sprinkler fire protection system for use at the earliest possible date after building enclosure and 55° F temperatures are maintained to protect the building structure.

B. The Construction Manager shall provide fire extinguishers, as required by OSHA standards or other codes.

C. Each Contractor shall store combustible materials in containers in fire-safe locations.

D. Each Contractor shall maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.

E. Each Contractor shall provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

F. The Construction Manager shall provide the local fire company with a set of site and floor plans. He shall invite the local fire company to visit the project site and plan emergency response.

3.21 BARRICADES, WARNING SIGNS, AND LIGHTS

A. All trade contractors requiring barricades, warning signs and lights shall comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against.

3.22 SITE ENCLOSURE FENCE

A. The Construction Manager shall perform all temporary fencing work as indicated on the site logistics drawing. This work shall be done immediately upon mobilizing for Work at the beginning of the Project.

B. The Sitework Contractor shall maintain permanent chain link fencing and fabric fencing
throughout the duration of the Project, particularly maintaining security function of gate devices.

3.23 BUILDING SECURITY, ENCLOSURE, AND LOCKUP

A. The General Trades Contractor shall install substantial temporary enclosure of partially completed areas of construction. Provide and maintain locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.

B. Each Trade Contractor is responsible for the secure storage of their own material and equipment on and off the site.

3.24 ENVIRONMENTAL PROTECTION, NPDES, AND PPC

A. To the fullest extent permitted by law, the Trade Contractor shall indemnify and hold harmless the Owner and Construction Manager, their employees and agents, from claims, losses, damage, and expenses including, but not limited to, attorney’s fees arising out of performance of the work as it relates to any type of pollution related situations. This would apply to bodily injury, sickness, disease or death, or to damages or destruction or contamination of tangible property arising out of the acts or omission of the Trade Contractor or the joint negligent acts of the Owner or Construction Manager, or anyone for whose acts the Trade Contractor may be liable.

B. Each Trade Contractor, prior to construction, must comply with the National Pollution Discharge Elimination System (NPDES) and submit and State and Local Preparedness, Prevention and Contingency Plans (PPC) to the Construction Manager before the start of work.

Each Trade Contractor must construct, operate and maintain storage of materials to provide protection for each individual worker, as well as the protection of property or real estate of the construction site and environment.

C. Each Trade Contractor shall provide protection, operate temporary facilities, and conduct construction in ways and methods that comply with all environmental regulations, and minimize the possibility that air, water, and soil from becoming contaminated or polluted as a result of work or storage of supplies and materials, or equipment usage.

D. Each Trade Contractor will designate and train a responsible employee in environmental contamination procedures, including, but not limited to, emergency responses, material and waste inventories, spills and leak precautions and responses, inspections, housekeeping, security, and external factors.

E. Open burning will not be permitted.

3.25 WORKDAY

A. The workdays for the project are defined as 7:00 a.m. to 3:30 p.m., Monday through Friday, with lunch period from 12:00 to 12:30 p.m. The progress schedule may require contractors to perform work other than the normal workday and in addition to the normal workday to meet milestones in the progress schedule for the project, or to make up time.
previously lost to regain the progress schedule requirements or to prevent interruption of the Owner's ongoing operations at no additional cost to the Owner.

B. Working times other than the normal workday or in addition to the normal work day, must be arranged in advance with the Construction Manager.

C. Trade Contractors who require additional workday hours to regain work time previously lost to meet the requirements of the project schedule shall be assessed for all costs including Construction Manager Supervision and other Trade Contractor cost necessary for the performance of their work.

3.26 LUNCH WAGON

A. Lunch wagons, catered events or other non-construction related functions shall not be permitted on the project site, except by the written permission of the Owner and Construction Manager.

B. No alcoholic beverages or controlled substances shall be allowed on the project at any time.

3.27 EROSION CONTROL

A. The Sitework Trade Contractor shall employ all methods required to comply with local regulatory authorities requirements to control erosion from the project site, including drainage control ditches, sediment basins, straw bale dikes, silt fencing and whatever procedure necessary to comply with requirements.

B. The Sitework Trade Contractor shall maintain these controls throughout the duration of the project.

3.28 EXCAVATION

A. Any Trade Contractor performing excavation shall protect all excavated materials from moisture, freezing and drying, so that the same materials excavated can be utilized for backfill.

B. Any Trade Contractor performing excavation shall have an OSHA trained person on site during all excavation operations. This person shall evaluate soil types and conditions to determine the required shoring and excavation methods.

3.29 BLASTING

A. Blasting is not permitted.

3.30 MATERIAL INVENTORIES

A. Contractors shall coordinate the delivery and storage on the jobsite of all significant materials.

B. Each Trade Contractor shall be responsible for the proper location, secure, and weather resistant storage as required of all materials. This includes placement of materials not to
obstruct passage on site or within building structures or in any way which causes impediment or obstruction to other Trade Contractors.

C. All material inventories must be stored by the Trade Contractor to avoid excessive loads on building structure.

D. When directed by the Construction Manager, a Trade Contractor shall remove or relocate material inventories as required for the progress of the project.

3.31 DELIVERIES

A. All contractors are required to properly instruct material suppliers and vendors to address deliveries to them specifically by named responsible party at the jobsite and require advance notice.

B. All deliveries addressed to the project in general, the Owner, Architect or Construction Manager, will be refused and returned to shipper.

C. The Owner will not be responsible for receipt, handling, or loss of any materials which are shipped to the Owner in error and received unknowing of relationship to the project.

D. Contractor receiving materials at the jobsite shall be responsible for prevention of any mud or other deposits on public roadways or other areas outside project limit lines, which may result due to methods of material delivery. Trade Contractor shall instruct delivery conveyor to take appropriate measures to prevent depositing mud or other construction deposits outside of contract limit lines. Total responsibility of cleanup of mud or other construction deposit outside of contract limit lines will be the responsibility of the Trade Contractor receiving the delivery.

E. Each Contractor shall provide his superintendent with a telephone pager to enable locating the superintendent on and off site.

3.32 OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.

2. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Termination and Removal: Unless the Construction Manager requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or not later than Substantial Completion. Complete
or, if necessary restore, permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of the Trade Contractor. The Owner reserves the right to take possession of Project identification signs.

2. The Sitework Trade Contractor shall remove temporary paving that is not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that does not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt, and other petrochemical compounds, and other substances which might impair growth of plant materials or lawns. Repair or replace street paving, curbs and sidewalks at the temporary entrances, as required by the governing authority.

3.33 SNOW REMOVAL

A. Snow removal for roads, building exterior, contractor parking, contractor office, staging, and Construction Manager's office area access will be performed by the Sitework Contractor.

B. The General Trades Contractor shall be responsible for snow removal from within the building, maintaining safe walkway, stair traffic areas and building corridors, using anti-skid methods for snow, mud and/or ice removal, to provide safe usage.

C. All snow and ice removal required to perform contractor specific tasks on floors, roof, work stages, etc., shall be performed by each Contractor.

END OF SECTION 015000
SECTION 016000 - MATERIALS AND EQUIPMENT PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

1. Multiple Prime Contracts: Provisions of this Section apply to the construction activities of each prime contractor.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Reference Standards and Definitions" specifies the applicability of industry standards to products specified.
2. Division 1 Section "Submittals" specifies requirements for submittal of the Contractor's Construction Schedule and the Submittal Schedule.
3. Division 1 Section "Substitutions" specifies administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, which is current as of the date of the Contract Documents.

b. "Foreign Products," as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.

2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise
fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.4 SUBMITTALS

A. Product List: A list of products required is included at the end of this Section. Prepare a schedule in tabular form showing each product listed. Include the manufacturer's name and proprietary product names for each item listed.

B. Product List: Prepare a list showing products specified in tabular form acceptable to the Architect. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.

1. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.

2. Form: Prepare product list with information on each item tabulated under the following column headings:
   a. Related Specification Section number.
   b. Generic name used in Contract Documents.
   c. Proprietary name, model number, and similar designations.
   d. Manufacturer's name and address.
   e. Supplier's name and address.
   f. Installer's name and address.
   g. Projected delivery date or time span of delivery period.

3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of an initial product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.
   a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.

4. Completed List: Within 60 days after date of commencement of the Work, submit 3 copies of the completed product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.

5. Architect's Action: The Architect will respond in writing to Contractor within 2 weeks of receipt of the completed product list. No response within this period constitutes no objection to listed manufacturers or products but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect's response will include a list of unacceptable product selections, containing a brief explanation of reasons for this action.
1.5 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

   1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

   1. Each prime contractor is responsible for providing products and construction methods that are compatible with products and construction methods of other prime or separate contractors.

   2. If a dispute arises between prime contractors over concurrently selectable, but incompatible products, the Architect will determine which products shall be retained and which are incompatible and must be replaced.

C. Foreign Product Limitations: Except under one or more of the following conditions, provide domestic products, not foreign products, for inclusion in the Work:

   1. No available domestic product complies with the Contract Documents.

   2. Domestic products that comply with the Contract Documents are available only at prices or terms substantially higher than foreign products that comply with the Contract Documents.

D. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.

   1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

   2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

      a. Name of product and manufacturer.
      b. Model and serial number.
      c. Capacity.
      d. Speed.
      e. Ratings.
1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.

7. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where Specifications name only a single product or manufacturer, provide the product indicated. No substitutions will be permitted.

2. Semi proprietary Specification Requirements: Where Specifications name 2 or more products or manufacturers, provide 1 of the products indicated. No substitutions will be permitted.

a. Where Specifications specify products or manufacturers by name, accompanied by the term "or equal" or "or approved equal," comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

3. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these
products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.
   a. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.

6. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.

7. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
   a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.

8. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern, and texture from the product line selected.

9. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division 1 for allowances that control product selection and for procedures required for processing such selections.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

   1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
SECTION 017000 – CONTRACT CLOSEOUT

1.1 RELATED SECTIONS

A. General and Supplementary Conditions.
B. Section 013300 - Submittal Procedures for closeout documents submittals.
C. Section 015000 - Construction Facilities and Temporary Controls: Progress cleaning.
D. Section 017500 - Starting of Systems: System start-up, testing, adjusting, and balancing.

1.2 CLOSEOUT PROCEDURES

A. Completion of the Work specified herein is a condition precedent to issuance of the Final Certificate of Payment by Construction Manager and Architect.
B. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect review.
C. Provide submittals to Architect through Construction Manager that is required by governing or other authorities.
D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
E. Owner will occupy portions of the site as specified in Section 013100.

1.3 HAZARDOUS-FREE MATERIALS CERTIFICATION

A. Upon completion of this project, the Contractor shall deliver to the Architect three (3) copies of a notarized letter addressed to the Owner certifying that to the best of the Contractor's knowledge all products provided by them for incorporation into this project do not contain any hazardous materials exceeding current EPA guidelines.
B. It is the responsibility of the Contractor to review "Manufacturer's Safety Data Sheets" (MSDS) on all products to ascertain compliance with EPA guidelines prior to shop drawing submission to the Architect. Incorporation of products into the project without the submission of shop drawings or samples to the Architect will indicate that the Contractor has ascertained that the products meet EPA limits.
C. It is the responsibility of the Contractor to notify the Architect in writing of the lack of compliance of a product with EPA guidelines prior to ordering or incorporating any products into this project.

1.4 OPERATION AND MAINTENANCE DATA

A. Submit data on 8-1/2 x 11 inch text pages, bound in three D side ring binders with durable plastic covers.
B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE
INSTRUCTIONS" and title of Project.

C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, typed on white paper, in three parts as follows:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers. Include for all mechanical and electrical equipment a compilation of the nameplate data for equipment; name, address and phone number of nearest distributor; name, address and phone number of nearest service organization.

2. Part 2: Operation and maintenance instructions arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
   a. Significant design criteria.
   b. List of equipment.
   c. Parts list for each component.
   d. Operating instructions.
   e. Maintenance instructions for equipment and systems.
   f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents. Include videotapes of training sessions.
   g. (1) 8x10 photograph of each piece of equipment.
   h. Name and telephone number of service representative.
   i. Test results/reports.
   j. Certified performance curves.
   k. Re-order information.
   l. Catalog, model, serial number.
   m. Wiring diagrams.
   n. Assembly drawings.
   o. Schedule
   p. Charts
   q. Nameplate data.

3. Part 3: Project documents and certificates, including the following:
   a. Shop drawings and product data.
   b. Air and water balance reports.
   c. Certificates.
   d. Photocopies of warranties and bonds.

E. Submit 1 draft copy of completed volumes 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content of all document sets as required prior to final submission.
F. Submit three copies of revised final volumes, within 10 days after final inspection.

1.5 WARRANTIES

A. Provide triplicate notarized copies.

B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.

C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.

D. Submit prior to final Application for Payment.

E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.6 FINAL SUBMISSIONS

A. Submit Consent of Surety to Final Payment.

B. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

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

D. Affidavit of payment of all claims against the work.

1.7 PROJECT RECORD DOCUMENTS

A. Trade contractors shall maintain on site, one set of the following record documents; record actual revisions to the Work:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, Product Data, and Samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Construction Manager and Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.
E. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

F. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured depths of foundations in relation to finish floor.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract Drawings.

G. Remove Architect seal from all documents.

H. Submit documents to Architect with final Application for Payment.

I. Submit a final liquidated damages settlement statement.

1.8 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.

B. Deliver to Project site and place in location as directed extra materials and parts as indicated within the respective specification sections; obtain receipt from Owner upon delivery and placement and prior to final payment.

END OF SECTION 017000
SECTION 01 73 29 – CUTTING & PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections include the following:

1. Divisions 02 through 07 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety. Operating elements include the following: List below is an example only. Revise to suit Project's operating systems. With advice of counsel, delete below if Architect's approval is not required. If list is deleted, delete option in paragraph above.

1. Fire-suppression systems.
2. Mechanical systems piping and ducts.
3. Control systems.
4. Communication systems.
5. Conveying systems.
6. Electrical wiring systems.
C. **Visual Requirements:** Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

D. **Cutting and Patching Conference:** Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

**PART 2 - PRODUCTS**

2.1 **MATERIALS**

A. **General:** Comply with requirements specified in other Sections.

B. **In-Place Materials:** Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

**PART 3 - EXECUTION**

3.1 **EXAMINATION**

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

   1. **Compatibility:** Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 **PREPARATION**

A. **Temporary Support:** Provide temporary support of Work to be cut.

B. **Protection:** Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. **Adjoining Areas:** Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

5. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

   a. Clean piping, conduit, and similar features before applying paint or other finishing materials.

   b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 73 29
SECTION 01 74 19 – CONSTRUCTION WASTE MANAGEMENT

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for construction waste management activities.

1.2 DEFINITIONS

A. Construction, Demolition, and Land clearing (CDL) Waste: Includes all non-hazardous solid wastes resulting from construction, remodeling, alterations, repair, demolition and land clearing. Includes material that is recycled, reused, salvaged or disposed as garbage.

B. Salvage: Recovery of materials for on-site reuse, sale or donation to a third party.

C. Reuse: Making use of a material without altering its form. Materials can be reused on-site or reused on other projects off-site. Examples include, but are not limited to the following: Crushing or grinding of concrete for use as sub-base material. Chipping of land clearing debris for use as mulch.

D. Recycling: The process of sorting, cleaning, treating, and reconstituting materials for the purpose of using the material in the manufacture of a new product.

E. Source-Separated CDL Recycling: The process of separating recyclable materials in separate containers as they are generated on the job-site. The separated materials are hauled directly to a recycling facility or transfer station.

F. Co-mingled CDL Recycling: The process of collecting mixed recyclable materials in one container on-site. The container is taken to a material recovery facility where materials are separated for recycling.

G. Approved Recycling Facility: Any of the following:
   1. A facility that can legally accept CDL waste materials for the purpose of processing the materials into an altered form for the manufacture of a new product.
   2. Material Recovery Facility: A general term used to describe a waste-sorting facility. Mechanical, hand-separation, or a combination of both procedures, are used to recover recyclable materials.

1.3 SUBMITTALS

A. Contractor shall develop a Waste Management Plan: Submit 3 copies of plan within 14 days of date established for the Notice to Proceed.

B. Contractor shall provide Waste Management Report: Concurrent with each Application for Payment, submit 3 copies of report.
1.4 PERFORMANCE REQUIREMENTS

A. General: Divert a minimum of 75% CDL waste, by weight, from the landfill by one, or a combination of the following activities:

1. Salvage
2. Reuse
3. Source-Separated CDL Recycling
4. Co-mingled CDL Recycling

B. CDL waste materials that can be salvaged, reused or recycled include, but are not limited to, the following:

1. Acoustical ceiling tiles
2. Asphalt
3. Asphalt shingles
4. Cardboard packaging
5. Carpet and carpet pad
6. Concrete
7. Drywall
8. Fluorescent lights and ballasts
9. Land clearing debris (vegetation, stumpage, dirt)
10. Metals
11. Paint (through hazardous waste outlets)
12. Wood
13. Plastic film (sheeting, shrink wrap, packaging)
14. Window glass
15. Wood
16. Field office waste, including office paper, aluminum cans, glass, plastic, and office cardboard.

1.4 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements, that employs a LEED Accredited Professional, certified by the USGBC as waste management coordinator.

B. Regulatory Requirements: Conduct construction waste management activities in accordance with hauling and disposal regulations of all authorities having jurisdiction and all other applicable laws and ordinances.

C. Preconstruction Conference: Schedule and conduct meeting at Project site prior to construction activities.

1. Attendees: Inform the following individuals, whose presence is required, of date and time of meeting.
   a. Owner
   b. Architect
1.5 WASTE MANAGEMENT PLAN – Contactor shall develop and document the following:

A. Develop a plan to meet the requirements listed in this section at a minimum. Plan shall consist of waste identification, waste reduction plan and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight throughout the plan.

B. Indicate anticipated types and quantities of demolition, site-cleaning and construction waste generated by the project. List all assumptions made for the quantities estimates.

C. List each type of waste and whether it will be salvaged, recycled, or disposed of in an landfill. The plan should included the following information:

1. Types and estimated quantities, by weight, of CDL waste expected to be generated during demolition and construction.

2. Proposed methods for CDL waste salvage, reuse, recycling and disposal during demolition including, but not limited to, one or more of the following:
   a. Contracting with a deconstruction specialist to salvage materials generated,
   b. Selective salvage as part of demolition contractor’s work,
   c. Reuse of materials on-site or sale or donation to a third party.

3. Proposed methods for salvage, reuse, recycling and disposal during construction including, but not limited to, one or more of the following:
   a. Requiring subcontractors to take their CDL waste to a recycling facility;
   b. Contracting with a recycling hauler to haul recyclable CDL waste to an approved recycling or material recovery facility;
c. Processing and reusing materials on-site;
d. Self-hauling to a recycling or material recovery facility.

4. Name of recycling or material recovery facility receiving the CDL wastes.

5. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on project site where materials separation will be located.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:

1. Total quantity of waste.
2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
3. Total cost of disposal (with no waste management).
4. Revenue from salvaged materials.
5. Revenue from recycled materials.
7. Savings in hauling and tipping fees that are avoided.
8. Handling and transportation costs. Including cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT, GENERAL

A. Provide containers for CDL waste that is to be recycled clearly labeled as such with a list of acceptable and unacceptable materials. The list of acceptable materials must be the same as the materials recycled at the receiving material recovery facility or recycling processor.

B. The collection containers for recyclable CDL waste must contain no more than 10% non-recyclable material, by volume.

C. Provide containers for CDL waste that is disposed in a landfill clearly labeled as such.

D. Use detailed material estimates to reduce risk of unplanned and potentially wasteful cuts.

E. To the greatest extent possible, include in material purchasing agreements a waste reduction provision requesting that materials and equipment be delivered in packaging made of recyclable material, that they reduce the amount of packaging, that packaging be taken back for reuse or recycling, and to take back all unused product. Insure that subcontractors require the same provisions in their purchase agreements.

F. Conduct regular visual inspections of dumpsters and recycling bins to remove contaminants.

3.2 SOURCE SEPARATION
A. General: Contractor shall separate recyclable materials from CDL waste to the maximum extent possible.

Separate recyclable materials by type.

1. Provide containers, clearly labeled, by type of separated materials or provide other storage method for managing recyclable materials until they are removed from Project site.
2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water and to minimize pest attraction. Cover to prevent windblown dust.
3. Stockpile materials away from demolition area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from weather.

3.3 CO-MINGLED RECYCLING

A. General: Do not put CDL waste that will be disposed in a landfill into a co-mingled CDL waste recycling container.

REMOVAL OF CONSTRUCTION WASTE MATERIALS

A. Remove CDL waste materials from project site on a regular basis. Do not allow CDL waste to accumulate on-site.

B. Transport CDL waste materials off Owner's property and legally dispose of them.

C. Burning of CDL waste is not permitted.

END OF SECTION
## Waste Management Progress Report

<table>
<thead>
<tr>
<th>MATERIAL CATEGORY</th>
<th>DISPOSED IN MUNICIPAL SOLID WASTE LANDFILL</th>
<th>DIVERTED FROM LANDFILL BY RECYCLING, SALVAGE OR REUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Recycled</td>
</tr>
<tr>
<td>1. Acoustical Ceiling Tiles</td>
<td></td>
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<tr>
<td>2. Asphalt</td>
<td></td>
<td></td>
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<tr>
<td>3. Asphalt Shingles</td>
<td></td>
<td></td>
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<tr>
<td>4. Cardboard Packaging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Carpet and Carpet Pad</td>
<td></td>
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<tr>
<td>6. Concrete</td>
<td></td>
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<tr>
<td>7. Drywall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Fluorescent Lights and Ballasts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Land Clearing Debris (vegetation, stumpane, dirt)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Metals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Paint (through hazardous waste outlets)</td>
<td></td>
<td></td>
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<tr>
<td>12. Wood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Plastic Film (sheeting, shrink wrap, packaging)</td>
<td></td>
<td></td>
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<tr>
<td>14. Window Glass</td>
<td></td>
<td></td>
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<tr>
<td>15. Field Office Waste (office paper, aluminum cans, glass, plastic, and coffee cardboard)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Other (insert description)</td>
<td></td>
<td></td>
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<tr>
<td>17. Other (insert description)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Total (In Weight)</td>
<td>(TOTAL OF ALL ABOVE VALUES – IN WEIGHT)</td>
</tr>
<tr>
<td></td>
<td>Percentage of Waste Diverted</td>
<td>(TOTAL WASTE DIVIDED BY TOTAL DIVERTED)</td>
</tr>
</tbody>
</table>
SECTION 017500 - FACILITY STARTUP/COMMISSIONING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Starting systems.

B. Demonstration and instructions.

1.2 RELATED SECTIONS

A. General and Supplementary Conditions.

B. Section 017000 - Contract Closeout: System operation and maintenance data and extra materials.

1.3 STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Construction Manager, Architect/Engineer and Owner seven (7) days prior to start-up of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or for other conditions which may cause damage.

D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of applicable manufacturer’s representative and Contractors’ personnel in accordance with manufacturers’ instructions.

G. When specified in individual Specification sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner’s personnel no more than two (2) weeks prior to date of Substantial Completion.

B. Demonstrate Project equipment and instruct in a classroom environment located at site and instructed by a qualified manufacturer’s representative who is knowledgeable about the Project.
C. Contractor shall video tape the demonstration/instructions on format acceptable to Owner and provide two (2) copies of tape at Project closeout or at such time as directed by Construction Manager. Tape shall be clear in visual and audio recreation of demonstration and instructions. A professionally prepared training video produced by the manufacturer shall be an acceptable substitute to on-site video tape.

D. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners= personnel in detail to explain all aspects of operation and maintenance.

F. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment or designated location.

G. Prepare and insert additional data in operations and maintenance manuals when needed for additional data becomes apparent during construction.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 017500
SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Project Record Documents.
3. Operation and maintenance manuals.
4. Warranties.
5. Instruction of Owner's personnel.
6. Final cleaning.

B. Related Sections include the following:

1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
3. Divisions 2 through 33 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
6. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
7. Complete startup testing of systems.
8. Submit test/adjust/balance records.
9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
10. Advise Owner of changeover in heat and other utilities.
11. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
12. Complete final cleaning requirements, including touchup painting.
13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor’s list or on additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 1 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
   a. Project name.
   b. Date.
   c. Name of Architect.
   d. Name of Contractor.
   e. Page number.
4. Include space for sign off and acceptance of each item.

1.6 PROJECT RECORD DOCUMENTS

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Architect and Owner’s reference during normal working hours.

B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.

1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
   a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
   b. Accurately record information in an understandable drawing technique.
   c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
   d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.

2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
3. Mark important additional information that was either shown schematically or omitted from original Drawings.
4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.
5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Note related Change Orders, Record Drawings, and Product Data, where applicable.

D. Record Product Data: Submit one copy of each Product Data submittal. Mark one (1) set to indicate the actual product installation where installation varies substantially from that indicated in Product Data.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer’s written instructions for installation.
   3. Note related Change Orders, Record Drawings, and Record Specifications, where applicable.

E. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.7 OPERATION AND MAINTENANCE MANUALS

A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:

1. Operation Data:
   a. Emergency instructions and procedures.
   b. System, subsystem, and equipment descriptions, including operating standards.
   c. Operating procedures, including startup, shutdown, seasonal, and weekend operations.
   d. Description of controls and sequence of operations.
   e. Piping diagrams.

2. Maintenance Data:
   a. Manufacturer's information, including list of spare parts.
   b. Name, address, and telephone number of Installer or supplier.
   c. Maintenance procedures.
   d. Maintenance and service schedules for preventive and routine maintenance.
   e. Maintenance record forms.
   f. Sources of spare parts and maintenance materials.
   g. Copies of maintenance service agreements.
   h. Copies of warranties and bonds.

B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.
1.8 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

   1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper.
   2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
   3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 DEMONSTRATION AND TRAINING

A. Instruction: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

   1. Provide instructors experienced in operation and maintenance procedures.
   2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
   3. Schedule training with Owner, through Architect, with at least seven days' advance notice.
   4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.
B. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. For each training module, develop a learning objective and teaching outline. Include instruction for the following:

1. System design and operational philosophy.
2. Review of documentation.
3. Operations.
4. Adjustments.
5. Troubleshooting.
7. Repair.

3.2 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances. Cut lawn and field areas.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Remove snow and ice to provide safe access to building.
   f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   h. Sweep concrete floors broom clean in unoccupied spaces.
   i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
   j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
   k. Remove labels that are not permanent.
l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to unusual operating conditions.

o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

q. Clean ducts, blowers, and coils if units were operated without filters during construction.

r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

s. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 017700
SECTION 017836 - WARRANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturer’s standard warranties on products and special warranties.

   1. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.

B. Related Sections: The following Sections contain requirements that relate to this Section:

   1. Division 1 Section "Submittals" specifies procedures for submitting warranties.
   2. Division 1 Section "Contract Closeout" specifies contract closeout procedures.
   3. Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.
   4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

D. Separate Prime Contracts: Each prime contractor is responsible for warranties related to its own contract.

1.3 DEFINITIONS

A. Standard product warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.
B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

E. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within 15 days of completion of that designated portion of the Work.

B. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect, for approval prior to final execution.

C. Forms for special warranties are included at the end of this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Submit a draft to the Owner, through the Architect, for approval prior to final execution.

1. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.

D. Form of Submittal: At Final Completion compile 2 copies of each required warranty properly
executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize
the warranty documents into an orderly sequence based on the table of contents of the Project
Manual.

E. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-
leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch
(115-by-280-mm) paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark
the tab to identify the product or installation. Provide a typed description of the product or
installation, including the name of the product, and the name, address, and telephone
number of the Installer.

2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES,
Project title or name, and name of the Contractor.

3. When warranted construction requires operation and maintenance manuals, provide additional
copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 LIST OF WARRANTIES

A. Schedule: Provide warranties on products and installations as specified in individual specification
sections.

END OF SECTION 017836
Statement of Special Inspections

Project: Cape Henlopen School District – Milton Elementary School Demo – Sitework
Location: 512 Federal Street Milton Delaware 19968
Owner: Cape Henlopen School District

Design Professional in Responsible Charge:

This Statement of Special Inspections is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Special Inspection Coordinator and the identity of other approved agencies to be retained for conducting these inspections and tests. This Statement of Special Inspections encompass the following disciplines:

- [ ] Structural
- [ ] Mechanical/Electrical/Plumbing
- [ ] Architectural
- [ ] Other: ________________________________

The Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Building Official and the Registered Design Professional in Responsible Charge. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge.

A Final Report of Special Inspections documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy.

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim Report Frequency: __________ or [ ] per attached schedule.

Prepared by:

Jim Baker, PE
(type or print name)

Owner's Authorization: __________________________ Building Official's Acceptance: __________________________

Signature: __________________________ Date: __________
Design Professional Seal

Signature: __________________________ Date: __________
Owner's Authorization:

Signature: __________________________ Date: __________
Building Official's Acceptance:

CASE Form 101 • Statement of Special Inspections • ©CASE 2004
This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

- Soils and Foundations
- Cast-in-Place Concrete
- Precast Concrete
- Masonry
- Structural Steel
- Cold-Formed Steel Framing
- Spray Fire Resistant Material
- Wood Construction
- Exterior Insulation and Finish System
- Mechanical & Electrical Systems
- Architectural Systems
- Special Cases

### Schedule of Inspection and Testing Agencies

<table>
<thead>
<tr>
<th>Special Inspection Agencies</th>
<th>Firm</th>
<th>Address, Telephone, e-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Special Inspection</td>
<td></td>
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<tr>
<td>Coordinator</td>
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<tr>
<td>2. Inspector</td>
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<tr>
<td>3. Inspector</td>
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<td>4. Testing Agency</td>
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<td>5. Testing Agency</td>
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<tr>
<td>6. Other</td>
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</table>

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner’s Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

**CASE Form 101** • Statement of Special Inspections • ©CASE 2004
### A. Concrete Construction

1. Inspection of reinforcing steel, including prestressing tendons, and placement.
   - **03 30 00**
   - **Owner's Testing Agency**
   - **ACI 318: 3.5, 7.1-7.7**
   - **1910.4**

2. Inspection of reinforcing steel welding in accordance with Table 1705.2.2, Item 2b.
   - **03 30 00**
   - **Owner's Testing Agency**
   - **AWS D1.4; ACI 318: 3.5.2**
   - **-**

3. Inspection of anchors cast in concrete where allowable loads have been increased or where strength design is used.
   - **03 30 00**
   - **Owner's Testing Agency**
   - **ACI 318: 8.1.3, 21.2.8**
   - **1908.5, 1909.1**

4. Inspection of anchors installed in hardened concrete members.
   - **03 30 00**
   - **Owner's Testing Agency**
   - **ACI 318: 3.8.6, 8.1.3, 21.2.8**
   - **1909.1**

5. Verify use of required design mix.
   - **03 30 00**
   - **Owner's Testing Agency**
   - **ACI 318: Ch. 4, 5.2-5.4**
   - **1904.2, 1910.2, 1910.3**

6. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.
   - **03 30 00**
   - **Owner's Testing Agency**
   - **ASTM C 172, ASTM C 31; ACI 318: 5.6, 5.8**
   - **1910.10**

7. Inspection of concrete and shotcrete placement for proper application techniques.
   - **03 30 00**
   - **Owner's Testing Agency**
   - **ACI, 318: 5.9, 5.10**
   - **1910.6, 1910.7, 1910.8**

8. Inspection for maintenance of specified curing temperature and techniques.
   - **03 30 00**
   - **Owner's Testing Agency**
   - **ACI, 318: 5.11, 5.13**
   - **1910.9**

9. Inspection of prestressed concrete:
   - a. Application of prestressing forces.
      - **Owner's Testing Agency**
      - **ACI 318: 18.20**
      - **-**
   - b. Grouting of bonded prestressing tendons in the seismic-force-resisting system.
      - **Owner's Testing Agency**
      - **ACI 318: 18.18.4**
      - **-**

10. Erection of precast concrete members.
    - **Owner's Testing Agency**
    - **ACI 318: Ch. 16**
    - **-**

11. Verification of in-situ concrete strength, prior to stressing of tendons.
    - **03 30 00**
    - **Owner's Testing Agency**
    - **ACI 318: 6.2**
    - **-**
### B. Masonry Construction - Level 1

<table>
<thead>
<tr>
<th></th>
<th>INSPECTION AND TESTING</th>
<th>TECHNICAL SPECIFICATION SECTION</th>
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<th>CONTINUOUS</th>
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<th>REFERENCE STANDARD</th>
<th>IBC 2012 REFERENCE</th>
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<td>12.</td>
<td>Inspect formwork for shape, location and dimensions of the concrete member being formed.</td>
<td>03 31 00.00 10</td>
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<td>1.</td>
<td>Compliance with required inspection provisions of the construction documents and the approved submittals shall be verified.</td>
<td>04 20 00</td>
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<td>TMS 602, ACI 530.1, ASCE 6a, Art. 1.5</td>
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<td>Verification of ( f'_m ) and ( f'<em>c</em>{ASC} ) prior to construction except where specifically exempted by this code.</td>
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<td>3.</td>
<td>Verification of slump flow and VSI as delivered to the site for self-consolidating grout.</td>
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<td>c.</td>
<td>Location of reinforcement, connectors, prestressing tendons, anchorages</td>
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<td>☐</td>
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<td>d.</td>
<td>Prestressing technique</td>
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<td>e.</td>
<td>Grade and size of prestressing tendons &amp; anchorages</td>
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<td>b. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction</td>
<td>04 20 00</td>
<td>Owner's Testing Agency</td>
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<td>x</td>
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<td>c. Specified size, grade and type of reinforcement, anchor bolts, prestressing tendons and anchorages</td>
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<td>d. Welding of reinforcing bars</td>
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<td>e. Cold (temperature below 40°F)/hot (temperature above 90°F) weather protection of masonry construction</td>
<td>04 20 00</td>
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<td>TMS 602, ACI 530.1, ASCE 6, Art. 1.8C, 1.8D</td>
<td>Sec.2104.3, 2104.4</td>
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<td>f. Prestressing force measurement and application</td>
<td>04 20 00</td>
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<td>6. Prior to grouting, the following shall be verified to ensure compliance:</td>
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<td>a. Grout space is clean.</td>
<td>04 20 00</td>
<td>Owner's Testing Agency</td>
<td>x</td>
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<td>TMS 602, ACI 530.1, ASCE 6, Art. 3.2D</td>
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<td>b. Placement of reinforcement, connectors and anchorages.</td>
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<td>c. Proportions of site-prepared grout.</td>
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<td>d. Construction of mortar joints.</td>
<td>04 20 00</td>
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<td>x</td>
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<td>TMS 602, ACI 530.1, ASCE 6, Art. 3.3B</td>
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<td>7. Grout placement shall be verified to ensure compliance with code and construction document provisions.</td>
<td>04 20 00</td>
<td>Owner's Testing Agency</td>
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<td>a. Grouting of prestressing bonded tendons</td>
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<tr>
<td>8. Preparation of grout specimens, mortar specimens and/or prisms</td>
<td>04 20 00</td>
<td>Owner's Testing Agency</td>
<td>☒</td>
<td>☐</td>
<td>TMS 602, ACI 530.1, ASCE 64, Art 1.4</td>
<td>Sec. 2105.2.2, 2105.3</td>
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</table>

D. Steel Construction

1. Material verification and high strength bolts, nuts, and washers:
   a. Identification markings to conform to ASTM standards specified in the approved construction documents | 05 12 00 | Owner's Testing Agency | ☒ | ☐ | Applicable ASTM material specifications. AISC 360, Section A3.3 |
   b. Manufacturer’s certificate of compliance required | 05 12 00 | Owner's Testing Agency | ☒ | ☐ |

2. Inspection of high-strengthbolting:
   a. Snug-tight joints | 05 12 00 | Owner's Testing Agency | ☐ | ☒ | AISC 360, Section M2.5 | 1704.3.3 |
   b. Pre-tensioned and slip-critical joints using turn-of-nut with match marking, twist-off bolt or direct tension indicator methods of installation | 05 12 00 | Owner's Testing Agency | ☐ | ☒ | AISC 360, Section M2.5 | 1704.3.3 |
   c. Pre-tensioned and slip-critical using turn-of-nut without match marking or calibrated wrench methods of installation | 05 12 00 | Owner's Testing Agency | ☐ | ☒ | AISC 360, Section M2.5 | 1704.3.3 |

3. Material verification of structural steel:
   a. For structural steel, identification markings to conform to AISC 360. | 05 12 00 | Owner's Testing Agency | ☒ | ☐ | AISC 360, Section M5.5 | - |
   b. Identification markings to conform to ASTM standards specified in the approved construction documents | 05 12 00 | Owner's Testing Agency | ☒ | ☐ | Applicable ASTM material standards | - |
   c. Manufacturer’s certified test reports. | 05 12 00 | Owner's Testing Agency | ☐ | ☒ | - | - |

4. Material verification of weld filler materials:
   a. Identification markings to conform to AWS specification in the approved construction documents | 05 12 00 | Owner's Testing Agency | ☒ | ☐ | AISC 360, Section A3.5 and applicable AWS A5 documents | - |
<table>
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<th>INSPECTION/TESTING RESPONSIBILITY</th>
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<th>PERIODIC</th>
<th>REFERENCE STANDARD</th>
<th>IBC 2012 REFERENCE</th>
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<tr>
<td>b. Manufacturer’s certificate of compliance required.</td>
<td>☒ 05 12 00</td>
<td>Owner’s Testing Agency</td>
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<td>5. Inspection of welding:</td>
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<td>a. Structural steel and cold-formed steel deck:</td>
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<tr>
<td>1. Complete and partial penetration groove welds.</td>
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<td>Owner’s Testing Agency</td>
<td>☐ ☒</td>
<td>AWS D1.1</td>
<td>1704.3.1</td>
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<td>2. Multi-pass fillet welds.</td>
<td>☒ 05 12 00</td>
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<td>AWS D1.1</td>
<td>1704.3.1</td>
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<td>3. Single-pass fillet welds &gt;5/16”</td>
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<td>Owner’s Testing Agency</td>
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<td>AWS D1.1</td>
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<td>4. Plug and slot welds</td>
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<td>Owner’s Testing Agency</td>
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<td>5. Single-pass fillet welds ≤ 5/16”</td>
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<td>b. Reinforcing steel</td>
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<td>2. Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special reinforced concrete shear walls and shear reinforcement.</td>
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<td>4. Other reinforcing steel.</td>
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<td>6. Inspection of steel frame joint details for compliance with approved construction documents:</td>
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<td>a. Details such as bracing and stiffening.</td>
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<td>c. Application of joint details at each connection.</td>
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**E. STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL**

1. Material verification of cold-formed steel deck:
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<th>PERIODIC</th>
<th>REFERENCE STANDARD</th>
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<td>Applicable ASTM material standards</td>
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<td>b. Manufacturer’s certified test reports</td>
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<td>2. Inspection of welding:</td>
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<td>1) Verification of weldability of reinforcing steel other than ASTM A706.</td>
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<tr>
<td>2) Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement.</td>
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<td>3) Shear reinforcement.</td>
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<td>4) Other reinforcing steel.</td>
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<td>1. Verify element materials below shallow foundations are adequate to achieve the design bearing capacity.</td>
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<td>2. Verify excavations are extended to proper depth and have reached proper material.</td>
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<td>3. Perform classification and testing of compacted fill materials.</td>
<td>31 00 00</td>
<td>Owner's Testing Agency</td>
<td></td>
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<tr>
<td>4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.</td>
<td>31 00 00</td>
<td>Owner's Testing Agency</td>
<td></td>
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<tr>
<td>5. Prior to placement of compacted fill, observe Subgrade and verify that site has been prepared properly.</td>
<td>31 00 00</td>
<td>Owner's Testing Agency</td>
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</tbody>
</table>
“Special Inspections and Tests” Report Requirements:

1. Testing Agency to furnish reports to the appropriate authority and to the registered design professional. Reports to indicate that work inspected is in conformance with the contract documents. Discrepancies to be brought to the immediate attention of the contractor for correction, and reported to the registered design professional. If discrepancies are not corrected they are to be brought to the attention of the appropriate authority and to the registered design professional, prior to completion of that phase of the work. Final reports documenting the tests and inspections along with discrepancies and correction of discrepancies shall be furnished to the appropriate authority and to the registered design professional.
SECTION 019110 COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Commissioning: Commissioning is a systematic process of ensuring that all building systems perform interactively according to the design intent and the owner’s operational needs. This is achieved by beginning in the design phase and documenting design intent and continuing through construction, acceptance and the warranty period with actual verification of performance. The commissioning process shall encompass and coordinate the traditionally separate functions of system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training.

Basic Commissioning during the construction phase is intended to achieve the following specific objectives according to the Contract Documents:

1) Verify that applicable equipment and systems are installed according to the manufacturer’s recommendations and to industry accepted minimum standards and that they receive adequate operational checkout by installing contractors.
2) Verify and document proper performance of equipment and systems.
3) Verify that O&M documentation left on site is complete.
4) Verify that the Owner’s operating personnel are adequately trained.

B. The commissioning process does not take away from or reduce the responsibility of the system designers or installing contractors to provide a finished and fully functioning product.

C. Abbreviations: The following are common abbreviations used in the Specifications and in the Commissioning Plan. Definitions are found in Section 1.06.

A/E- Architect and design engineers
CA- Commissioning Authority
CC  Controls Contractor
CM- Construction Manager (as constructor)
Cx- Commissioning
Cx Plan- Commissioning Plan document
FT- Functional Performance Test
MC- Mechanical Contractor
PC- Pre functional Checklist
Subs- Subcontractors to General
TAB- Test and Balance Contractor
EC- Electrical Contractor
PM Owner’s Project Manager

1.02 COORDINATION

A. Commissioning Team: The members of the commissioning team consist of the Commissioning authority (CA), the Project Manager (PM), the designated representative of the Owner’s Construction Management firm (CM), the architect and design engineers (particularly the mechanical engineer), the Mechanical Contractor (MC), the Electrical Contractor (EC), the TAB representative, the Controls Contractor (CC), any other installing subcontractors or suppliers of equipment. If known, the Owner’s building or plant operator/engineer is also a member of the commissioning team.
B. Management: The CA is hired by the Architect, but reports directly to the Owner. The CA directs and coordinates the commissioning activities and the reports to the CM. All members work together to fulfill their contracted responsibilities and meet the objectives of the Contract Documents. The CA’s responsibilities are the same regardless of who hired the CA.

C. Scheduling: The CA will work with the CM according to established protocols to schedule the commissioning activities. The CA will provide sufficient notice to the CM for scheduling commissioning activities. The CM will integrate all commissioning activities into the master schedule. All parties will address scheduling problems and make necessary notifications in a timely manner in order to expedite the commissioning process.

The CA will provide the initial schedule of primary commissioning events at the commissioning scoping meeting held after the contracts are awarded. As construction progresses more detailed commissioning schedules are developed by the CM in collaboration with the CA.

1.03 COMMISSIONING PROCESS

A. Commissioning Plan: The commissioning plan provides guidance in the execution of the commissioning process. Just after the initial commissioning scoping meeting the CA will update the plan which is then considered the “final” plan, though it will continue to evolve and expand as the project progresses. The Specifications will take precedence over the Commissioning Plan.

B. Commissioning Process: The following narrative provides a brief overview of the typical commissioning tasks during construction and the general order in which they occur.

1. Commissioning during construction begins with a scoping meeting conducted by the CA where the commissioning process is reviewed with the commissioning team members.
2. Additional meetings will be required throughout construction, scheduled by the CA through the GC with necessary parties attending, to plan, scope, coordinate, schedule future activities and resolve problems.
3. Equipment documentation is submitted to the CA during normal submittals, for detailed start-up procedures only. Submittal approvals will be by the A/E team.
4. The CA works with the Subs in developing startup plans and startup documentation formats, including providing the Subs with pre-functional checklists to be completed, during the startup process.
5. In general, the checkout and performance verification proceeds from simple to complex; from component level to equipment to systems and intersystem levels with pre-functional checklists being completed before functional testing.
6. The Subs, under their own direction, execute and document the pre-functional checklists and perform startup and initial checkout. The CA documents that the checklists and startup were completed according to the approved plans. This may include the CA witnessing start-up of selected equipment.
7. The CA develops specific equipment and system functional performance test procedures. The Subs review the procedures.
8. The procedures are executed by the Subs, under the direction of, and documented by the CA.
9. Items of non-compliance in material, installation or setup are corrected at the Sub’s expense and the system retested.
10. The CA only reviews the O&M documentation for completeness.
11. Commissioning is completed before Substantial Completion of the project.
12. The CA reviews, pre-approves the training provided by the Subs and verifies that is was completed. The CM coordinates the training with the Owners and staff.
13. Deferred testing is conducted, as specified or required.
14. The CA delivers a notebook and CD covering the completed Cx process to the Owner.

1.04 RELATED WORK

A. Specific commissioning requirements are given in the following sections of these specifications. All of the following sections apply to the Work of this section.

013300 Submittals \- Alerts all parties that additional detail in submittals may be required and directs to Divisions 22, 23, 26 & 27.

017800 Contract Close-Out \- Defines Substantial Completion and Functional Completion milestones, relative to commissioning.

019110 Commissioning Requirements \- Describes the commissioning process, responsibilities common to all parties, responsibilities of the A/E, CA, CM, and Suppliers, focusing on the CA. The unique MC, CC, TAB and EC responsibilities are included in Div. 23 and 26.

230959 \- Lists special requirements and alerts the controls contractor of the special requirements of the control contractor and control system.

260599 Basic Electrical Materials and Methods \- Alerts the Electrical Contractor of Cx responsibilities in Division 26 & 27.

265100.3.3 \- Describes the Cx responsibilities of the Electrical Contractor to the lighting control devices.

265100.3.5

1.05 RESPONSIBILITIES

A. The responsibilities of various parties in the commissioning process are provided in this section. The responsibilities of the mechanical contractor, TAB and controls contractor are in Division 23 and those of the electrical contractor in Division 26. It is noted that the services for the Project Manager, Construction Manager, Architect, HVAC mechanical and electrical designers/engineers, and Commissioning authority are not provided for in this contract. That is, the Contractor is not responsible for providing their services. Their responsibilities are listed here to clarify the commissioning process.

B. All Parties

1. Attend commissioning scoping meeting and all additional meetings, as necessary.

C. Architect (of A/E)

Construction and Acceptance Phase

1. Perform normal submittal review, construction observation, as-built drawing preparation,
O&M manual preparation, etc., as contracted.

2. Coordinate resolution of system deficiencies identified during commissioning, according to the contract documents.
3. Review and approve the O&M manuals.

D. Mechanical and Electrical Designers/Engineers (of the A/E)

Construction and Acceptance Phase
1. Perform normal submittal review, construction observation, as-built drawing preparation, etc., as contracted. One site observation should be completed just prior to system startup.
2. Provide any design narrative and sequences documentation requested by the CA. The designers shall assist (along with the contractors) in clarifying the operation and control of commissioned equipment in areas where the specifications, control drawings or equipment documentation is not sufficient for writing detailed testing procedures.
3. Attend commissioning scoping meetings and other selected commissioning team meetings as requested.
4. Participate in the resolution of system deficiencies identified during commissioning, according to the contract documents.
5. Do the required final systems review and prepare final punch list and back check that all items are complete.

E. Commissioning Authority (CA)

The CA is not responsible for design concept, design criteria, compliance with codes, design or general construction scheduling, cost estimating, or construction management. The CA may assist with problem-solving non-conformance or deficiencies, but ultimately that responsibility resides with the CM and the A/E. The primary role of the CA is to develop and coordinate the execution of a testing plan, observe and document performance—which systems are functioning in accordance with the documented design intent and in accordance with the Contract Documents. The Contractors will provide all labor, tools or the use of tools to start, check-out and functionally test equipment and systems, except for specified testing with portable data-loggers, which shall be supplied and installed by the CA at the Owner’s expense.

Construction and Acceptance Phase
1. Coordinates and directs the commissioning activities in a logical, sequential and efficient manner using consistent protocols and forms, centralized documentation, clear and regular communications and consultations with all necessary parties, frequently updated timelines and schedules and technical expertise.
2. Coordinate the commissioning work and, with the CM, ensure that commissioning activities are being scheduled into the master schedule.
3. Revise, as necessary, the Draft 2, Commissioning Plan—Construction Phase.
4. Plan and conduct a commissioning scoping meeting and other commissioning meetings as required.
5. Request and review additional information required to perform commissioning tasks, including O&M materials, contractor start-up and checkout procedures.
6. Before startup, gather and review the current control sequences and interlocks and work with contractors and design engineers until sufficient clarity has been obtained, in writing, to be
able to write detailed testing procedures.

7. Contractor submittals approved by A/E applicable to systems being commissioned for compliance with commissioning needs will be used by the CA as the design intent.

8. Write and distribute pre-functional tests and checklists.

9. Develop an enhanced start-up and initial systems checkout plan with Subs.

10. Perform site visits, as necessary, to observe component and system installations. Attends selected planning and job-site meetings to obtain information on construction progress. Review construction meeting minutes for revisions/substitutions relating to the commissioning process. Assist in resolving any discrepancies.

11. Witness all or part of the HVAC piping test and flushing procedure, sufficient to be confident that proper procedures were followed. Document this testing and include the documentation in O&M manuals will be by CM. Notify Owner's project manager of any deficiencies in results or procedures.

12. Witness all or part of any ductwork testing and cleaning procedures, sufficient to be confident that proper procedures were followed. Document this testing and include the documentation in O&M manuals will be by CM. Notify Owner’s project manager of any deficiencies in results or procedures.

13. Approve pre-functional tests and checklist completion by reviewing pre-functional checklist reports and by selected site observation and spot checking.

14. Approve systems startup by reviewing start-up reports and by selected site observation submitted by contractors.

15. Review TAB execution plan.

16. Oversee sufficient functional testing of the control system and approve it to be used for TAB, before TAB is executed.

17. Approve air and water systems balancing by spot testing, by reviewing completed reports and by selected site observation.

18. With necessary assistance and review from installing contractors, develop functional performance test procedures for equipment and systems. This may include energy management control system trending, manual functional testing. Submit to CM for review, and for approval if required.

19. Coordinate, witness and approve manual functional performance tests performed by installing contractors. Coordinate retesting as necessary until satisfactory performance is achieved. Perform actual functional testing on equipment so specified in Divisions 22, 23, 26 and 27.

20. Maintain a master deficiency and resolution log and a separate testing record – normally by e-mail.

21. The training of the Owner’s operating personnel by Contractor is to be reviewed.

22. O&M manuals after initial approval by the A/E Team are to be turned over to the PM without CA review by the CM.

23. Provide a final commissioning report (as described in this section)i.e., notebook with CD to the Owner.

Warranty Period

1. Coordinate and supervise required seasonal or deferred testing and deficiency corrections.

F. Construction Manager (CM).

Construction and Acceptance Phase

1. Facilitate the coordination of the commissioning work by the CA and ensure that commissioning activities are being scheduled into the master schedule.
2. Attend a commissioning scoping meeting and other commissioning team meetings.
3. Furnish a copy of all construction documents, addenda, change orders and approved submittals and shop drawings related to commissioned equipment to the CA.
4. Review the functional performance test procedures submitted by the CA, prior to testing.
5. Review commissioning progress and deficiency reports.
6. Coordinate the resolution of non-compliance and design deficiencies identified in all phases of commissioning.
7. Assist in coordinating the training of Owner personnel, and preparation and turnover of the O&M Manuals.

Warranty Period
1. Assist the CA as necessary in the seasonal or deferred testing and deficiency corrections required by the specifications.

G. Equipment Suppliers & Contractors
1. Provide all requested submittal data, including detailed start-up procedures and specific responsibilities of the Owner to keep warranties in force.
2. Assist in equipment testing per agreements with Subs.
3. Include all special tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment according to these Contract Documents in the base bid price to the Contractor, except for stand-alone data logging equipment that may be used by the CA.
4. Through the contractors they supply products to, analyze specified products and verify that the designer has specified the newest most updated equipment reasonable for this project’s scope and budget.
5. Provide information requested by CA regarding equipment sequence of operation and testing procedures.
6. Review test procedures for equipment installed on start-up by factory representatives, and maintain warranties.

1.06 DEFINITIONS

Acceptance Phase: Phase of construction after startup and initial checkout when functional performance tests, O&M documentation review and training occurs.

Approval: Acceptance that a piece of equipment or system has been properly installed and is functioning in the tested modes according to the Contract Documents.

Architect / Engineer (A/E): The prime consultant (architect) and sub-consultants who comprise the design team, generally the HVAC mechanical designer/engineer and the electrical designer/engineer.

Basis of Design: The basis of design is the documentation of the primary thought processes and assumptions behind design decisions that were made to meet the design intent. The basis of design describes the systems, components, conditions and methods chosen to meet the intent. Some reiterating of the design intent may be included.

Commissioning authority (CA): An independent agent, not otherwise associated with the A/E team members or the Contractor, though he/she may be hired as a subcontractor to them. The CA directs and coordinates the day-to-day commissioning activities. The CA does not take an
Commissioning Plan: An overall plan, developed before or after bidding, that provides the structure, schedule and coordination planning for the commissioning process.

Contract Documents: The documents binding on parties involved in the construction of this project (drawings, specifications, change orders, amendments, contracts, Cx Plan, etc.).

Contractor: The general contractor or authorized representative.

Control System: The central building energy management control system.

Construction Manager (CM) as Constructor: The organization contracted by the owner to provide complete project construction services. In general, the construction manager (CM) is hired by the owner to manage the project delivery, excluding providing the A/E services. The CM manages the construction process including contracting, supervising and on-site managing authority over a project’s construction. The CM is the Owner’s on-site representative, unless otherwise specified.

Data Logging: Monitoring flows, currents, status, pressures, etc. of equipment using stand-alone data loggers separate from the control system.

Deferred Functional Tests: FTs that are performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions that disallow the test from being performed.

Deficiency: A condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents (that is, does not perform properly or is not complying with the design intent).

Design Intent: A dynamic document that provides the explanation of the ideas, concepts and criteria that are considered to be very important to the owner. It is initially the outcome of the programming and conceptual design phases.

Design Narrative or Design Documentation: Sections of either the Design Intent or Basis of Design.

Factory Testing: Testing of equipment on-site or at the factory by factory personnel with an Owner’s representative present.

Functional Performance Test (FT): Test of the dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods. Functional testing is the dynamic testing of systems (rather than just components) under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure set point). Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The systems are run through all the control system’s sequences of operation and components are verified to be responding as the sequences state. Traditional air or water test and balancing (TAB) is not functional testing, in the commissioning sense of the word. TAB’s primary work is setting up the system flows and pressures as specified, while functional testing is verifying that which has already been set up. The commissioning authority develops the functional test procedures in a sequential written form, coordinates, oversees and documents the actual testing, which is usually performed by the installing contractor or vendor. FTs are performed after pre-functional checklists and startups are complete.

General Contractor: The organization contracted by the owner to provide complete project construction services. In general, the General Contractor (GC) is hired by the owner to
provide complete construction services, excluding providing the A/E services. The GC manages the construction process including contracting, supervising and on-site managing authority over a project’s construction. (This is not a GC project.)

Indirect Indicators: Indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100% closed.

Manual Test: Using hand-held instruments, immediate control system readouts or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the “observation”).

Monitoring: The recording of parameters (flow, current, status, pressure, etc.) of equipment operation using data loggers or the trending capabilities of control systems.

Non-Compliance: See Deficiency.

Non-Conformance: See Deficiency.

Over-written Value: Writing over a sensor value in the control system to see the response of a system (e.g., changing the outside air temperature value from 50F to 75F to verify economizer operation). See also “Simulated Signal.”

Owner-Contracted Tests: Tests paid for by the Owner outside the CM’s contract and for which the CA does not oversee. These tests will not be repeated during functional tests if properly documented.

Phased Commissioning: Commissioning that is completed in phases (by floors, for example) due to the size of the structure or other scheduling issues, in order minimize the total construction time.

Pre-functional Checklist (PC): A list of items to inspect and elementary component tests to conduct to verify proper installation of equipment, provided by the CA to the Sub. Pre-functional checklists are primarily static inspections and procedures to prepare the equipment or system for initial operation (e.g., belt tension, oil levels OK, labels affixed, gages in place, sensors calibrated, etc.). However, some pre-functional checklist items entail simple testing of the function of a component, a piece of equipment or system (such as measuring the voltage imbalance on a three phase pump motor of a chiller system). The word pre-functional refers to before functional testing. Pre-functional checklists augment and are combined with the manufacturer’s start-up checklist. Even without a commissioning process, contractors typically perform some, if not many, of the pre-functional checklist items a commissioning authority will recommend. However, few contractors document in writing the execution of these checklist items. Therefore, for most equipment, the contractors execute the checklists on their own. The commissioning authority only requires that the procedures be documented in writing, and does not witness much of the pre-functional check-listing, except for larger or more critical pieces of equipment.

Project Manager (PM): The contracting and managing authority for the owner over the design and/or construction of the project, a staff position.

Sampling: Functionally testing only a fraction of the total number of identical or near identical pieces of equipment. Refer to Section 019110 Part 3.06 Section F for details.

Seasonal Performance Tests: FT that are deferred until the system(s) will experience conditions closer to their design conditions.

Simulated Condition: Condition that is created for the purpose of testing the response of a system (e.g., applying a hair blower to a space sensor to see the response in a VAV box).

Simulated Signal: Disconnecting a sensor and using a signal generator to send an amperage,
1.07 SYSTEMS TO BE COMMISSIONED

A. The following systems will be commissioned in this project.

<table>
<thead>
<tr>
<th>Equipment and System</th>
<th>Functional Test Requirements Specified In</th>
<th>Equipment and System</th>
<th>Functional Test Requirements Specified In</th>
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<td><strong>Plumbing System</strong></td>
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<td><strong>Electrical System</strong></td>
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<td>Identification &amp; Specialties</td>
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<td>Lavatory Sinks &amp; Trim</td>
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<td><strong>Clean &amp; Disinfect d</strong></td>
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<td>Piping (gas &amp; hydronic), insulation</td>
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<td>&amp; identification</td>
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<td>Centrifugal Fans</td>
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PART 2 - PRODUCTS

2.01 TEST EQUIPMENT

A. All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the Division contractor for the equipment being tested. For example, the mechanical contractor of Division 23 shall ultimately be responsible for all standard testing equipment for the HVAC system and controls system in Division 23, except for equipment specific to and used by TAB in their commissioning responsibilities. Two-way radios shall be provided by the Division Controller and required.

B. Special equipment, tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment, according to these Contract Documents shall be included in the base bid price to the Contractor and left on site.

C. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Specifications. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a certified calibration within the past year to an accuracy of 0.5°F and a resolution of ±0.1°F. Pressure sensors shall have an accuracy of ±0 or ±2.0% of the value range being measured (not full range of meter) and have been calibrated within the last year. All equipment shall be calibrated according to the manufacturer’s recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.

PART 3 - EXECUTION

3.01 MEETINGS

A. Scoping Meeting. Prior to the start of formal commissioning activities, the CA will schedule, plan and conduct a commissioning scoping meeting with the entire commissioning team in attendance. Meeting minutes will be distributed to all parties by the CA by e-mail.

B. Miscellaneous Meetings. Other meetings will be planned and conducted by the CA as construction progresses. These meetings will cover coordination, deficiency resolution and planning issues with particular Subs. The CA will plan these meetings and will minimize unnecessary time being spent by Subs.

3.02 REPORTING (All by E-mail)

A. The CA will provide regular reports to the CM, depending on the management structure, with increasing frequency as construction and commissioning progresses, but reports directly to the Owner.

B. The CA will regularly communicate with all members of the commissioning team, keeping them apprised of commissioning progress and scheduling changes through memos, progress reports, etc.

C. Testing or review approvals and non-conformance and deficiency reports are made regularly with the review and testing as described in later sections.
D. A final summary report by the CA will be provided to the CM, focusing on evaluating commissioning process issues and identifying areas where the process could be improved. All acquired documentation, logs, minutes, reports, deficiency lists, communications, findings, unresolved issues, etc., will be compiled in appendices and provided with the summary report.

3.03 SUBMITTALS

A. The CA will provide appropriate contractors with a specific request for the type of submittal documentation the CA requires to facilitate the commissioning work. These requests will be integrated into the normal submittal process and protocol of the construction team. At minimum, the request will include the manufacturer and model number, the manufacturer’s printed installation and detailed start-up procedures, full sequences of operation, O&M data, performance data, any performance test procedures, control drawings and details of owner contracted tests. In addition, the installation and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the Commissioning authority. All documentation requested by the CA will be included by the Subs in their O&M manual contributions.

B. The Commissioning authority will review submittals related to the commissioned equipment for conformance to the Contract Documents as it relates to the commissioning process, to the functional performance of the equipment and adequacy for developing test procedures. This review is intended primarily to aid in the development of functional testing procedures and only secondarily to verify compliance with equipment specifications. The Commissioning authority will notify the CM or A/E as requested, of items missing or areas that are not in conformance with Contract Documents and which require resubmission.

C. The CA may request additional design narrative from the A/E and Controls Contractor, depending on the completeness of the design intent documentation and sequences provided with the Specifications.

D. These submittals to the CA do not constitute compliance for O&M manual documentation. The O&M manuals are the responsibility of the Contractor, though the CA will review them as required.

3.04 START-UP, PREFUNCTIONAL CHECKLISTS AND INITIAL CHECKOUT

A. The following procedures apply to all equipment to be commissioned, as noted above in 1.07 Systems to be commissioned. Some systems that are not comprised so much of actual dynamic machinery, e.g., electrical system power quality, may have very simplified PCs and startup.

B. General: Pre-functional checklists are important to ensure that the equipment and systems are hooked up and operational. It ensures that functional performance testing (in-depth system checkout) may proceed without unnecessary delays. Each piece of equipment receives full pre-functional checkout. No sampling strategies are used. The pre-functional testing for a given system must be successfully completed prior to formal functional performance testing of equipment or subsystems of the given system.
C. Start-up and Initial Checkout Plan: The CA shall assist the commissioning team members responsible for startup of any equipment in developing detailed start-up plans for all equipment. The primary role of the CA in this process is to ensure that there is written documentation that each of the manufacturer-recommended procedures have been completed.

1. The CA adapts, if necessary, the representative pre-functional checklists and procedures from 1.07 above. These checklists indicate required procedures to be executed as part of startup and initial checkout of the systems and the party responsible for their execution.

2. These checklists and tests are provided by the CA to the Contractor. The Contractor determines which trade is responsible for executing and documenting each of the line item tasks and notes that trade on the form. Each form will have more than one trade responsible for its execution.

3. The subcontractor responsible for the purchase of the equipment develops the full start-up plan by combining (or adding to) the CA’s checklists with the manufacturer’s detailed start-up and checkout procedures from the O&M manual and the normally used field checkout sheets. The plan will include checklists and procedures with specific boxes or lines for recording and documenting the checking and inspections of each procedure and a summary statement with a signature block at the end of the plan.

The full start-up plan could consist of something as simple as:
   a. The CA’s pre-functional checklists.
   b. The manufacturer’s standard written start-up procedures copied from the installation manuals with check boxes by each procedure and a signature block added by hand at the end.
   c. The manufacturer’s normally used field checkout sheets.

4. The subcontractor submits the full startup plan to the CA for review and approval.

5. The CA reviews and approves the procedures and the format for documenting them, noting any procedures that need to be added.

6. The full start-up procedures and the approval form may be provided to the CM for review and approval, depending on management protocol.

D. Sensor and Actuator Calibration:
All field-installed temperature, relative humidity, CO, CO² and pressure sensors and gages, and all actuators (dampers and valves) on all equipment shall be calibrated using the methods described below. Alternate methods may be used, if approved by the Owner before-hand. All test instruments shall have had a certified calibration within the last 12 months. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.

All procedures used shall be fully documented on the pre-functional checklists or other suitable forms, clearly referencing the procedures followed and written documentation of initial, intermediate and final results.

Sensor Calibration Methods:
All Sensors: Verify that all sensor locations are appropriate and away from causes of erratic
operation. Verify that sensors with shielded cable are grounded only at one end. For sensor pairs that are used to determine a temperature or pressure difference, make sure they are reading within 0.2°F of each other for temperature and within a tolerance equal to 2% of the reading, of each other, for pressure. Tolerances for critical applications may be tighter.

Sensors without Transmitters: Standard Application. Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage or building automation system (BAS)) is within the tolerances in the table below of the instrument-measured value. If not, install offset in BAS, calibrate or replace sensor.

Sensors with Transmitters: Standard Application. Disconnect sensor. Connect a signal generator in place of sensor. Connect ammeter in series between transmitter and BAS control panel. Using manufacturer’s resistance-temperature data, simulate minimum desired temperature. Adjust transmitter potentiometer zero until 4 mA is read by the ammeter. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the BAS. Record all values and recalibrate controller as necessary to conform with specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction. Reconnect sensor. Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage or building automation system (BAS)) is within the tolerances in the table below of the instrument-measured value. If not, replace sensor and repeat. For pressure sensors, perform a similar process with a suitable signal generator.

Critical Applications: For critical applications (process, manufacturing, etc.) more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.

Tolerances, Standard Applications:

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Required Tolerance (±/−)</th>
<th>Sensor</th>
<th>Required Tolerance (±/−)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling coil, chilled and condenser water temps</td>
<td>0.4F</td>
<td>Flow rates, water</td>
<td>4% of design</td>
</tr>
<tr>
<td>AHU wet bulb or dew point</td>
<td>2.0F</td>
<td>Relative humidity</td>
<td>4% of design</td>
</tr>
<tr>
<td>Hot water coil and boiler water temp</td>
<td>1.5F</td>
<td>Combustion flue temps</td>
<td>5.0F</td>
</tr>
<tr>
<td>Outside air, space air, duct air temps</td>
<td>0.4F</td>
<td>Oxygen or CO₂ monitor</td>
<td>0.1 % pts</td>
</tr>
<tr>
<td>Watt-hour, voltage &amp; amperage</td>
<td>1% of design</td>
<td>CO monitor</td>
<td>0.01 % pts</td>
</tr>
<tr>
<td>Pressures, air, water and gas</td>
<td>3% of design</td>
<td>Natural gas and oil flow rate</td>
<td>1% of design</td>
</tr>
<tr>
<td>Flow rates, air</td>
<td>10% of design</td>
<td>Steam flow rate</td>
<td>3% of design</td>
</tr>
<tr>
<td>Barometric pressure</td>
<td>0.1 in. of Hg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Valve and Damper Stroke Setup and Check

EMS Readout: For all valve and damper actuator positions checked, verify the actual position against the BAS readout.

Set pumps or fans to normal operating mode. Command valve or damper closed, visually verify that valve or damper is closed and adjust output zero signal as required. Command valve or damper open, verify position is full open and adjust output signal as required. Command valve or damper to a few intermediate positions. If actual valve or damper position doesn’t reasonably correspond, replace actuator or add pilot positioner (for pneumatics).

Closure for hydronic heating coil valves (NO): Set heating set point 20°F above room temperature. Observe valve open. Remove control air or power from the valve and verify that the valve stem and actuator position do not change. Restore to normal. Set heating set point to 20°F below room temperature. Observe the valve close. For pneumatics, by override in the EMS, increase pressure to valve by 3 psi (do not exceed actuator pressure rating) and verify valve stem and actuator position does not change. Restore to normal.

Closure for hydronic cooling coil valves (NC): Set cooling set point 20°F above room temperature. Observe the valve close. Remove control air or power from the valve and verify that the valve stem and actuator position do not change. Restore to normal. Set cooling set point to 20°F below room temperature. Observe valve open. For pneumatics, by override in the EMS, increase pressure to valve by 3 psi (do not exceed actuator pressure rating) and verify valve stem and actuator position does not change. Restore to normal.

E. Execution of Pre-functional Checklists and Startup:

1. Four weeks prior to startup, the Subs and vendors schedule startup and checkout with the CM and CA. The performance of the pre-functional checklists, startup and checkout are directed and executed by the Sub or vendor. When checking off pre-functional checklists, signatures may be required of other Subs for verification of completion of their work.

2. The CA shall observe, at minimum, the procedures for each piece of primary equipment, unless there are multiple units, (in which case a sampling strategy may be used as approved by the CM). In no case will the number of units witnessed be less than four on any one building, nor less than 20% of the total number of identical or very similar units. (No sampling for this project.)

3. For lower-level components of equipment, (e.g., VAV boxes, sensors, controllers), the CA shall observe a sampling of the pre-functional and start-up procedures. The sampling procedures are identified in the commissioning plan. (No sampling for this project.)

4. The Subs and vendors shall execute startup and provide the CA with a signed and dated copy of the completed start-up and pre-functional tests and checklists.

5. Only individuals that have direct knowledge and witnessed that a line item task on the pre-functional checklist was actually performed shall initial or check that item off. It is not acceptable for witnessing supervisors to fill out these forms.
F. Deficiencies, Non-Conformance and Approval in Checklists and Startup:

1. The Subs shall clearly list any outstanding items of the initial start-up and pre-functional procedures that were not completed successfully, at the bottom of the procedures form or on an attached sheet. The procedures form and any outstanding deficiencies are provided to the CA within two days of test completion.

2. The CA reviews the report and submits either a non-compliance report or an approval form to the Sub or CM. The CA shall work with the Subs and vendors to correct and retest deficiencies or uncompleted items. The CA will involve the CM and others as necessary. The installing Subs or vendors shall correct all areas that are deficient or incomplete in the checklists and tests in a timely manner, and shall notify the CA as soon as outstanding items have been corrected and resubmit an updated start-up report and a Statement of Correction on the original non-compliance report. When satisfactorily completed, the CA recommends approval of the execution of the checklists and startup of each system to the CM using a standard form.

3. Items left incomplete, which later cause deficiencies or delays during functional testing may result in back charges to the responsible party. Refer to Part 3.07 herein for details.

3.05 PHASED COMMISSIONING

A. The project will not require startup and initial checkout to be executed in phases. Cx will be planned and scheduled in a coordination meeting of the CA, CM, mechanical, TAB and controls contractor. Results will be added to the master and commissioning schedule.

3.06 FUNCTIONAL PERFORMANCE TESTING

A. This sub-section applies to all commissioning functional testing for all divisions.

B. The general list of equipment to be commissioned is found in Section 019110, Part 1.07. The specific equipment and modes to be tested are found in the Functional Performance Tests (FPTs) provided by the CA.

C. The parties responsible to execute each test are listed in this Section are as follows:

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Responsible Parties</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Plumbing Pipe/Installation Specialties</td>
<td>CM, MC, CA</td>
</tr>
<tr>
<td>- Water Closets, Urinals, Lavatories</td>
<td>CM, MC, CA</td>
</tr>
<tr>
<td>- Lighting Controls, Clocks &amp; Intercom, Fire Alarm</td>
<td>CM, EC, Equip. Supplier, CA</td>
</tr>
<tr>
<td>- Ductwork &amp; Accessories</td>
<td>CM, MC, Subs, CA, TAB</td>
</tr>
<tr>
<td>- Piping (Gas &amp; Hydronic) Insulation</td>
<td>CM, MC, CA</td>
</tr>
<tr>
<td>- Air Diffusers, Registers, Grilles</td>
<td>CM, MC, CA</td>
</tr>
<tr>
<td>- Packaged Outdoor Air Handler</td>
<td>CM, MC, CC, TAB, Equip. Supplier, CA</td>
</tr>
<tr>
<td>- VAV Boxes</td>
<td>CM, MC, CC, TAB, Equip. Supplier, CA</td>
</tr>
<tr>
<td>- Centrifugal Fan</td>
<td>CM, MC, TAB, CA</td>
</tr>
<tr>
<td>- HVAC Controls</td>
<td>CM, MC, CC, TAB, CA</td>
</tr>
<tr>
<td>- TAB</td>
<td>CM, MC, TAB, CA, CC</td>
</tr>
<tr>
<td>- Unit Heaters</td>
<td>CM, MC, CC, CA, TAB</td>
</tr>
</tbody>
</table>
D. Objectives and Scope: The objective of functional performance testing is to demonstrate that each system is operating according to the documented design intent and Contract Documents. Functional testing facilitates bringing the systems from a state of substantial completion to full dynamic operation. Additionally, during the testing process, areas of deficient performance are identified and corrected, improving the operation and functioning of the systems.

In general, each system should be operated through all modes of operation (seasonal, occupied, unoccupied, warm-up, cool-down, part- and full-load) where there is a specified system response. Verifying each sequence in the sequences of operation is required. Proper responses to such modes and conditions as power failure, freeze condition, low oil pressure, no flow, equipment failure, etc. shall also be tested.

E. Development of Test Procedures: Before test procedures are written, the CA shall obtain all requested documentation and a current list of change orders affecting equipment or systems, including an updated points list, program code, control sequences and parameters. Using the testing parameters and requirements in this Section and Section 230000, the CA shall develop specific test procedures and forms to verify and document proper operation of each piece of equipment and system. Each Sub or vendor responsible to execute a test, shall provide limited assistance to the CA in developing the procedures review (answering questions about equipment, operation, sequences, etc.). Prior to execution, the CA shall provide a copy of the test procedures to the Sub(s) who shall review the tests for feasibility, safety, equipment and warranty protection. The CA may submit the tests to the A/E for review, if requested.

The CA shall review owner-contracted, factory testing or required owner acceptance tests which the CA is not responsible to oversee, including documentation format, and shall determine what further testing or format changes may be required to comply with the Specifications. Redundancy of testing shall be minimized.

The purpose of any given specific test is to verify and document compliance with the stated criteria of acceptance given on the test form.

Representative test formats and examples (not designed for this facility) are found in the appendices to Section 230000 and 260000. The test procedure forms developed by the CA shall include (but not be limited to) the following information:

1. System and equipment or component name(s).
2. Equipment location and ID number.
3. Date.
4. Project name.
5. Participating parties.
6. Special cautions, alarm limits, etc.
7. Specific step-by-step procedures to execute the test, in a clear, sequential and repeatable format.
8. Acceptance criteria of proper performance with a Yes / No check box to allow for clearly marking whether or not proper performance of each part of the test was achieved.
9. A section for comments and field notes.
10. Signatures and date block for the CA.

F. Test Methods:

1. Functional performance testing and verification may be achieved by manual testing (persons manipulate the equipment and observe performance) or by monitoring the performance and analyzing the results using the control system’s trend log capabilities or by stand-alone data loggers. The CA may substitute specified methods or require an additional method to be executed, other than what was specified, with the approval of the CM. This may require a change order and adjustment in charge to the Owner. The CA will determine which method is most appropriate for tests that do not have a method specified.

2. Simulated Conditions: Simulating conditions (not by an overwritten value) shall be allowed, though timing the testing to experience actual conditions is encouraged wherever practical.

3. Overwritten Values: Overwriting sensor values to simulate a condition, such as overwriting the outside air temperature reading in a control system to be something other than it really is, shall be allowed, but shall be used with caution and avoided when possible. Such testing methods often can only test a part of a system, as the interactions and responses of other systems will be erroneous or not applicable. Simulating a condition is preferable. e.g., for the above case, by heating the outside air sensor with a hair blower rather than overwriting the value or by altering the appropriate set point to see the desired response. Before simulating conditions or overwriting values, sensors, transducers and devices shall have been calibrated.

4. Simulated Signals: Using a signal generator which creates a simulated signal to test and calibrate transducers and DDC constants is generally recommended over using the sensor to act as the signal generator via simulated conditions or overwritten values.

5. Altering Set Points: Rather than overwriting sensor values, and when simulating conditions is difficult, altering set points to test a sequence is acceptable. For example, to see the AC compressor lockout work at an outside air temperature below 55F, when the outside air temperature is above 55F, temporarily change the lockout set point to be 2F above the current outside air temperature.

6. Indirect Indicators: Relying on indirect indicators for responses or performance shall be allowed only after visually and directly verifying and documenting, over the range of the tested parameters, that the indirect readings through the control system represent actual conditions and responses. Much of this verification is completed during pre-functional testing.

7. Setup: Each function and test shall be performed under conditions that simulate actual conditions as close as is practically possible. The Sub executing the test shall provide all necessary materials, system modifications, etc. to produce the necessary flows, pressures, temperatures, etc. necessary to execute the test according to the specified conditions. At completion of the test, the Sub shall return all affected building equipment and systems, due to these temporary modifications, to their pre-test condition.

8. Sampling: Multiple identical pieces of non-life-safety or otherwise non-critical equipment
may be functionally tested using a sampling strategy. Significant application differences and significant sequence of operation differences in otherwise identical equipment invalidates their common identity. A small size or capacity difference, alone, does not constitute a difference. It is noted that no sampling by Subs is allowed in pre-functional checklist execution.

A common sampling strategy referenced in the Specifications as the “xx% Sampling—yy% Failure Rule” is defined by the following example.

\[
\begin{align*}
xx &= \text{the percent of the group of identical equipment to be included in each sample.} \\
yy &= \text{the percent of the sample that if failing, will require another sample to be tested.}
\end{align*}
\]

The example below describes a 20% Sampling—10% Failure Rule.

a. Randomly test at least 20% (xx) of each group of identical equipment. In no case test less than three units in each group. This 20%, or three, constitute the “first sample.”
b. If 10% (yy) of the units in the first sample fail the functional performance tests, test another 20% of the group (the second sample).
c. If 10% of the units in the second sample fail, test all remaining units in the whole group.
d. If at any point, frequent failures are occurring and testing is becoming more troubleshooting than verification, the CA may stop the testing and require the responsible Sub to perform and document a checkout of the remaining units, prior to continuing with functionally testing the remaining units.

(No sampling will be done on this project.)

G. Coordination and Scheduling: The Subs shall provide sufficient notice to the CA regarding their completion schedule for the pre-functional checklists and startup of all equipment and systems. The CA will schedule functional tests through the CM and affected Subs. The CA shall direct, witness and document the functional testing of all equipment and systems. The Subs shall execute the tests.

In general, functional testing is conducted after pre-functional testing and startup has been satisfactorily completed. The control system is sufficiently tested and approved by the CA before it is used for TAB or to verify performance of other components or systems. The air balancing and water balancing is completed and debugged before functional testing of air-related or water-related equipment or systems. Testing proceeds from components to subsystems to systems. When the proper performance of all interacting individual systems has been achieved, the interface or coordinated responses between systems is checked.

H. Test Equipment: Refer to Section 019110, Part 2.01 for test equipment requirements.

I. Problem Solving: The CA will recommend solutions to problems found, however the burden of responsibility to solve, correct and retest problems is with the CM, Subs and A/E.
tests using the specific procedural forms developed for that purpose. Prior to testing, these forms are provided to the CM for review and approval and to the Subs for review.

B. Non-Conformance:

1. The CA will record the results of the functional test on the procedure or test form. All deficiencies or non-conformance issues shall be noted and reported to the CM on a standard non-compliance form and forwarded to the A/E team.

2. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CA. In such cases the deficiency and resolution will be documented on the procedure form.

3. Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures. However, the CA will not be pressured into overlooking deficient work or loosening acceptance criteria to satisfy scheduling or cost issues, unless there is an overriding reason to do so at the request of the CM.

4. As tests progress and a deficiency is identified, the CA discusses the issue with the executing contractor.

a. When there is no dispute on the deficiency and the Sub accepts responsibility to correct it:
   1) The CA documents the deficiency and the Sub’s response and intentions and they go on to another test or sequence. After the day’s work, the CA submits the non-compliance reports to the CM for signature, if required. A copy is provided to the Sub and CA. The Sub corrects the deficiency, signs the statement of correction at the bottom of the non-compliance form certifying that the equipment is ready to be retested and sends it back to the CA.

   2) The CA reschedules the test and the test is repeated.

b. If there is a dispute about a deficiency, regarding whether it is a deficiency or who is responsible:
   1) The deficiency shall be documented on the non-compliance form with the Sub’s response and a copy given to the CM and to the Sub representative assumed to be responsible.

   2) Resolutions are made at the lowest management level possible. Other parties are brought into the discussions as needed. Final interpretive authority is with the A/E. Final acceptance authority is with the Project Manager.

   3) The CA documents the resolution process.

   4) Once the interpretation and resolution have been decided, the appropriate party
corrects the deficiency, signs the statement of correction on the non-compliance form and provides it to the CA. The CA reschedules the test and the test is repeated until satisfactory performance is achieved.

5. Cost of Retesting:
   a. The cost for the Sub to retest a pre-functional or functional test, if they are responsible for the deficiency, shall be theirs. If they are not responsible, any cost recovery for retesting costs may be negotiated with the CM.
   b. For a deficiency identified, not related to any pre-functional checklist or start-up fault, the following shall apply: The CA and CM will direct the retesting of the equipment once at no “charge” to the Contractor for their time. However, the CA’s and CM’s time for a second retest will be charged to the Contractor, who may choose to recover costs from the responsible Sub.
   c. The time for the CA and CM to direct any retesting required because a specific pre-functional checklist or start-up test item, reported to have been successfully completed, but determined during functional testing to be faulty, will be back charged to the Contractor, who may choose to recover costs from the party responsible for executing the faulty pre-functional test.
   d. CA will absorb its own costs related to a single startup and a single Functional Test of each item of equipment and each system. If a second or subsequent startup or retest is required for any reason, or if Installing Contractor is not ready for a startup or test at the scheduled time, CM shall compensate Owner for CA’s additional time and expenses. Compensation shall be computed by multiplying hours worked by CA times CA’s hourly billing rate of $175.00 and adding the cost of CA’s expenses (including by way of example but not limitation: air travel, car rental, lodging, long distance, reproduction, special insurance, procured equipment, leased equipment, delivery service, and postage). CM may unilaterally withhold said funds from payments otherwise due to Installing Contractor.
   e. Refer to the sampling section of Section 019110, Part 3.06 for requirements for testing and retesting identical equipment.

6. The Contractor shall respond in writing to the CA and CM at least as often as commissioning meetings are being scheduled concerning the status of each apparent outstanding discrepancy identified during commissioning. Discussion shall cover explanations of any disagreements and proposals for their resolution.

7. The CA retains the original non-conformance forms until the end of the project – e-mails.

8. Any required retesting by any contractor shall not be considered a justified reason for a claim of delay or for a time extension by the prime contractor.

C. Failure Due to Manufacturer Defect: If 10%, or three, whichever is greater, of identical pieces...
(size alone does not constitute a difference) of equipment fail to perform to the Contract Documents (mechanically or substantively) due to manufacturing defect, not allowing it to meet its submitted performance spec, all identical units may be considered unacceptable by the CM or PM. In such case, the Contractor shall provide the Owner with the following:

a. Within one week of notification from the CM or PM, the Contractor or manufacturer’s representative shall examine all other identical units making a record of the findings. The findings shall be provided to the CM within two weeks of the original notice.

b. Within two weeks of the original notification, the Contractor or manufacturer shall provide a signed and dated, written explanation of the problem, cause of failures, etc. and all proposed solutions which shall include full equipment submittals. The proposed solutions shall not significantly exceed the specification requirements of the original installation.

c. The CM will determine whether a replacement of all identical units or a repair is acceptable.

d. Two examples of the proposed solution will be installed by the Contractor and the CM will be allowed to test the installations for up to one week, upon which the CM will decide whether to accept the solution.

e. Upon acceptance, the Contractor and/or manufacturer shall replace or repair all identical items, at their expense and extend the warranty accordingly, if the original equipment warranty had begun. The replacement/repair work shall proceed with reasonable speed beginning within one week from when parts can be obtained.

D. Approval: The CA notes each satisfactorily demonstrated function on the test form. Formal approval of the functional test is made later after review by the CA and by the CM, if necessary. The CA recommends acceptance of each test to the CM using a standard form. The CM gives final approval on each test using the same form, providing a signed copy to the CA and the Contractor.

3.08 OPERATION AND MAINTENANCE MANUALS

A. Standard O&M Manuals:

1. The specific content and format requirements for the standard O&M manuals are detailed in Section 017800.

2. CA Review: Prior to substantial completion, the CA shall review the O&M manuals, documentation and redline as-builds for systems that were commissioned and to verify compliance with the Specifications. The CA will communicate deficiencies in the manuals to the CM or A/E, as requested. Upon a successful review of the corrections, the CA recommends acceptance of these sections of the O&M manuals to the CM or A/E. The CA also reviews each equipment warranty and verifies that all requirements to keep the warranty valid are clearly stated. This work does not supersede the A/E’s review of the O&M manuals according to the A/E’s contract.
3.09 TRAINING OF OWNER PERSONNEL

A. The CM shall be responsible for training coordination and scheduling and ultimately for ensuring that training is completed.

B. The CA shall be responsible for overseeing and approving the content and adequacy of the training of Owner personnel for commissioned equipment.

1. The CA shall interview the facility manager and lead engineer to determine the special needs and areas where training will be most valuable. The Owner and CA shall decide how rigorous the training should be for each piece of commissioned equipment. The CA shall communicate the results to the Subs and vendors who have training responsibilities.

2. In addition to these general requirements, the specific training requirements of Owner personnel by Subs and vendors is specified in Division 23 and 26.

3. Each Sub and vendor responsible for training will submit a written training plan to the CM, A/E and CA for review and approval prior to training. The plan will cover the following elements:
   a. Equipment (included in training).
   b. Intended audience.
   c. Location of training.
   d. Objectives.
      . Subjects covered (description, duration of discussion, special methods, etc.).
   f. Duration of training on each subject.
   g. Instructor for each subject.
   h. Methods (classroom lecture, video, site walk-through, actual operational demonstrations, written handouts, etc.).
   i. Instructor and qualifications.

4. For the primary HVAC equipment, the Controls Contractor shall provide a short discussion of the control of the equipment during the mechanical or electrical training conducted by others.

5. The overall training plan and coordinates and schedules, is by the CM, with overall training for the commissioned systems. The CA reviews criteria for determining that the training was satisfactorily completed, and may include attending some of the training, etc. The CA recommends approval of the training to the CM using a standard form with Owner and A/E approval.

3.10 DEFERRED TESTING

A. Unforeseen Deferred Tests: If any check or test cannot be completed due to the building structure, required occupancy condition or other deficiency, execution of checklists and functional testing may be delayed upon approval of the PM. These tests will be conducted in the same manner as the seasonal tests as soon as possible. Services of necessary parties will be negotiated.
B. Seasonal Testing: During the warranty period, seasonal testing (tests delayed until weather conditions are closer to the system’s design) specified in this Section and Section 230000 and 260000 shall be completed as part of this contract. The CA shall assist in this activity. Tests will be executed, documented and deficiencies corrected by the appropriate Subs, with facilities staff and the CA witnessing. Any final adjustments to the O&M manuals and as-builds due to the testing will be made.

3.11 WRITTEN WORK PRODUCTS

A. The commissioning process generates a number of written work products described in various parts of the Specifications. The Commissioning Plan—Construction Phase, lists all the formal written work products, describes briefly their contents, who is responsible to create them, their due dates, who receives and approves them and the location of the specification to create them. In summary, the written products are:

<table>
<thead>
<tr>
<th>Product</th>
<th>Developed By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Final commissioning plan</td>
<td>CA</td>
</tr>
<tr>
<td>2. Meeting minutes</td>
<td>CA</td>
</tr>
<tr>
<td>3. Commissioning schedules</td>
<td>CA with CM</td>
</tr>
<tr>
<td>4. Equipment documentation submittals</td>
<td>Subs</td>
</tr>
<tr>
<td>5. Sequence clarifications</td>
<td>Subs and A/E as needed</td>
</tr>
<tr>
<td>6. Pre-functional checklists</td>
<td>A/E and CA</td>
</tr>
<tr>
<td>7. Startup and initial checkout plan</td>
<td>Subs and CA (compilation of existing documents)</td>
</tr>
<tr>
<td>8. Startup and initial checkout forms filled out</td>
<td>Subs</td>
</tr>
<tr>
<td>9. Final TAB report</td>
<td>TAB</td>
</tr>
<tr>
<td>10. Issues log (deficiencies)</td>
<td>CA</td>
</tr>
<tr>
<td>11. Deficiency reports</td>
<td>CA</td>
</tr>
<tr>
<td>12. Functional test forms</td>
<td>CA</td>
</tr>
<tr>
<td>13. Filled out functional tests</td>
<td>CA and Subs</td>
</tr>
<tr>
<td>14. O&amp;M manuals</td>
<td>Subs</td>
</tr>
<tr>
<td>15. Overall training plan</td>
<td>CM and Owner (PM)</td>
</tr>
<tr>
<td>16. Specific training agendas</td>
<td>Subs</td>
</tr>
<tr>
<td>17. Final commissioning report</td>
<td>CA</td>
</tr>
</tbody>
</table>

END OF SECTION 019110
SECTION 02 40 00
DEMOLITION AND REMOVAL

PART 1 - GENERAL

1.1 REQUIREMENTS

Work includes demolition and removal of building, pods, sidewalks, etc., indicated or specified. Materials resulting from demolition work, except as indicated or specified otherwise, become the property of the Contractor and shall be removed from the property.

1.2 DUST CONTROL

Take appropriate action to check the spread of dust and to avoid the creation of a nuisance in the surrounding area. Do not use water if it results in hazardous or objectionable conditions, such as ice, flooding or pollution.

1.3 PROTECTIONS

A. Buildings: Protect existing work that is to remain in place. Repair items damaged during performance of the work or replace with new.

B. Personnel Safety: Perform work in a safe manner in order to avoid accidents and property damage. Workmen must be experienced in this type of work. Equipment should be of suitable type, in good working condition, and operated by skilled operators.

C. Traffic: Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Provide alternate routes around closed or obstructed traffic ways.

D. Explosives: Use of explosives will not be permitted.

E. Strictly observe regulations when removing tanks and piping which may contain flammable liquids or gases. Contact and coordinate with appropriate hospital officials as required.

PART 2 - PRODUCTS: Not applicable.

PART 3 - EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

A. Structures: Remove indicated existing structures to 3 feet below proposed finished grade or 1 foot below existing grade, whichever is greater.

B. Salvageable items may be removed any time after the start of the demolition work, on site sale or storage is not permitted. Salvageable items to be designated by the owner prior to demolition.
C. Utilities and Related Equipment:
   1. Prevent damage to overhead and underground cables, telephone, water and sewer lines during the operation.
   2. Arrange with utility companies for disconnection of services and removal of fittings and equipment before starting work.
   3. Notify Owner before disconnecting any utility service.

D. Concrete Slabs: Remove completely all existing concrete, walkways or slabs indicated for removal or any other obstruction which interferes with the construction.

E. Buildings: Buildings shall be removed in their entirety. This includes trailers shown for removal.

F. Filling: Demolition area shall be returned to existing grade with select fill in accord with Section 02200 Earthwork. Select fill is available from site. Contractor to coordinate with A-Del Construction.

G. Utility Removal: Existing utilities shown for removal shall be removed completely to 5 feet outside of the building and shall be capped at that point. All removal shall be in accordance with DNREC requirements.

H. Curb & Gutter: Curb and gutter shall be removed completely after sawcutting a straight edge along the pavement per the plans.

I. Precast Concrete Structures: Precast concrete structures shall be removed completely. Another option would be to remove the first two feet and punch a hole in the bottom. This includes all manholes, catch basins, and pump station structures.

3.2 DISPOSITION OF MATERIAL

Title to Materials: Title to materials and equipment to be removed, except as specified otherwise, is vested in the Contractor upon receipt of notice to proceed. The Owner will not be responsible for the condition or loss of, or damage to, such property after notice to proceed.

3.3 CLEANUP

A. Debris and Rubbish: Remove and transport debris and rubbish in a manner that will prevent spillage on streets or adjacent areas. Cleanup spillage from streets and adjacent areas.

B. Regulations: Comply with Federal, State, and Local hauling and disposal regulations.

END OF SECTION
SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. Earthwork includes: clearing, compaction, embankment, excavation, filling and grading, grubbing & stripping of topsoil.

B. The extent of earthwork is shown on the drawing.
   1. Remove shrubs, trees, grass or obstructions which interfere with new construction and are noted to be removed per drawings. Preparation of subgrade for slabs, pavements, and foundations are also included as part of this work.

1.2 QUALITY ASSURANCE

A. Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

B. Provide soil testing and inspection service. Inspection agency selected and paid by contractor subject to approval of the Engineer.

1.3 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction: Testing agency will inspect and Engineer will approve subgrades and fill layers before further construction work is performed thereon.

B. If, based on reports of Testing Agency and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense.

1.4 JOB CONDITIONS

A. Existing Utilities: Locate existing underground utilities in the areas of work.
   1. Should uncharged or incorrectly charged piping or other utilities be encountered during excavation, consult the Owner immediately for directions as to proceed.
   2. Contact "Miss Utility" and Owner for assistance in locating existing utilities.

B. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
   1. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.
1.5 RELATED WORK SPECIFIED ELSEWHERE

Erosion and Sediment Control: Section 31 25 00

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Subgrade Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand, as acceptable to the Owner.

B. Backfill and Fill Materials: Provide acceptable soil materials for backfill and fill from borrow, or on site stockpile, free of clay, rock, or gravel larger than 1" in any dimension, debris, waste, frozen materials, organic and other deleterious matter. Material to be in accord with governing jurisdiction and specifications: Delaware Standard Specifications for Road and Bridge Construction, August 2001, and all subsequent amendments thereof. DELDOT Type B shall be used unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions under which excavating, filling and grading are to be performed and determine suitability of stockpiled soil for use as backfill and fill material. Do not proceed with the work until unsatisfactory conditions have been corrected and accepted by the Engineer.

B. Soil Bearing Testing
1. The Contractor shall be responsible for testing of the available soil bearing capacity. He shall arrange for such testing by an independent testing agency approved by the Engineer or Architect, the following tests shall be performed:
   a. Minimum one (1) three foot deep penetrometer test and subsequent bearing capacity evaluation per 500 S.F. of structure footprint.
2. The Contractor shall secure the necessary proctor tests and one field density test for every 50 CY of backfill material used for structures and embankments. A minimum of two field density tests per structure or embankment will be required.
3. The Engineer may request the necessary proctor tests and one compaction test per 100 L.F. section of backfilled trenches at any time during backfilling operations or upon completion of the backfill operations.

3.2 EXCAVATION

A. Excavation consists of removal and disposal of material encountered when establishing required grade elevations.
B. Earth excavation consists of removal and disposal of pavements and other obstructions visible on ground surface.

C. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Owner. Under footings, foundation bases or slabs fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, only when acceptable to the Owner. Elsewhere, backfill and compact unauthorized excavation as specified for authorized excavations of same classification, unless otherwise directed by the Owner. Payment will not be made to the contractor for filling unauthorized excavation.

D. Stability of Excavations: Slope side of excavation to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible either because of space restrictions or stability of material excavated.
1. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

E. Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers and crossbraces, in good serviceable condition.
1. Provide minimum requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.
2. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

F. Dewatering: Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.
1. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
2. Convey water removed from excavations and rain water to collecting or run-off areas. Provide and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Comply with applicable sediment control measures. Do not use trench excavations as temporary drainage ditches.
3. Dewatering for the structures and pipelines shall commence when groundwater is first encountered and shall be continued until such time as backfill has been completed. No concrete or pipes shall be laid in water nor shall water be allowed to rise over them until the concrete or mortar has set at least eight (8) hours. Groundwater shall not be allowed to rise around the pipe until the trench is backfilled.
4. The Contractor shall dispose of the water from the work in a suitable manner without damage to adjacent property. No water shall be drained into work built or under construction without prior consent of the Engineer. Water shall be disposed of in such a manner as not to be a menace to the Public Health. Water shall be piped to the nearest point of the municipal storm drainage system as directed by the Engineer. Contractor to provide necessary traffic control to
maintain temporary piping. No discharge to the sanitary sewer system shall be allowed.

5. In the event the Contractor's dewatering operations affect any water supplies within the project area, the Contractor shall take whatever steps that are required to provide uninterrupted water service.

6. The Contractor shall remove any siltation deposits in storm sewer systems, resulting from his dewatering or construction operations. He shall also be responsible for conveyance of dewatering flows and for erosion and sediment control.

G. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
1. Locate and retain soil materials away from edge of excavations.
2. Dispose of excess and/or unsatisfactory soil material and waste materials as specified hereinafter.

H. Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10", and extending a sufficient distance from footings and foundations to permit placing and removal of concrete form work, installation of services, other construction required, and for inspection. In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete is placed. Trim bottoms to required lines and grades to leave solid base to receive concrete.

I. Excavation for Pavements: Cut surface under pavements to comply with cross sections, elevations and grades as shown.

J. Removal of Unsatisfactory Soil Materials: Excavate unsatisfactory soil materials encountered that extend below required elevations, to additional depth directed by the Engineer. Unsatisfactory material is defined as clay, silt, etc. which would not, in the Engineer's opinion, provide adequate strength and would not compact properly. Unsatisfactory material shall be removed from the site.

3.3 COMPACTION

A. General: Control soil compaction during construction providing minimum percentage of density specified for each area classification.

B. Percentage of Maximum Density Requirements: Provide not less than the following percentages of maximum density of soil material compacted at -2 to +2 percent of optimum moisture content, as determined by ASTM D1557, for the actual density of each layer of soil material-in-place.
1. Building Slabs and Steps: Compact top 12" of subgrade, place material in 8" loose layers and compact each layer of backfill or fill material to 95% maximum density.
2. Lawn or Unpaved Areas: Compact top 6" of subgrade, place and compact each layer of backfill or fill material to 90% maximum density.
3. Walkways: Compact top 6" of subgrade. Place material in 8" loose layers and compact each layer of backfill or fill material at 95% maximum density.
4. Pavements: Compact top 12" of subgrade, place material in 8" loose layers and compact each layer of backfill or fill material to 95% maximum density.
5. Pipeline: Backfill in 8" loose layers with mechanical compaction, to 95% maximum density in traffic areas and 90% in non-traffic areas.
6. Backfill in demolition areas: Backfill in 8" loose layers with mechanical compaction to 95% maximum density.
7. Embankments: Place material in 8" loose layers with mechanical compaction to 95% maximum density.

C. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material.

3.4 BACKFILL AND FILL

A. General: Place satisfactory excavated, borrow or stockpiled material in layers to required subgrade elevations.

B. Backfill excavations promptly as work permits, but not until completion of the following:
   1. Acceptance by Engineer of construction below finish grade including, where applicable, dampproofing, and perimeter insulation.
   2. Inspection, testing, approval, and recording locations of underground utilities.
   4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials.
   5. Removal of trash and debris.

C. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.
   1. When existing ground surface has a density less than that specified under "Compaction" for the particular area classification, break up the ground surface, pulverize, moisture-condition to the optimum moisture content and compact to required depth and percentage of maximum density.

D. Placement and Compaction: Place backfill and fill materials in layers not more than 8" in loose depth. Before compaction, moisten or aerate each layer as necessary to provide the optimum moisture content. Compact each layer to required percentage of maximum density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
   1. Place backfill and fill materials evenly adjacent to structures, to required elevations. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around structure to approximately same elevation in each lift.

3.5 GRADING

A. General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.
B. Grading Outside Structures: Grade areas adjacent to structures to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes, and as follows:
1. Grassed Areas: Finish areas to receive topsoil to within not more than 0.10' above or below the required subgrade elevations.
2. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 0.10' above or below the required subgrade elevations.
3. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 0.10' above or below the required subgrade elevation.

C. Grading Surface of Fill Under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 0.2'.

D. Compaction: After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

3.6 MAINTENANCE

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion, and keep free of trash and debris.
1. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

END OF SECTION
SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.1 USE OF EXPLOSIVES
   A. The use of explosives will not be permitted.

1.2 PROTECTION OF PERSONS AND PROPERTY
   A. Clearing and grubbing operations shall be conducted in a manner that will ensure safety of persons and prevent damage to existing structures and utilities, construction in progress, trees, vegetation designated to remain standing including root damage, and other property.

PART 2 - PRODUCTS

2.1 FILL MATERIAL
   A. Fill material needed for filling depressions shall be Delaware Department of Transportation Type B borrow material, in accordance with Section 209 or approved excavated material.

PART 3 - EXECUTION

3.1 CLEARING OPERATIONS
   A. Clearing shall consist of the vegetation designated for removal, including rubbish occurring within the areas to be cleared. Clearing shall also include the complete removal and disposal of the tennis courts that obtrude, encroach upon, or otherwise obstruct the work.

3.2 GRUBBING OPERATIONS
   A. The Contractor shall completely remove all debris protruding through the ground surface. This material shall be excavated and remove to a depth of not less than 12 inches below the surface level of the original ground.

3.3 FILLING DEPRESSIONS
   A. Depressions resulting from grubbing operations shall be completely filled with fill material, unless further excavation or earthwork is indicated.
   
   B. Prior to filling, subgrade surfaces of depressions shall be free of standing water, frost, or frozen material.
   
   C. The Contractor shall place fill material in horizontal layers not to exceed 8 inches in loose depth. Each layer shall be compacted between -2 to +2 percent of the optimum moisture content and to 90% of maximum dry density outside of paving and 95% in areas of proposed paving, as determined by ASTM D1557. The density of soil-in-place shall be
determined in accordance with ASTM D1556, Sand Cone Method or ASTM D2922, Nuclear Method. The surface of filled depressions shall be graded to meet adjacent proposed contours and to provide surface water drainage.

3.4 DISPOSAL OF CLEARED AND GRUBBED MATERIAL

A. Burning of materials on site will not be permitted.

B. Refuse from the clearing and grubbing operations shall be removed for disposal at no additional cost to the Owner. Costs of permits and fees for disposal shall be paid by the Contractor. The Contractor shall be responsible for compliance with federal, state, and local laws and regulations pertaining to the control of environmental pollution, building of fires, and other regulated practices in the disposal of cleared and grubbed materials.

END OF SECTION
SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 USE OF EXPLOSIVES
   A. The use of explosives will not be permitted.

1.2 PROTECTION OF PERSONS AND PROPERTY
   A. Clearing and grubbing operations shall be conducted in a manner that will ensure safety of persons and prevent damage to existing structures and utilities, construction in progress, trees, vegetation designated to remain standing including root damage, and other property.

PART 2 - PRODUCTS

2.1 FILL MATERIAL
   A. Fill material needed for filling depressions shall be Delaware Department of Transportation Type B borrow material, in accordance with Section 209 or approved excavated material.

PART 3 - EXECUTION

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   A. Clearing shall consist of the vegetation designated for removal, including rubbish occurring within the areas to be cleared. Clearing shall also include the complete removal and disposal of the tennis courts that obtrude, encroach upon, or otherwise obstruct the work.

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   A. The Contractor shall completely remove all debris protruding through the ground surface. This material shall be excavated and remove to a depth of not less than 12 inches below the surface level of the original ground.

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   A. Depressions resulting from grubbing operations shall be completely filled with fill material, unless further excavation or earthwork is indicated.
   B. Prior to filling, subgrade surfaces of depressions shall be free of standing water, frost, or frozen material.
   C. The Contractor shall place fill material in horizontal layers not to exceed 8 inches in loose depth. Each layer shall be compacted between -2 to +2 percent of the optimum moisture

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content and to 90% of maximum dry density outside of paving and 95% in areas of proposed paving, as determined by ASTM D1557. The density of soil-in-place shall be determined in accordance with ASTM D1556, Sand Cone Method or ASTM D2922, Nuclear Method. The surface of filled depressions shall be graded to meet adjacent proposed contours and to provide surface water drainage.

3.4 DISPOSAL OF CLEARED AND GRUBBED MATERIAL

A. Burning of materials on site will not be permitted.

B. Refuse from the clearing and grubbing operations shall be removed for disposal at no additional cost to the Owner. Costs of permits and fees for disposal shall be paid by the Contractor. The Contractor shall be responsible for compliance with federal, state, and local laws and regulations pertaining to the control of environmental pollution, building of fires, and other regulated practices in the disposal of cleared and grubbed materials.

END OF SECTION
SECTION 31 23 00

EXCAVATION AND BACKFILL FOR PIPELINES AND STRUCTURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contractor shall perform all excavation, backfilling, grubbing, and grading required for construction and installation of pipelines, structures and appurtenances. Excavation shall include removal of pavement, concrete, rock, earth and debris, regardless of character. Trenches and excavations shall be sheeted, shored and braced by the Contractor, as necessary to allow construction and provide safe working conditions. Additionally, the Contractor shall be responsible for maintaining a dry excavation by dewatering. He shall also locate, support and protect existing utilities and structures encountered in the work, provide traffic control, dispose of surplus and unsuitable excavated materials and restore backfilled areas to original condition or as required by the drawings and specifications. All backfilled and restored areas shall be maintained by the Contractor, in a proper condition, for the duration of the project.

B. The Contractor is responsible for direct or indirect damage to existing structures, pipelines, conduits, poles, wires and utilities of every description in the vicinity of his work whether above or below ground, or that may be encountered in trench or structure excavation. This responsibility shall include the cost of protection by sheeting, bracing, hand excavation, when warranted, and the expense to repair or replace any existing facility damaged directly or indirectly by construction activities under this contract, whether such facility is or is not shown on the drawings.

C. The Contractor shall verify the location, size and elevation of all existing utilities at the various points of connection and/or crossings prior to starting any work. Any discrepancies in locations or elevations shall be brought to the attention of the Engineer in order that the designs may be adjusted accordingly. Damages suffered or additional costs incurred by the Contractor as a result of his failure to conform to the requirements of this paragraph shall be the sole responsibility of the Contractor. Connections to existing utilities shall be made by the Contractor at such a time and in such a manner as the Engineer may direct, and the cost shall be included in the price bid for pipeline and structures, unless otherwise defined in the proposal.

D. Excavation and backfill, within an area where a State agency has jurisdiction, shall be done in accordance with requirements and provisions of the permits issued by the agencies for the construction within their respective rights-of-way. Such requirements and provisions, where applicable, shall take precedence and supersede the provisions of these specifications.

PART 2 - PRODUCTS

2.1 MATERIALS
No classification of excavated materials will be made. Excavation and trenching work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the contract work, regardless of the type, character, composition, or condition thereof.

PART 3 - EXECUTION

3.1 PIPELINE TRENCH EXCAVATION

A. The Contractor shall excavate, maintain and backfill all excavation necessary for completing the work under the contract. Unless otherwise specified or approved, excavation shall be open cut. No extra compensation will be allowed for hand excavation and backfill necessary to complete the work or required by the Engineer.

B. Trenches shall be excavated to the necessary width and depth, as shown on the drawings and as required for the protective sheeting, pull boxes, etc. No extra compensation will be allowed for trenches wider than that detailed on the drawings.

C. The sides of the trenches shall be practically plumb and shall not be sloped unless approved in writing by the Engineer. Trench sides shall be supported or sheeted as required to protect pavement surfaces, curbing, utilities, etc., and required for safety. Safety regulations shall be as required by State safety codes and OSHA.

D. In paved areas, the Contractor shall remove the paving only as necessary for the excavation of the trench or as detailed. Pavement edges at the trench shall be saw cut neat and straight prior to the start of any excavation. Should the Contractor disturb or damage pavement for a greater width than detailed on the drawings or should pavement damage result from cave-ins, settlement, etc., Contractor shall replace such paving at his own expense. Saw cuts shall be carried out to the full depth of existing bituminous or concrete paving or combination thereof.

E. In non-paved areas strip surface vegetation and topsoil and place in stock piles which are separated from the trench excavated materials. Topsoil shall not be used for general trench refill.

F. The excavation of all trenches shall be fully completed at least twenty (20) feet in advance of pipe laying, unless otherwise authorized or directed. The Engineer may require the backfilling of open trench, over completed pipelines, or ahead of the pipe laying operation, if in his judgment such action is necessary, and the Contractor shall have no claim for extra compensation.

G. Should work be stopped for any reason and any excavation is left open for an unreasonable length of time, the Contractor shall refill the excavation at his own expense if so directed, by the Engineer or the Town Inspector. He shall not reopen the excavation until he is ready to complete the facility. Should the Contractor refuse or fail to refill any excavation completely within forty-eight (48) hours or immediately if it poses a safety hazard after a proper notice has been given by the Engineer or Town Inspector the Owner
shall be authorized to do the work. The resulting expenses shall be deducted from monies due the Contractor.

H. The Contractor shall complete excavation as nearly as practicable to the lines of the pipeline to be installed as detailed. All cavities in the bottom of the trench shall be filled to the required level with compacted crushed stone or gravel. Unless the cavities have been made on direction of the Engineer and classified as "Excavation Below Subgrade" for unsuitable material, no extra compensation shall be due the Contractor.

I. Excavated materials shall be graded, hauled, stored and protected as such material found suitable will be required for backfilling, repaving or other purposes. Material classified as unsuitable shall be disposed of by the Contractor at a location approved by the Engineer. Hauling of excavated materials for any purpose shall not entitle the Contractor to additional compensation. Only those excavated materials designated by the Owner shall become property of the Contractor.

J. All stockpiled materials shall be placed in such a way to prevent damage to the trench, structures, drainage areas or private property. Excavated materials shall not be placed on private property, unless written permission is obtained from the property Owner by the Contractor.

K. The Contractor shall remove, relocate, change or protect all structures including but not limited to signs, mailboxes, overhead and buried utilities as required for construction whether shown on drawings or not. No extra compensation will be allowed for property damage, injury or loss of time due to obstructions encountered not shown on plans.

L. The Contractor shall be responsible for any damage to curb, gutter, sidewalk, traffic control devices, pavement material and lawns. Any damage resulting directly or indirectly during construction shall be replaced in kind by the Contractor without additional compensation. The reuse of disturbed curb, gutter or sidewalk is prohibited. New sections shall be installed to the nearest undisturbed control joint. Cost for replacement shall be included in the linear foot cost for pipe.

3.2 PIPELINE TRENCH BACKFILL

A. Materials excavated from the trench except topsoil shall be used for trench backfill, provided that, in the opinion of the Engineer, the excavated material is suitable for this purpose. Backfill material shall be free from large lumps, pavement, pieces of concrete and stones.

B. Suitable material, as approved by the Engineer, shall be carefully deposited in the trench by methods which will not damage or disturb the pipeline or structure, and shall be solidly tamped around the pipe or structure. Backfill material shall be placed in 8-inch layers. Compaction shall be accomplished by mechanical tampers. Care shall be taken in the use of mechanical tampers not to injure or move the pipe or to cause the pipe to be supported unevenly. Each layer shall be mechanically tamped for the full trench width unless an alternative method is approved in writing by the Engineer.

C. Every backfill layer shall be compacted to 95% of maximum density at optimum moisture content as determined by the Modified Proctor Test, ASTM D1557 Method C.
Materials containing an excess of moisture shall be permitted to dry until the moisture content is within the specified range. Materials too dry shall be wetted uniformly until the moisture content is in the specified range.

D. No compacting shall be done when the material is too wet to be compacted properly. At such times the work shall be suspended until the backfill materials have dried sufficiently to permit proper compaction or such other precautions shall be taken as may be necessary to obtain proper compaction. The Contractor is responsible for hauling, storing and drying of excavated material to be used in backfill operations within the prices bid.

E. The Engineer may request compaction tests of the backfilled trenches at any time during construction or upon completion of the backfill operations. As a minimum field density testing shall be performed at a rate of 1 test per 100 linear feet of trench, at a depth and location specified by the Engineer or his representative. Such testing shall be arranged by the Contractor and performed by an independent testing agency approved by the Engineer. The Contractor shall pay the testing laboratory for all tests performed inclusive of sample collection, preparation and transportation. The Contractor will be paid, at the unit price bid, for all Proctor tests. For those field density tests which indicate that compaction satisfies specification requirements, the Contractor will be paid for testing at the unit price bid. For those tests which indicate that compaction does not satisfy specification requirements, the Contractor will not be paid. Whenever test results indicate compaction densities less than specified, the Contractor shall, at his own expense, secure the specified compaction using methods approved by the Engineer. The testing agency, so employed by the Contractor, shall submit a copy of all testing reports directly to the Engineer. Each report shall contain the project identification name and number, name of Contractor, name of testing agency, and location of sample tested by station, street and depth, as a minimum.

F. The Contractor shall, at his own expense, maintain all refilled excavations in proper condition. Trench surfaces shall be reshaped when necessary. If the Contractor fails to make repairs within forty eight (48) hours after receipt of written notice from the Owner, the Owner may refill said depression wherever necessary and the cost of so doing will be retained from any monies due or to become due the Contractor under the Contract. The Contractor shall be fully responsible for any injury or damage that may result from lack of maintenance of any refilled excavation at any time prior to final acceptance.

G. All unauthorized excavations made by the Contractor shall be immediately backfilled in accordance with the requirements of the specifications for trench backfill at the Contractor's expense.

H. After completion of backfilling, all material not used shall be disposed of as approved by the Engineer, and all places on the line of the work shall be left clean and in good condition. This cleaning up shall be done by the Contractor without extra compensation. If he fails to do this work within a reasonable time after receipt of notice, it will be performed by the Owner, and the cost will be retained from the monies due the Contractor under the contract.

I. No backfilling of pipelines will be allowed until measurements of pipe and an inspection has been performed by the Owner's representative, and until the Engineer has authorized
the backfill. Any unauthorized backfill of pipelines shall be uncovered by the Contractor at his expense if required by the Engineer.

3.3 EXCAVATION FOR STRUCTURES

A. Excavate for structures, walls, foundations, footings, etc., to the depth and width required for construction and stripping of forms. Structural excavation shall consist of the excavation of all earth, rock boulders existing concrete and masonry foundations and walls, and all other materials encountered regardless of type, which the Contractor may encounter.

B. Excavated materials shall be segregated as they are excavated, with the suitable and unsuitable material and topsoil being piled separately. All suitable material shall be used for backfill. All unsuitable material shall be removed, at the Contractor's expense, and disposed of at an approved off-site location. No excavated material shall be deposited at any time so as to endanger partly finished structures either by direct pressure, or indirectly by overloading banks contiguous to the operation.

C. The Contractor shall be responsible for the condition of all excavations made by him. All slides and cave-ins shall be removed without extra compensation, at whatever time and under whatever circumstances they may occur.

3.4 BACKFILL FOR STRUCTURES

A. Backfill around structures with suitable material from the excavation to the original surface grades or the finished grades shown on the plans or defined by the Engineer. If additional material is needed to fill around the structure, Special Backfill shall be furnished and placed by the Contractor at the price bid in the proposal.

B. No backfill shall be placed against new concrete or masonry structures until properly cured.

C. Backfill shall be placed in eight (8) inch loose layers and compacted by mechanical tampers. Compaction shall conform with the requirements for compaction already set forth in this specification.

D. The Contractor shall exercise caution in backfill and compaction to prevent damage to structures.

3.5 MISCELLANEOUS EXCAVATION AND BACKFILL

A. The Contractor shall do such miscellaneous excavation as may be necessary or directed. Such excavation shall be subject to the same conditions and requirements as specified for trench excavation but will be paid for as "Miscellaneous Excavation and Backfill".

B. Miscellaneous Excavation shall include the digging of test pits in the areas not called out on the project plans, extra width of trench made necessary by change in its location, or excavation for any special structures outside the trench that may not be shown on the drawings or described in the specifications, where such excavation is done at the direction of the Engineer.
C. Test pits shall be dug by the Contractor whenever directed or as necessary to determine location, depth or materials of existing utilities. The depth and size shall be such as required by the Engineer. Test pits shall be dug by the Contractor, without being directed to do so, along the lines of the trenches as shown on the drawings in advance of the excavation, or prior to use of mechanical moles, for the purpose of satisfying himself as to the location and elevation of underground obstructions or conditions.

3.6 EXCAVATION BELOW SUBGRADE AND GRAVEL REFILL

A. Materials below the excavation limit for pipelines and structures (below subgrade), which in the judgment of the Engineer should be removed, shall be removed as directed. All spaces created by the removal of unsuitable material below subgrade shall be refilled and compacted with crushed stone or gravel. Payment for Excavation Below Subgrade and Gravel Refill shall be made at the unit price bid.

B. Should the Contractor elect to excavate suitable material below subgrade and install stone for the purpose of securing a dry trench bottom, in lieu of dewatering by mechanical methods, no payment will be made for Excavation Below Subgrade and Gravel Refill.

3.7 DEWATERING

A. All excavations must be kept free of water below the subgrade of the work while work is in progress. This may be accomplished by ordinary pumping methods or by well points, whichever will produce the required results. Upon removal of dewatering equipment, the Contractor shall backfill all holes and restore disturbed areas to their original condition.

B. Dewatering for the structures and pipelines shall commence when groundwater is first encountered and shall be continued until such time as backfill has been completed. No concrete or pipe shall be laid in water nor shall water be allowed to rise over them until the concrete or mortar has set at least eight (8) hours. Groundwater shall not be allowed to rise around the pipe until the trench is backfilled.

C. The Contractor shall dispose of the water from the work in a suitable manner without damage to adjacent property. No water shall be drained into work built or under construction without prior consent of the Engineer. Water shall be disposed of in such a manner as not to be a menace to the Public Health.

D. In the event the Contractor's dewatering operations affect any water supplies within the project area, the Contractor shall take whatever steps that are required to provide uninterrupted water service.

E. The Contractor shall remove any siltation deposits in storm sewer systems, resulting from his dewatering or construction operations. He shall also be responsible for conveyance of dewatering flows and for erosion and sediment control.

3.8 SHEETING, SHORING AND BRACING

A. The Contractor shall furnish and install all sheeting, shoring and bracing necessary to insure safe working conditions and to prevent damage to public and private property and structures. If, in the opinion of the Engineer, the sheeting, shoring, or bracing is not of...
proper quality or is not properly placed to insure safe working conditions and to prevent property damage, the Contractor shall remedy such inadequacy at his own expense as may be directed by the Engineer. Sheet, shoring, and bracing shall be removed as backfilling progresses, except at such locations as the Engineer may direct or approve it to be left in place.

B. The condition of all excavations made by the Contractor shall be the responsibility of the Contractor. No extra compensation will be allowed for property damage, injury or loss of time, due to excavation slides or cave-ins at any time under any circumstances.

C. The Contractor shall cut off any sheeting left in place, at least eighteen (18) inches below finished grade, and shall remove the material cut off without compensation.

D. Where necessary, in quicksand, soft ground, or for the protection of any structure or property, sheeting shall be driven to such depth below the bottom of the trench as may be required to protect all existing and/or proposed work.

E. The cost for furnishing, placing and removal of sheeting, shoring or bracing shall be included in the prices bid.

F. A trench box is an acceptable alternative to sheeting, shoring or bracing providing such boxes conform to safety codes.

3.9 SELECT BACKFILL

A. Should the Contractor encounter unsuitable material during excavation, he shall remove and dispose of such material at a location approved by the Engineer. The cost of such disposal shall be included in the prices bid for pipe and structures.

B. Should sufficient suitable material from excavations on the project not be available for backfill, the Contractor shall furnish Select Backfill upon approval of the Engineer. Special backfill shall conform to Delaware DOT. Type G.

C. Payment for authorized Select backfill will be made at the price bid for the material placed within the trench width detailed and for the length and depth approved.

3.10 GRAVEL BEDDING

Gravel bedding for installation of under structures shall meet the requirements of #57 stone per Section 813 of the Delaware Standard Specifications.

END OF SECTION
SECTION 31 25 00

EROSION & SEDIMENT CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

Provide necessary equipment, labor and supplies for erosion and sediment control throughout project. Work consists of grading of site, providing silt fence, inlet protection, and straw bale dikes and other necessary measures required for effective control. Sediment and erosion control work shall comply with the requirements of the State of Delaware Erosion and Sediment Control Handbook, 2005 Addition, and the Delaware Sediment and Stormwater Regulations, issued January 2014. The receipt of a proposal by a bona fide bidder shall be interpreted to mean the Contractor has familiarized himself with these Regulations and Rules of Procedure and is fully cognizant of exactly what is required.

1.2 SUBMITTALS

A. Erosion and Sediment Control Schedule.

At pre-construction conference or prior to start of actual construction, submit for acceptance, schedules for accomplishment of temporary and permanent erosion control work. Submit schedule for each of the following procedures: Grading, construction and paving. No work shall be started until erosion control schedules and methods of operation have been approved.

1.3 EXECUTION

A. Throughout the duration of the project, control erosion and minimize siltation to rivers, streams and impoundments. Control shall include, but is not limited to the use of berms, dikes, dams, sediment basins, sediment traps, filters, fiber mats, netting, gravel or crushed stone, mulch, grasses, slope drains, and other methods. Erosion and sediment control measures as described herein and on the drawings shall be applied to erodible materials exposed by any project activity.

B. Coordinate erosion and sediment control measures with the construction of the permanent drainage facilities which shall be constructed prior to the grading operation to assure economical, effective and continuous erosion and siltation control.

C. Dress, prepare, and seed slopes immediately following the completion of each portion of work and immediately following suspension of grading operations.

D. Fill slopes shall be dressed, prepared and seeded as the embankment proceeds to the extent needed to stop erosion and sedimentation.

E. The Contractor shall incorporate permanent erosion control features into the project at the earliest practicable time. Temporary erosion control measures shall be used to correct conditions that develop during construction that were not foreseen during the design...
stage, that are needed prior to installation of permanent erosion control features, or that are needed temporarily to control erosion that develops during normal construction practices that are not associated with permanent control features of the project.

END OF SECTION
SECTION 31 31 16
TERMITE CONTROL

PART 1 - GENERAL

1.01 SUMMARY
A. Provide soil treatment for termite control.

1.02 SUBMITTALS
A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
B. Warranty: Submit manufacturer’s standard warranty. Include labor and materials to repair or replace defective materials.
   1. Warranty Period: 5 years.

1.03 QUALITY ASSURANCE
A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS
A. Soil Treatment Materials: Soil treatment materials shall bear Federal registration number of U.S. Environmental Protection Agency and acceptable to authorities having jurisdiction. If acceptable, products may include chloropyrifos, permethrin, cypermethrine, fenvalerate, isofenphose.

PART 3 - EXECUTION

3.01 INSTALLATION
A. Treat soil in strict compliance with National Pest Control Association standards and with manufacturer's printed instructions and recommendations.
B. Treat areas under floor slabs prior to placement of concrete if possible to avoid drilling. Treat areas outside foundation walls after excavation, filling and grading are complete. Do not apply treatment to frozen or excessively wet soils.
C. Post signs and other warnings indicating that soil poisoning has been applied. Protect persons and property from injury or damage from soil treatment work.

END OF SECTION
SECTION 31 32 00

SOIL STABILIZATION

PART 1 - GENERAL

1.1 Includes topsoil, fertilizers and lime for unpaved disturbed areas as shown on the Drawing.

1.2 SUBGRADE

A. To be neutralized with lime if highly acid or composed of heavy clay.

1.3 SUBMITTALS

A. Laboratory test results of topsoil for PH, soluble salts and application requirements for lime and fertilizer.

1.4 Related work specified elsewhere: Turf and Grass 32 92 00.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Sandy loam, silt loam, or other soil approved by the Owner.

B. Shall not contain subsoil, slag, cinders, stones, lumps of soil, sticks, roots, trash or other extraneous materials larger than 1" in diameter or length.

C. Must be free of plants or plant parts of bermuda grass, quackgrass, Johnson grass, nutsedge, poison ivy, Canadian thistle, or others as specified.

D. A pH of 5.0 to 7.0 is required.

E. Soluble salts shall not be higher than 500 parts per million.

2.2 FERTILIZERS

A. Uniform in composition, free flowing and suitable for application with approved equipment.

B. Delivered to the site fully labeled according to applicable State Fertilizer Laws and shall bear the name, trade name or trade-mark and warranty of the producer.

C. Fertilizer application rates shall be determined by soil tests per the approved sediment & erosion control plan.

D. Fertilizer shall be distributed evenly over the area to be seeded.
2.3 LIME

A. Shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide).

B. Ground limestone shall be ground to such fineness that at least 50% will pass through a 100-mesh sieve and 98 to 100% will pass through a 20-mesh sieve.

C. Application rates of liming materials shall be per the approved sediment & erosion control plan.

D. Lime shall be distributed uniformly over the entire areas to be seeded.

PART 3 - EXECUTION

3.1 SUBSOIL

A. Test for PH. If highly acid apply ground limestone at the rate of 100 pounds per 1,000 sq. ft.

B. Immediately prior to placing topsoil, loosen subsoil by disking or scarifying to a depth of at least two inches.

3.2 TOPSOIL

A. Topsoil shall be uniformly distributed on the designated areas and it shall be a minimum depth of 4 inches after firming.

B. Spreading shall be performed in such a manner that seeding can proceed with a minimum of additional soil preparation and tillage.

C. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

D. Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading or proposed seeding.

E. After the topsoiling has been spread and the final grades approved, it shall be cleared of all grade stakes, surface trash and other objects that would hinder maintenance of seeded and planted areas.

F. Paved areas over which hauling operations are conducted shall be kept clean, and any soil which may be brought upon the surfacing shall be promptly removed.

G. The wheels of all vehicles shall be kept clean to avoid tracking soil on the surfacing of roads, walks or other paved areas.
H. Lime and fertilizer shall be uniformly mixed into the top 4 inches of soil by diskimg, harrowing or other approved methods.

I. Any undulations or irregularities in the surface resulting from fertilizing, liming, tilling or other causes shall be leveled prior to seeding.

J. Flooded, washed out or areas otherwise damaged shall be reconstructed and all grades re-established by the landscape contractor in accordance with the drawings and/or other applicable specifications.

END OF SECTION
SECTION 31 50 00
EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Provide shoring and bracing for sidewalls in deep excavations with steel sheet, soldier piles or timber lagging to protect existing buildings, utilities, roadways, and improvements.

1.02 SUBMITTALS

A. Shop Drawings: Layout of shoring and bracing and other data, acceptable to local authorities having jurisdiction, prepared by a qualified professional engineer.

1.03 QUALITY ASSURANCE

A. Survey of Adjacent Structures and Levels: Registered land surveyor prior to excavation.

B. Engineer: A professional engineer licensed in the jurisdiction of the project.

C. System Design: Prevent cave-ins, loss of ground, or damage to people and property. Maintain shoring and bracing during construction activities and remove shoring and bracing if practical when construction and filling is complete.

D. Comply with codes and ordinances of governing authorities having jurisdiction. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Sheet steel: Heavy-gauge steel sheet suitable for service.

B. Soldier piles: Steel H-beams in serviceable condition.

C. Timber lagging: Heavy timber pressure treated with wood preservative.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install in proper relation with adjacent construction to permit forming and finishing of concrete surfaces. Coordinate with work of other sections.

B. Locate shoring and bracing to avoid permanent construction. Anchor and brace to prevent collapse.

END OF SECTION
SECTION 32 11 26

BITUMINOUS STABILIZED BASE COURSES

PART 1 – GENERAL

1.01 SUMMARY

A. Provide hot-mixed asphalt paving over prepared subbase and roadway markings.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

B. Test Reports: Submit for approval test reports.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Construction Tolerances:
   1. Surface Course Thickness: Within 1/4 inch.
   2. Base Course Surface Smoothness: Within 1/4 inch.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asphalt-Aggregate Mixture: Plant-mixed, hot-laid asphalt-aggregate mixture, ASTM D 3515, complying with local DOT and DPW regulations.

B. Prime Coat: Cut-back asphalt, ASTM D 2027.

C. Tack Coat: Emulsified asphalt, ASTM D 977.

D. Herbicide Treatment: Commercial chemical for weed control registered by Environmental Protection Agency and acceptable to authorities having jurisdiction.

E. Lane and Parking Area Marking Paint, Yellow Color: Alkyd-resin type, ready-mixed, AASHTO M 248, Type I.

F. Lane and Parking Area Marking Paint, White Color: Alkyd-resin type, ready-mixed, AASHTO M 248, Type I.
PART 3 - EXECUTION

3.01 INSTALLATION

A. Asphalt/Aggregate Mixture: Comply with local DOT or DPW Standard Specifications for Highways and Bridges. Class as required by loading and use.


C. Apply prime coat to prepared subbase. Apply tack coat to previous laid work and adjacent in-place concrete surfaces.

D. Place asphalt concrete at minimum temperature of 225 degrees F in strips not less than 10' wide overlapping previous strips. Complete entire base course before beginning surface course.

E. Construct curbs to dimensions indicated or if not indicated to standard shapes. Provide tack coat between curb and pavement.

F. Begin rolling when pavement can withstand weight of roller. Roll while still hot to obtain maximum density and to eliminate roller marks.

G. Provide 4” lane and striping paint in uniform, straight lines. Provide wheelstops where indicated and securely dowel into pavement. Protect work from traffic and damage.

H. Test in-place asphalt work for thickness and smoothness. Remove and replace defective work and patch to eliminate evidence of patching.

END OF SECTION
SECTION 32 11 36

CONCRETE BASE COURSES

PART 1 - GENERAL

1.01 SUMMARY
   A. Provide cast-in-place concrete paving over prepared subbase.

1.02 SUBMITTALS
   A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
   B. Design Mixes: Submit for approval design mixes, including adjustments for variations in project conditions.
   C. Test Reports: Submit for approval test reports.

1.03 QUALITY ASSURANCE
   A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
   B. Construction Tolerance: 1/8" in 10' for grade and alignment of top of forms; 1/4" in 10' for vertical face on longitudinal axis.
   C. Testing: Independent testing laboratory.
   D. Mock-Ups: Provide mock-up as required to demonstrate quality of workmanship.

PART 2 - PRODUCTS

2.01 MATERIALS
   A. Concrete: ASTM C 150, Type I, Portland cement; ASTM C 33, normal weight aggregates; potable water.
      1. Design Mix: ASTM C 94, 3000 psi, 28 day minimum compressive strength.
      2. Slump Limits: 8 inches minimum with superplasticizer, 3 inches otherwise.
      3. Air Content: 5 to 8 percent.
      4. Finish: Broom finish, perpendicular to direction of travel.
   C. Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 60.
   D. Fabricated Bar Mats: Steel bar or rod mats, ASTM A 184, using ASTM A 615, Grade 60 steel bars.
E. Joint Dowel Bars: Plain steel bars, ASTM A 615, Grade 60.
G. Liquid-Membrane Forming and Sealing Curing Compound: ASTM C 309, Type I, Class A.
H. Bonding Compound: Polyvinyl acetate or acrylic base.

PART 3 - EXECUTION

3.01 INSTALLATION

B. Comply with concrete section for concrete mix, testing placement, joints, tolerances, curing, repairs and protection.
C. Dispose of over-mixed concrete off-site in a legal manner.
D. Protect concrete paving until weight of a person will not leave any impression. Remove and replace concrete paving which shows impressions or other defects. Skim coating defects is not acceptable.

END OF SECTION
SECTION 32 12 16

ASPHALT PAVING

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contractor shall restore all surfaces damaged by his operations and install all new asphalt paving to the width and extent detailed, noted on the plans or specified herein.

B. Surface restoration in streets and roads maintained by the State Department of Highways shall be accomplished in accordance with applicable utility construction permits.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 GENERAL

A. Various conditions and types of surface restoration are shown on the drawings. Materials and construction methods to be in accordance with the following specification and the Delaware DOT Standard Specifications dated July 1985.

B. Existing pavement not subject to complete repavement shall be trimmed to secure a straight clean edge for repaving. Saw cut bituminous pavement as shown on the drawings and as directed to obtain a clean pavement edge.

C. No staggered or irregular longitudinal trench repair widths shall be allowed in each block of work. Repairs shall be of a uniform width and in a straight line.

D. Minimum pavement restoration width is five (5) feet including edge of roads. Actual width shall be as detailed or noted on the plans. Should the Contractor damage or disturb larger areas, he shall replace the additional area at his cost.

E. Undermined areas shall be grout filled or cut back.

F. A 2” inch layer of cold patch shall be placed on all lateral and main utility trenches for temporary paving at the end of every workday.

G. Catch basins, inlets, curbs and all other appurtenances shall be adequately covered and protected prior to application of bituminous materials. No earth or bituminous materials shall be allowed to enter any storm drainage system and suitable containment provisions shall be employed to prevent surface runoff of bituminous materials.

H. Unless otherwise noted the final surface shall match grades existing prior to construction and shall be such that a smooth transition free of abrupt changes in grade is made with
adjacent pavements and/or sidewalks. No depressions or other misalignment shall obstruct, trap or otherwise misdirect the flow of surface water drainage.

3.2 MAINTENANCE OF REFILLED EXCAVATIONS

A. The Contractor shall maintain, at his own expense, all refilled excavations and surfacing in proper condition as specified herein. All depressions appearing in the refilled excavation, stabilized base and temporary paving shall be properly refilled. If the Contractor fails to make repairs within 48 hours after receipt of written notice from the Engineer, the Owner may refill said depressions and the cost thereof shall be deducted from any monies due the Contractor. In case of emergency the Owner may refill any depressions to protect with barricades without giving previous notice to the Contractor, and the cost of so doing shall be retained from any monies due or to become due the Contractor.

B. The Contractor shall be responsible for any injury or damage that may result from lack of maintenance of any refilled excavation at any time.

3.3 CRUSHER RUN BASE COURSE

A. Crusher run base course (Type "B") shall be spread on prepared and compacted refilled excavations to the compacted depth shown on the drawing details.

B. Materials and methods of construction shall meet the provisions of Section 821 of referenced standard specification.

3.4 BITUMINOUS CONCRETE PAVEMENT

A. Hot mix, hot laid bituminous concrete shall consist of placing bituminous concrete base and or wearing courses on a prepared base to the minimum compacted thickness shown on the drawings.

B. The hot-mix bituminous concrete surface and base courses shall conform to the Delaware DOT Standard Specifications for Type C & B, respectively and shall be constructed in accordance with the applicable Articles of Section 401 "Hot-Mix, Hot Laid Bituminous Concrete Pavement".

C. The subgrade shall be properly prepared, graded and compacted in accordance with Section 02200 of these specifications.

D. Materials and methods of construction shall meet the provisions of Section 401 of referenced standard specification. All thicknesses detailed shall be compacted thicknesses.

E. Cold mix temporary roadway material shall be furnished and placed as shown on the drawings and or directed by the Engineer. Cold mix shall meet the provisions of Section 402 of referenced standard specification. Separate payment shall not be made for temporary paving. The cost therefore shall be included in the price bid for pipe and fittings.
3.5 BITUMINOUS CONCRETE DRIVEWAY AND PARKING AREAS

Bituminous driveways and parking areas disturbed through the Contractor's construction operations shall be restored by means of 3-inches of hot-mix bituminous concrete pavement placed in a single lift onto a base course consisting of 4-inches of properly prepared and compacted crushed stone or quarry waste. Commercial and residential entrances on State maintained streets shall be in accordance with the plan details.

3.6 CONCRETE CURBS, SIDEWALKS AND DRIVEWAYS

A. General

1. The Contractor shall permanently repair or relay all curbs, sidewalks and driveways that have been removed, broken, or otherwise injured in executing any of the work under the contract or injured by settlement of any backfilled excavation at any time prior to termination of the contract and guarantee period.

2. Curb and sidewalk removed or damaged during construction shall be replaced in accordance with State of Delaware Department of Transportation standards. Install wheelchair curb ramps at all street corners reconstructed.

3. All concrete shall be according to Section 03300 of this Specification.

4. Separate payment for reconstruction of curbs, sidewalks and concrete driveways damaged by the Contractor will not be made. However, cost shall be included within the appropriate unit and/or lump sum prices bid for furnishing and laying pipe and appurtenances.

B. Curbs

1. Concrete curbs, normal and depressed, and curb and gutter shall be replaced in accordance with Delaware D.O.T. Standard Specifications Section 701, 702 and 704 and as detailed on the drawings.

2. Curbs shall be depressed at all existing driveway locations in accordance with Delaware State Standard Details, including proper preparation of subgrade and proper placing and spacing of joints and joint materials.

3. Partial replacement, when so directed, shall extend to the nearest existing joint in each direction.

C. Sidewalks

1. Concrete sidewalks shall be replaced as required, or as directed, in accordance with Section 705 of the Delaware D.O.T. Standard Specifications. Handicapped ramps shall be installed in all areas defined herein.

2. Sidewalks in areas not subject to vehicular loading shall have a minimum thickness of 4 inches placed upon a properly prepared, graded and compacted subgrade.
3. Sidewalks in vehicular loading areas shall be a minimum thickness of 6 inches reinforced with 6-inch by 6-inch wire mesh of 10-10 gauge. Subgrade shall be prepared as stated on the project plans.

4. Replacement of partial sections of concrete sidewalk, where so directed, shall be extended to the nearest existing joint in each direction.

5. Sidewalks shall be replaced to a width equal to that existing prior to start of construction and such width shall be maintained throughout the entire length of the block. In no instance shall the constructed width be less than 4 feet.

6. A broom finish shall be applied perpendicular to the direction of traffic.

3.7 FIELD QUALITY CONTROL

A. General: Test in-place bituminous concrete courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by the Owner.

B. Thickness: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thicknesses:
   1. Binder Course: 1/2" plus or minus.
   2. Surface Course: 1/4" plus or minus.

C. Surface Smoothness: Test finish surface of each asphalt concrete course for smoothness, using 10' straightedge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:
   1. Base Course Surface: 1/4".
   2. Wearing Course Surfaces: 3/16".

3.8 PARKING AND LANE MARKERS

A. All pavement markings, temporary and permanent, shall be installed in accordance with Section 748 of the Delaware Standard Specifications, Latest Edition.

B. Apply paint with mechanical equipment to produce uniform straight edges.

C. All markings destroyed during construction operations to be replaced in kind.

END OF SECTION
SECTION 32 13 13

CONCRETE PAVING (SIDEWALKS)

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work consists of construction of all concrete walks. Complete in place including sub-grade preparation, forms, reinforcements, finishing, curbing, etc., in strict accordance with the Drawings and as specified herein.

B. Related work not included in this section includes Section 31 00 00 - Earthwork.

PART 2 - PRODUCTS

2.1 SUB-GRADE PREPARATION

A. The sub-grade shall have a uniform compaction density throughout its entire depth and width and shall be approved by the Engineer prior to pouring any concrete.

2.2 FORMS

A. The contractor shall furnish forms that result in completely aligned concrete. Forms shall be fitted tightly and securely braced to maintain proper grade and alignment. Forms shall be cleaned and oiled with a non-staining lubricant immediately prior to placing concrete.

B. Forms shall not be removed until concrete has properly set.

2.3 MATERIALS, MIX

A. All materials (including cement, aggregate, reinforcing, joint filler and seal, curing materials, etc.) shall comply with the applicable provisions of the Standard Specifications of the governing jurisdiction: Delaware Standard Specifications for Road & Bridge Construction, July 1985, Delaware DOT and all subsequent amendments.

B. All concrete for walks, curbs, steps, etc., shall be 3000 psi at the end of 28 days. All concrete shall be in accordance with DELDOT Specifications Section 812, Class B.

2.4 JOINTS

A. Expansion joints shall be placed where slabs meet walls, steps or other rigid objects, and at approximately 20' intervals in walks. Joints shall be straight and true, perpendicular to the surface. Both edges of the joints shall be tooled to a ¼” radius. Particular care shall be exercised to keep the surface of concrete in exactly the same plane on both sides of the joint.
B. Expansion joints shall be filled with an approved non-extruding preformed filler, 1/2" thick. Expansion filler shall extend the full depth and width of the concrete, flush with the surface and 1/2" below top surface.

C. Seal - A hot poured rubber type compound shall be used. Seal shall be flush with concrete surface and shall not extend more than 1/4" beyond each edge of joint.

D. Contraction joints shall be similar to expansion joints, except that preformed filler will be omitted and joints need not be more than 2" deep, nor less than 1/4" in section thickness. Joints shall be at 5' intervals or as shown on scoring details on the drawings.

E. Edging - all exposed edges shall be straight and true and unless otherwise shown shall be tooled to a smooth 1/4" radius.

2.5 WALKS

A. Walks shall be 4" thick in areas not subject to vehicular loading, and 6" in traffic areas. It shall be reinforced with 6" wire mesh of 10-10 gauge troweled a true and even surface, and finished with a broom finish perpendicular to the direction of traffic.

PART 3 - EXECUTION

3.1 METHODS OF CONSTRUCTION

A. Methods of construction shall conform with Section 705 of the DELDOT Specifications.

END OF SECTION
SECTION 32 16 00
CURBS AND GUTTERS

PART 1 - GENERAL

1.01 SUMMARY
A. Provide curbs along edges of roadways over compacted gravel base.

1.02 SUBMITTALS
A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
B. Test Reports: Submit for approval test reports.

1.03 QUALITY ASSURANCE
A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
B. Construction Tolerance: 1/8" in 10' for grade and alignment; 1/4" in 10' for vertical or sloped face on longitudinal axis.
C. Mock-Ups: Provide mock-up as required to demonstrate quality of workmanship.

PART 2 - PRODUCTS

2.01 MATERIALS
A. Precast Concrete:
   1. Concrete: ASTM C 150, Type I, Portland Cement; ASTM C 33, normal weight aggregates; potable water.
   2. Design Mix: ASTM C 94, 3000 psi, 28 day minimum compressive strength.
   4. Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 60.
   5. Joint Dowel Bars: Plain steel bars, ASTM A 615, Grade 60.

PART 3 - EXECUTION

3.01 INSTALLATION
A. Provide acceptable materials and install curbing in strict compliance with local DOT and DPW Standard Specifications for Highways and Bridges.
B. Set curbs on compacted gravel subbase with joints between curb pieces from 1/8" to 3/4" wide. Point joints with mortar and tool concave; remove surplus mortar and clean curbs.

END OF SECTION
SECTION 32 30 00
SITE IMPROVEMENTS AND AMENITIES

PART 1 - GENERAL

1.01 SUMMARY
A. Provide site improvements and furnishings.

1.02 SUBMITTALS
A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.

1.03 QUALITY ASSURANCE
A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS
A. Provide units specifically designed for exterior exposure and intended use:
   1. Fencing:
      a. Chain link type
   2. Benches:
      a. Cast-iron type.
   3. Trash Receptacles:
      a. Metal type.
   5. Bollards:
      a. Concrete filled steel bollards.
   8. Site Walls:
      a. Masonry type.
   9. Steel Beam Guardrails: Galvanized steel and anchorage; DOT requirements.
   11. Site Signage: Directional or informational signage; multilingual as applicable to area.
PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

B. Restore damaged finishes and test for proper function. Clean and protect work from damage.

END OF SECTION
SECTION 32 31 00

FENCES AND GATES

PART 1 - GENERAL

1.01 SUMMARY

A. Provide chain link fencing and gates for areas requiring separation.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

B. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel Chain-Link Fence Fabric:
   1. Mesh and Wire Size: 2 inch mesh, 0.148 inch diameter (9 gauge).
   2. Coating: ASTM A 817, Type 2, Class 1, zinc-coated (galvanized) applied after weaving.

B. Framework:

C. Gates:
   1. Swinging type.

D. Framing and Fittings:
   1. End, corner, and pull posts.
   2. Line and intermediate posts.
   3. Gate posts.
   4. Top rail.
   5. Tension wire.
   6. Tie wires.
   7. Post and line caps.
PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials in accordance with manufacturer's instructions and approved submittals. Comply with ASTM F 567. Install materials in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections. Install posts to depth to avoid frost heave.

B. Cut pipe with pipe-cutters only. Cutting with backsaws is not acceptable. Tack weld gates for strength. Use spring loaded latches, not yokes.

C. Restore or replace damaged components. Clean and protect work from damage.

END OF SECTION
SECTION 32 90 00

PLANTING

PART 1 - GENERAL

1.01 SUMMARY

A. Provide landscape work:
   1. Trees, shrubs, plants, and ground cover.
   2. Finish grading and lawns.
   3. Topsoil and soil amendments.
   4. Initial maintenance of landscape materials.
   5. Pruning and relocation of existing plant materials.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.

C. Maintenance Data: Submit maintenance data, including maintenance schedule.

D. Notices: Submit 48-hour written notice prior to turnover to Owner for watering and maintenance.

E. Warranty: Warrant trees and shrubs for a period of one year after date of Substantial Completion, against defects including death and unsatisfactory growth and except for defects resulting from neglect by Owner, abuse by others, or natural phenomena. Replace unsatisfactory plant material at end of warranty period at no additional expense to the Owner. One replacement is required.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Balled and Burlapped Plants and Trees: Graded to American Standard for Nursery Stock, ANSI Z60.1.

C. Testing: Laboratory testing for suitable soil amendments and fertilizer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Plant Materials:
1. Deciduous trees.
2. Deciduous shrubs.
3. Coniferous and broadleaf evergreen trees and shrubs.
4. Ground cover.
5. Plants.

B. Lawns: Seed, new crop seed mixture.

C. Topsoil: From site stockpile with additional fertile, friable topsoil from local source.

D. Soil Amendments:
   1. Lime: Dolomitic limestone.
   2. Aluminum Sulfate: Commercial grade.
   4. Superphosphate: 20 percent available phosphoric acid.
   5. Sand: Clean, washed sand.
   7. Sawdust: Rotted sawdust free of chips and stones.
   10. Mulch: Ground or shredded pine bark mulch.

E. Landscape Materials:
   2. Anti-Erosion Mulch: Seed-free salt hay or threshed straw.
   4. Plastic Sheet: Black polyethylene, 8 mils.
   7. Stakes and Guys: New hardwood, treated softwood, or redwood.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials in accordance with approved submittals. Install landscape work in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

B. Prepare topsoil by mixing fertilizer with loam. Apply fertilizer at a rate of 2 pounds of actual nitrogen per 1000 sq. ft. for plant beds and 2 pounds per inch of trunk for tree pits.

C. Install soil mix to a depth of 18" in plant beds.

D. For seeded lawns, apply seed at rate of 5 pounds per 1000 square feet.

E. Excavate as required for trees and shrubs.
F. Install plant material and backfill with soil mix. Stake and guy trees. Water thoroughly. Allow for soil settlement.

G. Provide maintenance and watering until turnover to Owner’s for maintenance and watering. Replace damaged materials and dead or unhealthy plants prior to turnover to Owner.

END OF SECTION
PART 1 - GENERAL

1.1 Includes topsoil, fertilizers and lime for unpaved disturbed areas as shown on the Drawing.

1.2 SUBGRADE

   A. To be neutralized with lime if highly acid or composed of heavy clay.

1.3 SUBMITTALS

   A. Laboratory test results of topsoil for PH, soluble salts and application requirements for lime and fertilizer.

1.4 Related work specified elsewhere: Turf and Grass 32 92 00.

PART 2 - PRODUCTS

2.1 TOPSOIL

   A. Sandy loam, silt loam, or other soil approved by the Owner.

   B. Shall not contain subsoil, slag, cinders, stones, lumps of soil, sticks, roots, trash or other extraneous materials larger than 1" in diameter or length.

   C. Must be free of plants or plant parts of bermuda grass, quackgrass, Johnson grass, nutsedge, poison ivy, Canadian thistle, or others as specified.

   D. A pH of 5.0 to 7.0 is required.

   E. Soluble salts shall not be higher than 500 parts per million.

2.2 FERTILIZERS

   A. Uniform in composition, free flowing and suitable for application with approved equipment.

   B. Delivered to the site fully labeled according to applicable State Fertilizer Laws and shall bear the name, trade name or trade-mark and warranty of the producer.

   C. Fertilizer application rates shall be determined by soil tests per the approved sediment & erosion control plan.

   D. Fertilizer shall be distributed evenly over the area to be seeded.
2.3 LIME

A. Shall be ground limestone (hydrated or burnt lime may be substituted) which contains at least 50% total oxides (calcium oxide plus magnesium oxide).

B. Ground limestone shall be ground to such fineness that at least 50% will pass through a 100-mesh sieve and 98 to 100% will pass through a 20-mesh sieve.

C. Application rates of liming materials shall be per the approved sediment & erosion control plan.

D. Lime shall be distributed uniformly over the entire areas to be seeded.

PART 3 - EXECUTION

3.1 SUBSOIL

A. Test for PH. If highly acid apply ground limestone at the rate of 100 pounds per 1,000 sq. ft.

B. Immediately prior to placing topsoil, loosen subsoil by disk ing or scarifying to a depth of at least two inches.

3.2 TOPSOIL

A. Topsoil shall be uniformly distributed on the designated areas and it shall be a minimum depth of 4 inches after firming.

B. Spreading shall be performed in such a manner that seeding can proceed with a minimum of additional soil preparation and tillage.

C. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.

D. Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading or proposed seeding.

E. After the topsoiling has been spread and the final grades approved, it shall be cleared of all grade stakes, surface trash and other objects that would hinder maintenance of seeded and planted areas.

F. Paved areas over which hauling operations are conducted shall be kept clean, and any soil which may be brought upon the surfacing shall be promptly removed.

G. The wheels of all vehicles shall be kept clean to avoid tracking soil on the surfacing of roads, walks or other paved areas.
H. Lime and fertilizer shall be uniformly mixed into the top 4 inches of soil by disking, harrowing or other approved methods.

I. Any undulations or irregularities in the surface resulting from fertilizing, liming, tilling or other causes shall be leveled prior to seeding.

J. Flooded, washed out or areas otherwise damaged shall be reconstructed and all grades re-established by the landscape contractor in accordance with the drawings and/or other applicable specifications.

END OF SECTION
SECTION 32 92 00
TURF AND GRASSES

PART 1 - GENERAL

1.1 Includes fine grading, seeding and mulching of all disturbed areas.

1.2 QUALITY ASSURANCE
A. Deliver packaged materials in containers showing weight, analysis and name of manufacturer.
B. Protect materials from deterioration during delivery and while stored at site.

1.3 MAINTENANCE
A. Maintain grassed areas for not less than 60 days after acceptance of project.
B. Include watering, fertilizing, weeding, mowing, trimming and other operations required to establish a smooth, acceptable lawn, free of eroded or bare areas.
C. Reseed or replace areas damaged by construction processes or personnel.

1.4 GUARANTEE
A. All seeded areas to produce a dense, well-established and uniform turf. Contractor to be responsible for repair of any eroded, dead or bare areas until acceptance by Owner. Repair work to be accomplished as in original work.

1.5 RELATED WORK SPECIFIED ELSEWHERE
A. Soil Stabilization - Section 31 32 00
B. Earthwork - Section 31 00 00.

PART 2 - PRODUCTS

2.1 MATERIALS
A. All materials to conform to those stipulated below, unless otherwise approved.
B. Specified materials to be applied in amounts and methods herein stipulated.
C. Delivery tickets, indicating date, weight, analysis and vendor's name to be submitted to Project Engineer upon request.
D. Grass seed to be fresh new-crop seed complying with purity and germination requirements stipulated herein.

E. All seed shall be Maryland State Board of Agriculture certified and shall carry certified labels which shall be furnished by the Landscape Contractor to Owner. Seed shall be free of noxious grasses.

<table>
<thead>
<tr>
<th>Type</th>
<th>Min. Purity %</th>
<th>Min. Germination %</th>
<th>Max. Weed Seed %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kentucky 31 Fescue</td>
<td>98</td>
<td>85</td>
<td>0.5</td>
</tr>
<tr>
<td>Crownvetch</td>
<td>99</td>
<td>70</td>
<td>0.15</td>
</tr>
</tbody>
</table>

F. Mulch:

1. All mulch shall be straw tacked with asphalt emulsion, in accordance with DELDOT requirements
2. Mulch applied by spray equipment (hydro-seeded) to be equipped with an agitation system capable of keeping all solid in the mixture in complete suspension at all times until used.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All disturbed areas within project limits that are not shown for paving or special treatment are to be prepared for seeding.

B. Prior to seeding all surface areas shall be fine graded, free from debris, lumps, depressions, etc. Swales shall be correct and true and ready for seeding. Maximum tolerance is 0.1 foot.

C. Seeding:

1. All areas within project limits that are not shown as paving, are to be seeded with specified seed mix. Slopes 3:1 or flatter shall be seeded with Kentucky Fescue 31 per the approved sediment and erosion control plan. Slopes steeper than 3:1 shall be seeded with Crownvetch per the approved sediment and erosion control plan.
2. Seed on flat areas are to be uniformly distributed with an approved culti-packer and attached seed-hopper to insure a covering of 1/8" or less. Sow 1/2 seed in one direction and balance at right angles. If so directed, additional firming by light rollers to be accomplished.
3. At Contractor's option, seed on flat areas are to be applied by spray method provided all provisions of Section 734.06, DELDOT Specifications are met. Slopes steeper than 3:1 shall be applied by spray in accordance with DELDOT specification 734.07.
4. No seeding to be done during windy weather, or when ground is wet or otherwise non-tillable.
5. Seed mix to be sown between August 15th and October 31st or between February 1st, and April 30th unless otherwise approved.

D. Temporary Seeding

1. An annual rye grass shall be mixed with the specified seed mix to insure a quick stand of grass. The rye grass is to be applied at a rate of 150 lbs. per acre.

E. Mulching

1. All seeded areas to be mulched immediately following seeding. Mulching shall conform with the approved sediment and erosion control plan. Mulch and binder shall be per DELDOT specification 735.02.

END OF SECTION
SECTION 33 10 00
WATER UTILITIES

PART 1 - GENERAL

1.01 SUMMARY
A. Provide an operating underground, exterior water service piping system. Include piping, control valves, and steel and concrete anchorages. Include water service system and piping, accessories, and appurtenances for potable water and fire service outside the building.

1.02 SUBMITTALS
A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.

1.03 QUALITY ASSURANCE
A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
B. Testing: Hydrostatic tests at minimum 1-1/2 times working pressure for 2 hours.

PART 2 - PRODUCTS

2.01 MATERIALS
   1. Lining: AWWA C104, cement mortar, seal coated.
   2. Gaskets: AWWA C111.
   3. Ductile Iron and Cast Iron Fittings, AWWA C110 or AWWA C153, 250 psi minimum pressure rating; AWWA C104 cement mortar lining; AWWA C111 rubber gaskets.
B. PVC Pipe 4 Inches and Larger: AWWA C900, Class 150.
   2. PVC Couplings and Fittings: AWWA C900 with ASTM F 477 elastomeric seal gaskets.
C. Fiberglass Pressure Pipe 2 Inches and Larger: AWWA C950, Type I filament wound or Type II centrifugally cast; Grade 1 or 2; fiberglass fittings, AWWA C950, RTRP, 200 psi minimum pressure rating.
D. Copper Water Tube 2 Inches and Smaller: ASTM B 88, Type K seamless, annealed temper; ANSI B16.22 wrought-copper solder-joint copper fittings.
E. Copper Water Tube 2 Inches and Smaller: ASTM B 88, Type L seamless, annealed temper; ANSI B16.22 wrought-copper solder-joint copper fittings.

F. PVC Pipe 3 Inches and Smaller: ASTM D 1785, Schedule 40; Schedule 40 socket-type PVC fittings or elastomeric gasketed joint.

G. Polybutylene Pipe 3 Inches and Smaller: AWWA C902, DR 17 barbed insert type brass or bronze fittings.

H. Polybutylene Pipe 3 Inches and Smaller: ASTM D 2662, SIDR15 barbed insert type brass or bronze fittings.

I. Polybutylene Tubing 3 Inches and Smaller: ASTM D 2666, SIDR13.5 brass or bronze fittings.

J. Polyethylene Pipe and Tubing 3 Inches and Smaller: AWWA C901; barbed insert type copper alloy or nylon fittings.

K. Couplings: ASTM A 126, gray iron sleeve assembly with followers, rubber gaskets, bolts, nuts, and enamel paint finish.

L. Valves:
1. Nonrising stem gate valves 3 Inches and larger, AWWA C500.
2. Rising stem gate valves 3 Inches and larger, AWWA C500 or AWWA C509.
3. Nonrising stem gate valves 2 inches and smaller, MSS SP-80.
4. Valve Accessories: Cast-iron valve boxes, curb stops, and service boxes for curb stops.
5. Tapping sleeve and tapping valve for new connections larger than 2 inches.

M. Anchorages:
3. Rod Couplings: ASTM A 197, malleable iron.
6. Concrete Reaction Backing: ASTM C 150, Type I Portland cement for 3000 psi, 28 day minimum compressive strength.

N. Yard Hydrants: Post type.

O. Valve Pits and Meter Pits: Reinforced concrete with ladder and cast-iron manhole frame and cover.

P. Water Meter: Utility company water meter.

Q. Meter Box: Cast-iron body and cover with lettering.

R. Identification: Metallic-lined plastic underground warning tapes.

S. Fire Service Main Accessories:
1. Hose House: 16 gauge (.0598 inches) steel with red baked enamel finish, hoses, and nozzles.
2. Alarm Devices: UL 753 and FM approved including water flow indicators, supervisory switches, and pressure switches.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.

B. Clean and disinfect system. Test for proper operation. Backfill and protect work from damage.

END OF SECTION
SECTION 33 30 00
SANITARY SEWERAGE SYSTEM

PART 1 - GENERAL

1.01 SUMMARY
A. Provide sanitary sewerage system.

1.02 SUBMITTALS
A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.

1.03 QUALITY ASSURANCE
A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS
A. Pipe and Fittings:
   1. Hub and Spigot Cast-Iron Soil Pipe and Fittings: ASTM A 74, grey cast iron for compression gasket joints, class of service as required.
   3. Ductile Iron Pressure Pipe: AWWA C151, Class 150 for push-on joints.
   5. Corrugated Steel Pipe: ASTM A 760, Type 1, made from ASTM A 444 zinc-coated steel sheet for banded joints.
   8. Corrugated Polyethylene (PE) Drainage Tubing and Fittings: AASHTO M 252 Interim, Type S, with smooth waterway for coupling joints.
  11. Polyvinyl Chloride (PVC), Cellular-Core Plastic Pipe: ASTM F 891, Sewer and Drain Series, PS 50 minimum stiffness, for solvent-cemented joints.
12. Polyvinyl Chloride (PVC), Sewer Pipe and Fittings: ASTM D 3034, SDR 35, for solvent-cemented or gasketed joints.
13. Polyvinyl Chloride (PVC), Sewer Pipe and Fittings: ASTM F 679, T-1 wall thickness, bell and spigot for gasketed joints.
14. Polyvinyl Chloride (PVC), Profile, Gravity Sewer Pipe and Fittings: ASTM F 794, open and closed profile, bell and spigot for gasketed joints.
15. Polyvinyl Chloride (PVC), Ribbed Drain Pipe: AASHTO M 304M, bell and spigot, with smooth waterway for bell-gasketed joints.
16. Nonreinforced-Concrete Sewer Pipe and Fittings: ASTM C 14, Class 2, for gasketed joints.
17. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76, Class III, Wall B, for gasketed joints.
18. Reinforced-Concrete Arch Pipe: ASTM C 506, Class IV, for banded joints.
21. Couplings: Rubber or elastomeric sleeve and stainless steel band.
22. Couplings: Rubber or elastomeric compression gasket.

B. Manholes:
1. Precast Concrete Manholes: ASTM C 478.
2. Manhole Steps: Ductile iron or cast aluminum.

C. Cleanouts:
1. Cast-iron.
2. PVC with cast-iron adapter.

D. Catch Basins for Storm Sewerage System:
1. Precast Concrete Catch Basins: ASTM C 478 or ASTM C 858.
2. Cast-In-Place Concrete Catch Basins: 3000 psi.
3. Catch Basin Steps: Ductile iron or cast aluminum.
5. Curb Inlets: Precast concrete, stone, or brick conforming to utility standards.


F. Trench Drains for Storm Sewerage System: Interlocking precast polymer concrete modular units with grates, channel caps, and related accessories.

G. Identification: Metallic-core plastic underground warning tapes.
PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.

B. Where connections are made to existing systems, rout out old drainage lines.

C. Test for proper operation. Clean and protect work from damage.

END OF SECTION
SECTION 33 40 00
STORM DRAINAGE UTILITIES

PART 1 - GENERAL

1.1 DESCRIPTION
   A. This section covers storm drain pipe and appurtenances.
   B. The Contractor shall furnish all labor, materials, and appurtenances necessary to complete all storm drain construction shown on the drawings.

PART 2 - PRODUCTS

2.1 REINFORCED CONCRETE PIPE
   A. Reinforced concrete materials used for precast pipe shall conform to Section 32 11 36, "Concrete Base Courses" and shall have a minimum compressive strength of 4000 psi after 28 days of placement.
   B. Reinforced concrete pipe shall be manufactured without lifting holes and shall be handled at all times by means of slings or other methods approved prior to start of construction.
   C. Reinforced concrete pipe shall meet the applicable strength requirements contained in ASTM Designation: C-76, Reinforced Concrete Culvert, Storm Drain and Sewer Pipe, minimum circumferential reinforcement shall be as prescribed for Class IV.

2.2 MASONRY MATERIALS
   A. Mortar for pipe joints and connections to other drainage structures shall be composed of 1 part by volume Portland cement and 2 parts sand. Portland cement shall conform to ASTM C150. Sand shall conform to ASTM C144. Hydrated lime may be added to the mixture of mortar in an amount of not more than 20 percent of the volume of cement. Hydrated lime shall conform to ASTM C141.

2.3 CONCRETE PIPE JOINTS
   A. Concrete pipe joints shall be cement mortar bell-and-spigot-joints. The first pipe shall be bedded to the established gradeline, with the bell end placed upstream. The interior surface of the bell shall be cleaned with a wet brush and the lower portion of the bell filled with mortar to such a depth as to bring the inner surfaces of the abutting pipes flush and even. The spigot end of each subsequent pipe shall be cleaned and uniformly matched into the bell so the sections are closely fitted. After each section is laid, the remainder of the joint shall be filled with mortar and a bead formed around the outside of the joint with additional mortar. The cement mortar, finish, and protection of joints shall be as specified. If the mortar is not sufficiently stiff to prevent appreciable slump before setting, the outside of the joint shall be wrapped with cheesecloth to hold the mortar in place.
2.4 BACKFILL MATERIALS

A. Backfill materials shall conform to Section 31 23 00, "Excavation for Pipelines and Structures".

2.5 CASTINGS

A. Frames and covers for junction box shall be set by the Contractor as the work progresses. The frame shall be well bedded in mortar.

B. Materials for frames and covers shall be in accordance with the standard specifications for gray iron castings ASTM Designation A-48 for Class No. 35.

C. All frames and covers shall be of the sizes and types detailed on the plans.

D. Inlet gratings shall conform with the detail shown on the plans and/or for the Delaware Department of Highways and Transportation Standard Specifications and Standard Details.

PART 3 - EXECUTION

3.1 EXCAVATION AND BACKFILL

A. Excavation and backfill shall be in accordance with Section 31 23 00, "Excavation for Pipelines and Structures."

3.2 MATERIAL STORAGE

A. Materials required in the work shall be located and retained a sufficient distance from the edge of excavations to prevent such material falling or sliding into the excavations and to prevent cave-ins.

3.3 PIPE INSTALLATION

A. Installation of pipe materials shall conform to the written or published instructions of the manufacturer, except as otherwise specified. The manufacturer's written or published instructions shall supersede referenced national association or trade standard installation practices such as ASTM C12, for the specified material. Where the Contractor proposes to deviate from specified instructions, the proposed deviation shall be submitted for approval.

B. Under no circumstances shall pipe be laid when trench conditions or weather are unsuitable for such work. Diversion of drainage or dewatering of trenches during construction shall be provided as necessary. Laid pipe shall be inspected before backfilling is initiated.

C. Pipe shall be visually inspected for apparent defects and tapped with a hammer to audibly detect hidden defects, prior to being lowered into a trench.
D. Defective materials found shall be distinctly marked using a road-traffic-quality yellow paint and promptly removed from the site.

E. Pipe shall be laid beginning at a low point of a system and, when in final acceptance position, shall be true to the grades and alignment indicated, with unbroken continuity of invert.

F. Type RCP shall be installed in accordance with the applicable recommendations of ACPA, "Concrete Pipe Installation Manual," except as otherwise specified.

G. Pipe and fittings shall be clean and dry when laid.

H. Pipe, when ready for specified acceptance testing, shall be "broom clean."

I. Interior of line shall be cleared of dirt and superfluous matter as the work progresses. A swab or drag shall be kept in the line and pulled forward past each joint immediately upon completion of the joint. In lines where man entry is possible, brushes and brooms may be used for cleaning. Plugs shall be placed in the ends of uncompleted work at the end of the day and whenever work stops. Plugs shall be commercially manufactured products, unless otherwise approved.

J. Pipe shall be checked to determine whether line displacement or other defects have occurred. Inspection shall take place when 2 feet of earth cover is in place and upon completion of project. A flashlight or mirror-reflected sunlight shall be flashed between manholes. If the illuminated interior indicates poor alignment, debris, displaced pipe infiltration, or other defects, the defects designated shall be remedied by the Contractor.

3.4 BACKFILLING

Backfilling shall conform to Section 31 23 00, "Excavation and Backfill for Pipelines and Structures."

3.5 GRADING

Grading shall conform to Section 31 00 00, "Earthwork."

3.6 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Excess excavated material, trash, debris, and waste materials shall be removed from the project site and legally disposed at no additional cost to the Owner. Permits and fees for disposal shall be paid by the Contractor.

END OF SECTION
SECTION 33 47 00
POND AND RESERVOIR LINERS

PART 1 - GENERAL

1.01 SUMMARY
A. Provide impervious, flexible membrane liner for ponds and reservoirs.

1.02 SUBMITTALS
A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections, and relationship with adjacent construction.
   1. Shop drawings shall be prepared and stamped by a qualified engineer licensed in the jurisdiction of the project.
C. Warranty: Submit manufacturer’s standard warranty. Include labor and materials to repair or replace defective materials.
   1. Warranty Period: 10 years.

1.03 QUALITY ASSURANCE
A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS
A. Liner:
   1. EPDM, ASTM D 3253, Type II, fabric reinforced, 30 mils nominal thickness.
   2. EPDM, ASTM D 3253, Type II, fabric reinforced, 45 mils nominal thickness.
   3. EPDM, ASTM D 3253, Type II, fabric reinforced, 60 mils nominal thickness.
   4. CPE, 36 mils nominal thickness with reinforcing scrim.
   5. PVC, 10 mils nominal thickness.
   6. PVC, 20 mils nominal thickness.
   7. PVC, 30 mils nominal thickness.
B. Adhesives: Compatible with membrane for sealing seams and projections through membrane.
C. Battens Strips For Mechanical Attachment: Stainless steel or aluminum.
PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials in accordance with manufacturer's instructions and approved submittals. Install materials in proper relation with adjacent construction. Coordinate with work of other sections.

B. Restore damaged components and test for water leakage. Protect work from damage.

END OF SECTION