PROJECT MANUAL

FOR

CHESTER UPLAND SCHOOL DISTRICT

Athletic Field Upgrades – Phase 1

Prepared By: MGE Engineering Associates, LLC

October 2026

NOTICE OF ADVERTISEMENT

Public notice is hereby given that the Chester Upland School District will receive sealed bids electronically through the PENNBID Program (https://pennbid.bonfirehub.com) until **4:00 P.M., prevailing time, on Thursday, December 3, 2026**, for **CUSD – Athletic Field Upgrades – Phase 1**.

All specifications and bid documents are available through the PENNBID Program (https://pennbid.bonfirehub.com).

The scope of work includes, but is not limited to, construction of a new artificial turf field; expansion of the existing synthetic running track from six (6) lanes to eight (8) lanes, new home and visitor grandstands, parking lot and bus drop-off area upgrades, pedestrian right-of-way improvements, installation of new concrete curb, sidewalks, and decorative paving; upgraded perimeter fencing; stormwater management improvements, and associated site work, demolition, and restoration as indicated in the Contract Documents.

A non-mandatory pre-bid meeting will be held on Tuesday, November 17, 2026, at 10:00 A.M. at the Chester Upland School District Athletic Complex, 1100 W. 10th Street, Chester, PA 19013. All questions concerning the project shall be submitted through PennBid by the deadline posted on the project listing. Responses will be posted through PennBid. Bidders shall not contact the District Engineer or District staff directly regarding this solicitation.

Each bid shall be accompanied by bid security in the form of a bid bond or equivalent security acceptable under the Contract Documents, in an amount equal to ten percent (10%) of the total bid price. Bid bonds will be returned to unsuccessful bidders upon execution of the contract. The successful bidder shall provide a Performance and Payment Bond in an amount equal to one hundred percent (100%) of the Contract amount within ten (10) calendar days after receipt of written notice of acceptance of the bid.

There will be no physical public bid opening. Bid results will be made available through the PENNBID Program (https://pennbid.bonfirehub.com).

The successful bidder shall pay PennBid a fee equal to one-third of one percent (⅓%) of the contract award value, subject to a minimum fee of $150.00 and a maximum fee of $6,000.00, plus applicable tax.

This project is subject to applicable Pennsylvania laws and requirements, including, where applicable:

- Pennsylvania Prevailing Wage Act;
- Public Works Contractors' Bond Law;
- Steel Products Procurement Act;
- Public Works Employment Verification Act;
- Pennsylvania Human Relations Act;
- Separations Act and Section 751 of the Pennsylvania Public School Code; and
- Applicable Pennsylvania Department of Education requirements.

Bidders shall comply with all requirements identified in the bidding and Contract Documents. No bidder may withdraw its bid for sixty (60) days after the bid-opening date, except as otherwise permitted by law.
The Contract Documents contain the pertinent regulations and requirements. Award of the contract will be made to the lowest responsible bidder. The Chester Upland School District reserves the right to reject any or all bids, waive informalities or irregularities in bids, and award contracts in the best interests of the School District, subject to applicable law.

Nafis Nichols, Receiver
Chester Upland School District

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PROCUREMENT AND CONTRACTING REQUIREMENTS

NOTICE TO CONTRACTORS

Sealed proposals for the CUSD – Athletic Field Upgrades – Phase 1 will be received electronically via the PennBid Program by the Chester Upland School District until December 3, 2026 until 4:00 PM prevailing time, at which time said bids will be publicly opened with the results made available via PennBid.

Plans, Specification, and bid forms may be obtained at no cost on PennBid (https://pennbid.bonfirehub.com)

Each bid must be accompanied by either a bid bond in an amount of ten (10%) of the bid amount from a surety satisfactory to the District or by certified check or letter of credit upon a solvent bank in the amount of ten (10%) of the bid amount in favor of the District. Bid Bonds shall be accompanied by Proof of Authority of the official or agent signing the bond.

The successful bidder shall pay PennBid a fee equal to one-third of one percent (⅓%) of the contract award value, subject to a minimum fee of $150.00 and a maximum fee of $6,000.00, plus applicable tax.

Attention of bidders is called to all of the requirements contained in this bid packet, particularly to the application of the PA Prevailing Wage Requirements, various insurance requirements, various equal opportunity provisions, and the requirement of a payment bond and performance bond for 100% of the contract price.

All prospective bidders are required to present proof of an acceptable disposal method approved by the Pennsylvania Department of Environmental Resources or counterpart Agency in another State. The proof may consist of a copy of a State Solid Waste Disposal Permit to the prospective bidder or a Letter of Approval for the use of a proposed or existing disposal facility which has a permit or is under review for a permit.

The contract is subject to PA Procurement Rules which include Prevailing Wage Requirements.

Attention is called to the fact that the Contractor must ensure that employees and applicants for employment are not discriminated against because of their race because of their race, color, religion, sex, handicap, familial status, or national origin. Hearing impaired individuals may contact the District through the AT&T Relay Center at 1-800-654-5984.

No bidder may withdraw his bid within sixty (60) days after the actual date of the opening thereof. Chester Upland School District reserves the right to waive any informalities or to reject any or all bids.

NONCOLLUSION AFFIDAVIT

State of

BID Identification: CUSD – Athletic Field Upgrades – Phase 1

CONTRACTOR _____, being first duly sworn, deposes and says that he is _____(sole owner, a partner, president, secretary, etc.) of the party making the foregoing BID; that such BID is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation; that such BID is genuine and not collusive or sham; that said BIDDER has not directly or indirectly induced or solicited any other BIDDER to put in a false or sham BID, and has not directly or indirectly colluded, conspired, connived, or agreed with any BIDDER or any one else to put in a sham BID, or that any one shall refrain from bidding; that said BIDDER has not in any manner, directly or indirectly, sought by agreement, communication or conference with any one to fix the BID price of said BIDDER or of any other BIDDER, or to fix any overhead, profit, or cost element of such BID price, or of that of any other BIDDER, or to secure any advantage against the OWNER awarding the contract or anyone interested in the proposed contract; that all statements contained in such BID are true; and, further, that said BIDDER has not, directly or indirectly, submitted his BID price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith, to any corporation, partnership, company, association, organization, BID depository, or to any member or agent thereof, or to any other individual except to such person or persons as have a partnership or other financial interest with said BIDDER in his general business.

Signed:

_____

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

Seal of Notary:

_____

BID BOND

KNOW ALL MEN BY THESE PRESENTS, THAT WE, as PRINCIPAL, and _____ as SURETY, are held and firmly bound unto the (hereinafter called the OWNER), in the penal sum of DOLLARS ($_____) lawful money of the United States, for payment of which sum well and truly to be made, we bond ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THE OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying Bid dated _____ for .

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the time specified therein after the opening of the same, and shall within ten (10) days after the Principal is notified by the Owner of the award of such Contract to him, enter into a written contract with the Owner, in accordance with the Bid as accepted; and give bond with good and sufficient surety or sureties as may be required for the faithful performance and proper fulfillment and labor supplied, if required in said Contract; or in event of the withdrawal of said Bid within the period specified, or the failure to enter into such Contract and give such bonds within the time specified if the Principal shall pay the Owner the difference between the amount specified in said Bid and the amount for which the Owner may procure the required materials or supplies, or both, if the latter amount of the former, together with any other expenses and costs that may have been incurred by the Owner, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above bonded parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

WITNESSED BY:

_____
(Individual Principal)

Business Address:

ATTEST:

_____

Corporate Principal Corporate Surety

By:

SEAL

(Power of Attorney for person signing for Surety Company must be attached to bond.)

INSTRUCTIONS TO BIDDERS

1. RECEIPT AND OPENING OF BIDS: Chester Upland School District (herein called the "Owner"), invites bidders to submit sealed bids that will be received online via the PennBid Program by the Chester Upland School District by December 3, 2026, 4:00 PM prevailing time. There is no physical bid opening for this project, bids will be revealed via the PennBid website.

   The Successful Bidder Who Is Awarded The Contract, Will Be Required To Pay "PennBid" A Fee Of 1/3% of contract, $150 min. and capped at $6,000.00 (plus tax) Of the Contract Award Value. No fees apply to bidders who submit without being awarded the contract.

   The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within thirty (30) days after the actual date of the opening thereof.

2. PREPARATION OF BID: Each bid must be submitted electronically via PennBid, on the prescribed form and accompanied by a Bid Bond, Certified Check, or Letter of Credit, the Non-collusion Affidavit, and Subcontractor Declaration Form. All blank spaces for bid prices must be completed, in ink or typewritten, in both words and figures, and the foregoing Certifications must be fully completed and executed when submitted. In case of discrepancies of written words and figures, the prices written in words shall govern.

   All bids will be received through the PennBid Program and bidder shall adhere to requirements detailed on the Bid located on the website.

3. MODIFICATION OF BIDS: Any bidder may modify his/her bid within PennBid at any time prior to the due date and time listed in the invitation to bid.

4. METHOD OF BIDDING: The Owner invites unit price/lump sum price bids as indicated in the Bid Form.

   If the lowest total responsive bid received exceeds the amount of funds available to finance the contract, the Owner may:

   a. Reject all bids;

   b. Augment the funds available in an amount sufficient to enable award to the lowest responsive bidder or bidders;

c. Take the base bid less the alternative deductible (if any) as listed on the proposal form as to produce a net amount which is within available funds.

5. QUALIFICATIONS OF BIDDER: The Owner may make such investigations as he/she deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.

6. BID SECURITY: Each bid must be accompanied by cash, certified check of the bidder, or a bid bond prepared on the form of bid bond attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the Owner. Such cash, checks or bid bonds will be returned to all except the three lowest bidders within three days after the opening of bids, and the remaining cash, checks or bid bonds will be returned promptly after the Owner and the accepted bidder have executed the contract, or, if no award has been made within thirty (30) days after the date of the opening of bids, upon demand of the bidder at any time thereafter, so long as he/she has not been notified of the acceptance of his/her bid. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

7. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT: The successful bidder, upon his/her failure or refusal to execute and deliver the contract and bonds required within ten (10) days after he/she has received notice of the acceptance of his/her bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his/her bid.

8. CONDITIONS OF WORK: Each bidder must inform himself/herself fully to the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his/her obligation to furnish all material and labor necessary to carry out the provisions of his/her contract. Insofar as possible, the contractor in carrying out the work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

9. OBLIGATION OF BIDDER: At the time of the opening of bids each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect of his/her bid.

10. EXAMINATION OF SITE: Each bidder shall, and is hereby directed to inspect the entire site of the proposed work and judge for himself/herself as to all the circumstances affecting the cost and progress of the work and shall assume all patent and latent risks in connection therewith.

11. SOIL CONDITIONS: NA

12. WORKING FACILITIES: The plans show, in the general manner, the existing structures and the land available for construction purposes. The bidders must satisfy themselves of the conditions and difficulties that may be encountered in the execution of the work at this site.

13. ADDENDA AND INTERPRETATIONS: No official interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

    Every request for such interpretation should be in writing and will be submitted via the "Clarifications" feature within PennBid, and to be given consideration, must be received at least five (5) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be distributed to all prospective bidders, not later than three (3) days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his/her bid as submitted. All addenda so issued shall become part of the contract documents.

14. WATER SUPPLY: NA

15. SIGNATURE OF BIDDERS: The firm, corporate or individual name of the bidder must be signed in ink in the space provided for the signatures on the proposed blanks. In the case of a corporation, the title of the officer signing must be stated and such officer must be thereunto duly authorized and the seal of said corporation duly affixed. In the case of a partnership, the signature of at least one of the partners must follow the firm name, using the term "member of the firm". In the case of an individual, use the terms "doing business as", or "sole owner". The bidder shall further state in his proposal the name and address of each person or corporation interested therein.

16. NOTICE OF SPECIAL CONDITIONS: Attention of the bidder is particularly called to those parts of the General Contract Conditions and other contract documents and specifications which deal with the following:

    a. Insurance requirements
    b. Provisions, Pennsylvania Prevailing Wage Act

c. Requirement for a payment bond and performance bond for 100% of contract price
d. Requirement that all subcontractors be approved by the Owner
e. Time-for-completion and liquidated damages requirements
f. Safety standards
g. Contractor's responsibility to obtain permits
h. Affirmative Action and Equal Opportunity provisions
i. Nondiscrimination/Sexual Harassment Clause

17. ADDITIONAL OBLIGATIONS UPON CONTRACT AWARD: Upon award of the contract but prior to issuance of the notice to proceed, the contractor shall submit all of the following documents, completed as required:

(a) Acceptance of Notice of Award
(b) Contract
(c) Insurance certificate(s) and/or policy(ies)
(d) Performance & Payment bonds
(e) Subcontractor declaration form
(f) (If over $10,000:) Certification of Bidder Regarding Equal Employment Opportunity
(g) (If over $10,000:) Certification(s) by (all) Proposed Subcontractors Regarding Equal Employment Opportunity
(h) (Omitted)
(k) (If over $100,000:) Certification by Contractor and Subcontractors of Compliance with Clean Air and Water Acts
(l) (Omitted)
(m) (All) Subcontractor's Certification(s) Concerning Labor Standards and Prevailing Wage Requirements

GENERAL CONTRACT CONDITIONS

ARTICLE 1 - CONTRACT AND CONTRACT DOCUMENTS

A. All applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

B. The Plans, Specifications and Addenda, hereinafter enumerated in Paragraph 1 of the Supplemental General Conditions shall form part of this Contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit or cast light on the interpretation of the provisions to which they refer.

ARTICLE 2 - PERFORMANCE AND PAYMENT BONDS

Simultaneously with his/her delivery of the executed contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Owner. The bond shall be for 100 percent of the contract price. A Payment Bond and Performance Bond are required. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney. Under certain conditions, and within the limits of State and local laws and regulations, the Owner may waive the requirement that the Payment and Performance Bond be underwritten by a surety company and may authorize in lieu thereof, a personal bond backed by a letter of credit from a local lending institution for the full value of the Contract.

ARTICLE 3 - WAGE RATES

In the event that the rate of wages paid for any trade or occupant in the locality where such work is being performed are under current collective agreements or understandings between bona fide organizations of labor and employer, then the wages to be paid shall be not less than such agreed wage rates, nor less than the minimum rates compiled by the Commonwealth of Pennsylvania. A copy of these prevailing rates of wages has been included in these specifications.

Every Contractor and Subcontractor who is subject to this contract shall, as soon as he/she begins performance under his/her contract with the Owner, supply the Owner a schedule of the dates on which he/she is required to pay wages to employees. After construction begins he/she shall also deliver to the prevailing wage coordinator a weekly, a certified copy of his/her payroll which shall exhibit for each employee paid any wages, name, current address, identification number, number of hours worked each day of the pay period and the total for each week, hourly rate of pay, job classification, fringe payments, and deductions from wages. The certification of each payroll shall be executed by the Contractor, Subcontractor, or duly appointed agent thereof and shall recite that the payroll is correct and complete and that the wage rate shown is not less than those required by the contract.

ARTICLE 4 - OMITTED

ARTICLE 5 - INSURANCE

A. The contractor shall not commence work under this contract until he/she has obtained all the insurance required hereunder and such insurance has been approved by the Owner, nor shall the Contractor allow any Subcontractor to commence work on his/her subcontract until similar insurance required of the Subcontractor has been so obtained and approved. Approval of the insurance by the Owner shall not relieve or decrease the liability of the Contractor hereunder.B. The Contractor shall file with the Owner all Certificate(s) of Insurance as are necessary to document the insurance coverage required hereunder, subject to the approval of the Owner and receipt of any additional forms/documentation requested, prior to final execution of Agreement Contract and issuance of the Notice to Proceed.

C. Worker's Compensation.

All contractors and subcontractors shall acquire and maintain, during the term of the contract, Worker's Compensation insurance in full compliance with the laws of the State of Pennsylvania. The contractor shall at all times indemnify and save harmless the Owner from all claims for worker's compensation which may be made by any of the employees of any subcontractor to whom the Contract may have let the performance of any part of the work embraced in this contract, and the Contractor will appear for and defend the Owner against any and all such claims.

D. Contractor's Liability Insurance.

(i) The Contractor shall acquire and maintain during the term of the Contract Bodily Injury and Property Damage Liability Insurance under a standard Comprehensive General/Automobile Liability Policy which shall provide and include coverage on all Contractor's

Operations, Contractor's Protective (Sublet) Liability, Contractual Liability, Completed Operations Liability, Owned Automobiles and Non-owned and Hired Automobiles.

(ii) Property Damage Liability Insurance shall be provided on any demolition, blasting, excavating, shoring or similar operation on an "if any" basis.

(iii) Bodily Injury Liability limits shall be for an amount of no less the Five Hundred Thousand ($500,000) Dollars for injuries, including wrongful death to any one person and subject to the same limit for each person, in amount of not less than One Million ($1,000,000) Dollars on the account of any one occurrence.

(iv) Property Damage Liability Insurance shall be in an amount of not less than Five Hundred Thousand ($500,000) Dollars per occurrence. General Liability shall be extended to provide "Broad Form Property Damage Liability," and in an amount of not less the One Million ($l,000,000) dollars aggregate for damage on account of all occurrences.

(v) Any combination of underlying Comprehensive General/Automobile Liability coverage with Umbrella/Excess Liability coverage which provides no less than One Million ($1,000,000) Dollars Single Limit Bodily Injury & Property Damage Liability Insurance for the Contractor will also be acceptable.

(vi) The owner may adjust the liability limits to coincide with local government procurement policies and practice within the limits of state and local law.

E. Builder's Risk Insurance.

Each Contractor shall maintain insurance to protect himself and the Owner, jointly, from loss incurred by fire, lightning, extended coverage hazards, vandalism, theft, explosion and malicious mischief in the full amount of the Contract and such insurance shall cover all labor and materials connected with the work, including materials delivered to the site but not yet installed.

F. Installation Floater Insurance.

When a Contractor is involved solely in the installation of materials and not in the construction of a building, an Installation Floater is required in lieu of a Builder's Risk Policy with the same general conditions applying as set forth in paragraph E.

G. The Policies as listed above shall all contain the following special provisions:

(i) "The Company agrees that thirty (30) days prior to cancellation or reduction of the insurance afforded by this policy with respect to the Contract involved, written notice will be mailed to the Chester Upland School District."

(ii) The maintaining of such insurance as outlined herein shall in no way constitute a waiver of legal liability for damage to any adjoining buildings or their contents or the work and property of others on the site beyond the limits of insurance thus maintained. The Contractor shall hold the Owner free and harmless from any injury and damage resulting from the negligent or faulty performance of the Contract by the Contractor or by his/or her Subcontractors.

H. Additional Insured: Chester Upland School District and MG Engineering Associates, LLC

ARTICLE 6 - PENNSYLVANIA STEEL PRODUCTS PROCUREMENT ACT (NO. 1978-3)

If any steel products are to be used or supplied in the performance of the contract, only steel products produced in the United States shall be used or supplied in the performance of the contract or any subcontracts thereunder. This provision shall not apply in any case where the head of the public agency, in writing, determines that the type of steel products necessary to the performance of the contract are not produced in the United States in sufficient quantities to meet the requirements of the contract.

(iii) Each Contractor shall hold the Owner harmless from all payments for patents, either as royalty or otherwise, in the use of materials, methods, appliances, etc., that he may be in any way involved in or connected with any part of his work or the work of his Subcontractors.

(iv) Prior to commencement of any work under Contract, the Contractor shall furnish one (1) copy of Declaration of Insurance as evidence of coverage.

ARTICLE 7 - SAFETY

A. The Contractor will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. He/She will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury, or loss to all employees on the work and other persons who may be affected thereby, all the work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

B. The Contractor will erect and maintain, as required by the conditions and progress of the Work, all necessary safeguards for safety protection. He/She will notify owners of adjacent utilities when prosecution of the work may affect them.

C. The Contractor shall comply with the safety standards provisions of applicable laws, building and construction codes and the manual of Accident Prevention in Construction published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596), and the requirements of Title 29 of the Code of Federal Regulations, Section 1518 as published in the "Federal Register" Volume 36, No. 75, Saturday, April 17, 1971.

D. The Contractor shall maintain at his/her office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care of persons (including employees) who may be injured at the job site. In no case shall employees be permitted to work at a job site before the employer has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

E. Lights, signs and barricades shall be used to maintain traffic and safety for vehicular and pedestrian traffic during the course of this contract in accordance with the specifications.

ARTICLE 8 - PERMITS

The Contractor is responsible for obtaining and paying for all necessary permits and Licenses from the proper authorities. The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he/she shall promptly notify the Owner in writing.

ARTICLE 9 - SUPERVISION

A. The Contractor will supervise and direct the work. He/She will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor will employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The Supervisor shall have full authority to act on behalf of the Contractor and communications given to the supervisor shall be as binding as if given to the Contractor. The supervisor shall be present and on the site at all times as required to perform adequate supervision and coordination of the work.

B. The Owner and its representatives will at all times have access to the work. In addition, authorized representatives and agents of any participating federal or County agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the work and also for any inspection or testing thereof.

C. The Contractor shall submit a proposed program of operation, showing clearly how he/she proposed to conduct the work as to bring about the completion of his/her work within the time limit specified. This program shall outline the proposed sequence of operations, the rates of progress and the dates when his/her work will be sufficiently advanced to permit the installation of the work under other contracts, and the estimated progress payments due under the Contract. The work under this contract shall be so scheduled that as structures are completed, they can be placed into useful operation with a minimum of delay. The program shall be subject to the approval of the Owner.

D. All construction as proposed along all City, Township, County, State and Federal roads including storage and stockpiling of materials, is to be conducted within the limits of the public right-of-way. Bracing, sheeting and shoring shall be used to keep all construction work within the construction limits unless work agreements are secured from the adjacent property Owners. It is the Contractor's responsibility to secure these work agreements, if deemed necessary. Copies of the work agreements shall be delivered to the Engineer and the Owner prior to any work beginning on the effected property.

ARTICLE 10 - CLAIMS AGAINST CONTRACTOR

The Contractor shall indemnify and save the Owner or the owner's agents harmless from all claims growing out of the lawful demands of Subcontractor's laborers, workmen,

mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the work. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged or waived. If the Contractor fails to do so the Owner may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is fully finished that all liabilities have been fully discharged whereupon payment to the Contractor shall be resumed, in accordance with the terms of the Contract Documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to either the Contractor, his Surety, or any third party. In paying any unpaid bills of the Contractor, any payment so made by the Owner shall be considered as a payment made under the Contract Documents by the owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments in good faith.

ARTICLE 11 - SUBCONTRACTING

A. Neither the Contractor nor the owner shall sell, transfer, assign, or otherwise dispose of the Contract or any portion thereof, or of his right, title, or interest therein, or his obligations thereunder.

B. The Contractor shall not sublet, sell, transfer or assign any portion of the contract without consent of the Owner or his/her designated agent. No subcontract, or transfer of contract, shall in any way release the Contractor of his/her liability under the contract and bonds.

C. The Contractor shall not award work to Subcontractor(s) not identified on the Subcontractors Declaration Form as submitted with bid, without

i) Prior approval of the Owner

ii) Submission of all certifications as required in the INSTRUCTIONS TO BIDDERS. The Contractor shall be fully responsible to the Owner for the acts and omissions of the subcontractor(s), and of persons, either directly or indirectly employed by them, as he/she is for the acts and omissions of persons directly employed by him/her.

ARTICLE 12 - CHANGE OF WORK

A. The Owner reserves the right to make, at any time during the progress of the work, such increases or decreases in quantities and such alterations in details of work as may be deemed necessary or desirable. Such increases or decreases and alterations shall not invalidate the contract nor release the surety, and the Contractor agrees to perform the work as altered, the same as if it had been a part of the original contract.

B. Authorized alterations in plans or quantities of work involving work not covered by unit prices in the proposal shall be paid for as stipulated in the change order authorizing such work.

C. No changes in work covered by the approved Contract shall be made without having prior written approval of the Owner.

ARTICLE 13 - TIME

A. The Date of beginning and the time for completion of the work are essential conditions of the Contract Documents and the work embraced shall be commenced on a date specified in the Notice to Proceed.

B. The Contractor will proceed with the work at such rate of progress to ensure full completion within the Contract Time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the Contract Time for the completion of the work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the work.

C. The Contract Time to fully complete the project shall be consecutive calendar days following the date of commencement of work to be specified in a written "Notice to Proceed".

D. If the Contractor shall fail to complete the work within the Contract Time, or extension of time granted by the Owner, the Contractor will pay to the Owner for liquidated damages $1,500.00 for each calendar day that the Contractor shall be in default after the time stipulated in the Contract Documents.

ARTICLE 14 - COMPLETION OF WORK

A. The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one year from the date of Substantial Completion. The Contractor warrants and guarantees for a period of one year from the date of Substantial Completion of the improvement that it is free from all defects due to

faulty materials or workmanship, and the Contractor shall promptly make corrections as may be necessary by reason of such defects. The owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make repairs, adjustments, or other work, which may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. Upon 100% completion of the improvements, the contractor shall provide a Maintenance Bond in the amount of 15% of the cost of the improvements for a period of 1-year.

B. When the work, including that performed by Subcontractors, is completed, the site shall be cleaned of all rubbish and debris caused by the construction. All sheds or other temporary structures, surplus materials, and equipment shall be removed and the project left in a neat and presentable condition.

ARTICLE 15 - TERMINATION

After ten (10) days from delivery of a Written Notice to the Contractor, the Owner may, without cause and without prejudice to any other right or remedy elects to terminate the Contract. In such case the Contractor shall be paid for all work executed and any expense sustained plus reasonable profit, unless such termination was due to the act or conduct of the Contractor.

ARTICLE 16 - PAYMENT

Payment to the Contractor shall be made by the Chester Upland School District upon receiving invoice from contractor and inspection of work completed. The Owner's representative and the project engineer shall certify on the pay request that the completed work has been approved prior to the submission of the invoice. Retainage to be held should be reflected by the engineer/architect on the contractor's original invoice. A turn-around time of 3-4 weeks is expected before said funds are forwarded to the contractor.

It is important that the progress schedule be based on achievable goals, and that the Contractor makes every effort to meet target dates. The Chester Upland School District may hold the pay request, or a portion of the pay request, in cases where the Contractor is found to be in violation of any of the terms and conditions in this contract, e.g. federal labor standards compliance, until such violations are corrected.

ARTICLE 17 - LIVE UTILITIES AND OTHER PROPERTY

The contractor shall assume all responsibility for damage attributed to him to any property upon, or passing through, the Project Area, but excluded from the work or not owned by the Local Public Agency, such as utility lines, surface improvements, or like items.

If disconnections of underground utility services are required to be made in public thoroughfares, the Contractor shall comply with all local requirements and regulations respecting the barricade of streets, the removal and restoration of pavement, and other pertinent matters.

ARTICLE 18 - LIVE UTILITIES AND OTHER PROPERTY

The contractor shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms conditions and agreements of said contract.

If disconnections of underground utility services are required to be made in public thoroughfares, the Contractor shall comply with all local requirements and regulations respecting the barricade of streets, the removal and restoration of pavement, and other pertinent matters.

ARTICLE 19 - HOLD HARMLESS

The contractor shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the Local Public Agency, with or without notice to the Surety, and he shall satisfy all claims and demands incurred under such contract and shall fully indemnify and save harmless the Local Public Agency from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Local Public Agency all outlay and expense which the Local Public Agency may incur in making good any default.

SUPPLEMENTAL GENERAL CONDITIONS

1. ENUMERATION OF PLANS, SPECIFICATIONS AND ADDENDA

Following are the Plans, Specifications, and Addenda which form a part of this contract, as set forth in Article I of the General Contract Conditions, "Contract and Contract Documents".

Drawings:	Date per Plans
Athletic Field Plans	26 Sheets
Specifications:	Date per Plans
Technical Specifications	

Addenda:	Number	Date

2. STATED ALLOWANCES: Not Included

3. SPECIAL HAZARDS : Not Included

4. CONTRACTOR'S AND SUBCONTRACTOR'S PUBLIC LIABILITY, VEHICLE LIABILITY, AND PROPERTY DAMAGE INSURANCE

See Article 5 of General Contract conditions.

The Contractor shall either (1) require each of his/her subcontractors to procure and to maintain during the life of his/her subcontract, Subcontractor's Public Liability and Property Damage of the type and in the same amounts as specified in Article 5, or (2) insure the activities of his/her subcontractors in his/her own policy.

6. BUILDER'S RISK INSURANCE

The Contractor will maintain Builder's Risk Insurance (fire and extended coverage) on a 100 percent completed value basis on the insurable portions of the project for the benefit of the Owner, the Contractor, and all subcontractors, as their interests may appear.

CONTRACT

THIS AGREEMENT made this _____ day of _____, 20__, by and between _____hereinafter called the "Contractor, and _____hereinafter called the "Owner".

WITNESSETH, that the Contractor and the Owner for the considerations stated herein mutually agree as follows:

ARTICLE 1. Statement of Work.

The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment and services, including utility and transportation services, and perform and complete all work required for the construction of the Improvements embraced in the project; namely, _____, and required supplemental work for the _____all in strict accordance with the Contract Documents including all addenda thereto, numbered _____, dated _____, and _____dated , all as prepared by _____ acting and in these Contract documents preparation, referred to as the "Engineer".

ARTICLE 2. The Contract Price.

The Owner will pay the Contractor for the total quantities of work performed at the unit prices stipulated in the Bid for the respective items of work completed for the sum not to exceed _____ _____ (Dollars) subject to additions and deductions as provided in Section ___ hereof.

ARTICLE 3. Contract.

The executed contract documents shall consist of the following:

a. This Agreement
b. Addenda
c. Invitation for Bids
d. Instructions to Bidders
e. Signed copy of Bid
f. General Conditions, Parts I and II
g. Special Conditions
h. Technical Specifications
i. Drawings (as listed in the Schedule of Drawings)
j. Other Contract Provisions required by Chester Upland School District

This Agreement, together with other documents enumerated in this ARTICLE 3, which said other documents are as fully a part of the Contract as if hereto attached or herein repeated, forms the Contract between the parties hereto. In the event that any provision in any component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in this ARTICLE 3 shall govern, except as otherwise specifically stated.
IN WITNESS WHEREOF, the parties hereto have caused this AGREEMENT to be executed in _ _____original copies on the day and year first above written.

CONTRACTOR:	OWNER:
_____	_____
Signature	Signature
_____	_____
Typed/printed name	Typed/printed name
_____	_____
Title	Title

<u>Certifications</u>:

I, _____, certify that I am the _____ of the corporation named as Contractor herein; that _____who signed this Agreement on behalf of the Contractor, was then _____ of said corporation; that said Agreement was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

_____ (Corporate Seal)

PERFORMANCE AND PAYMENT BOND (OR BONDS)

Following the Form of Agreement, attach the approved form of the statutory surety bond or bonds to insure the performance of the Contract and payment of labor and materials. In addition to the corporation signatures of the surety company(ies) on the bond(s), each bond should be countersigned by the surety company's attorney-in-fact, authorized to act within the state in which the Project is situated.

MS-944S **PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS, that we, _____ of _____ , as PRINCIPAL and _____ a corporation incorporated under the laws of the State of _____ as Surety, are held and firmly bond unto the _____ in the full and just sum of _____ ($_____) dollars, lawful money of the United States of America, to be paid to the said _ or its assigns, to which payment well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above bounden Principal has entered into a contract with the above, hereinafter called Obligee, bearing even date herewith, for the improvement of:

_____

_____

for approximately the sum of _____ ($_____) dollars.

NOW, THEREFORE, the condition of this obligation is such that the above bounden PRINCIPAL shall and will promptly pay cause to be paid in full all sums of money which may be due by contractor or otherwise, to any individual, firm, partnership, association or corporation, for all material furnished or labor supplied or performed in the prosecution of the work, whether or not the said material or labor entered into and became component parts of the work and for rental of the equipment used and services rendered by public utilities in, or in connection with the prosecution of such work, then this obligation to be void, otherwise to remain in full force and effect.

THE PRINCIPAL and SURETY, hereby, jointly and severally, agree with the Obligee herein that any individual firm, partnership, association or corporation, which has performed labor or furnished material in the prosecution of the work as provided, and any public utility which has not been paid in full therefore, may sue in assumpsit on this Payment Bond, in his, their, or its own name and may prosecute the same to final judgment for such sum or sums as may be justly due him, them or it, and have execution thereon. Provided, however, that the Obligee shall not be liable for the payment of any costs of expenses of such suit.

RECOVERY by any individual, firm, partnership, association or corporation hereunder shall be subject to the provisions of the "Public Works Contractor's Bond Law of 167", Act No. 385, approved December 20, 1967, P.L. 869, which Act shall be incorporated herein and made a part hereof, as fully and completely as though its provisions were fully and at length herein recited.

It is further provided that any alteration which may be made in the terms of the contract or its work to be done or materials to be furnished or labor to be supplied or performed under it or the giving by the Obligee of any extension of time for the performance of the contract or any other forbearance on the part of either the Obligee or the Principal to the other, shall not in any way release the PRINCIPAL and the SURETY or SURETIES of any such alteration, extension or forbearance being hereby waived.

IN WITNESS WHEREOF, the said PRINCIPAL and SURETY have duly executed this Bond under seal the _____ day of _____, 20____.

WITNESS: _____
PLACE Contractor
SEAL
HERE

_____ BY _____
Title: Title:

WITNESS:
PLACE
SEAL
HERE

_____ Surety Company

_____ _____

Title: Title:

MS-944S (10-83)

PERFORMANCE BOND
(With Corporate Surety)

KNOW ALL MEN BY THESE PRESENTS, that we, _____(Name and Address of Contractor)

as Principal and _____
(Surety Company)

a corporation incorporated under the laws of the State of _____as Surety.
(Name of State)

are held and firmly bound unto _____ in
(Name of Contract Owner)

the full and just sum of _____ ($_____) dollars lawful money of the United States of America, to be paid to the above Owner or its assigns, to which payment well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above bounden Principal has entered into a contract with the above District, bearing even date herewith, for the undertaking of certain obligations as therein set forth.

NOW, THEREFORE, the condition of this obligation is such that if the above bounden Principal, as Contractor, shall in all respects comply with and faithfully perform the terms and conditions of said Contract, including the Specifications and conditions referred to and made a part thereof, and such alterations as may be made in said specifications as therein set forth, then this Obligation shall be void, but otherwise the same shall be and remain in full force, virtue and effect.

It is further provided that any alteration which may be made in the terms of the contract or its specifications with the express approval of the District or the Principal to the other, shall not in any way release the Principal and the Surety or either of any of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety of any such alteration or forbearance being hereby waived.

IN WITNESS WHEREOF, the said Principal and Surety have duly executed this Bond under Seal, pursuant to due and legal action authorizing the same to be done on _____.
(Date of Bond)

Attest/Witness: _____

_____
PLACE
SEAL
HERE

Contractor

_____ BY _____
Title: Title:

Attest/Witness: _____

_____
PLACE
SEAL
HERE

Surety Company

_____ _____
Title: Title:

NOTICE OF AWARD

To: _____

_____

_____

PROJECT Description: _____

_____

The OWNER has considered the BID submitted by you on _____, 20__ (BID Date) for the above described WORK in response to its Advertisement for BIDS and Information for BIDDERS.

You are hereby notified that your BID has been accepted for items in the amount of $____
.

You are required by the Information for BIDDERS to execute the Agreement and furnish the required CONTRACTOR's Contract BOND, if applicable, and Certificates of Insurance within 10 calendar days from the date of this notice to you.

If you fail to execute said Agreement and to furnish said BOND within 10 days from the date of this notice, said OWNER will be entitled to consider all your rights arising out of the OWNER's acceptance of your BID as abandoned and as a forfeiture of your BID guaranty. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this ____ day of _____, 20__.

_____
Owner

By: _____

Name: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by: _____
_____ on this _____day of _____, 20__.

By: _____

Name and Title: _____

cc: CONTRACTOR's Surety
Surety's Agent

NOTICE TO PROCEED

To: _____ Date: _____

_____

_____

PROJECT Description: _____

_____

You are hereby notified to commence WORK in accordance with the Agreement dated , 20__, on or

after _____, 20__, and you are to complete the WORK within _____ consecutive calendar days thereafter.

The date of completion of all WORK is therefore _____, 20__.

_____
Owner

By: _____

Name: _____

Title: _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____ on this _____ day of _____, 20___.

By: _____

Name: _____

Title: _____

CONTRACT CHANGE ORDER

Contract No._____ Date _____
Change Order No._____ Project No._____

To: (Contractor) _____

You are hereby requested to comply with the following changes from the contract plans and specifications:

ITEM NO. (1)	DESCRIPTION OF CHANGES – QUANTITIES, UNIT, UNIT PR CHANGE IN COMPLETION SCHEDULE, ETC. (2)	DECREASE IN CONTRACT PRICE (3)	INCREASE IN CONTRACT PRICE (4)
	Change in contract price due to this change order	$	$
	Total decrease	$	$
	Total increase	$	$
	Difference between Columns (3) and (4)	$	$
	Net (increase) (decrease) contract price	$	$

The sum of $_____ is hereby added to, deducted from, the total contract price and the total adjusted price to date thereby is $_____.

The time provided for completion in the contract is unchanged, increased, decreased, by ___ calendar days. This document shall become an amendment to the contract and all provisions of the contract will apply hereto.

_____

Accepted by: _____ _____
Contractor Date

Recommended by: _____ _____
Architect/Engineer Date

Approved by: _____ _____
Chester Upland School District Date

Note: Work performed under this change order prior to District concurrence is at owner's risk. District concurrence will be evidenced by signature of Engineer and Owner

004116 - BID FORM - STIPULATED SUM

1.1 BID INFORMATION

A. Bidder: _____.

B. Project Name: **CUSD – Athletic Field Upgrades – Phase 1**

C. Project Locations:

1. The Athletic Fields at STEM Academy: 1100 West 10th Street, Chester, PA 19013

D. Owner: Chester Upland School District

1.2 CERTIFICATIONS AND BASE BID

A. Base Bid, Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by MG Engineering Associates, LLC, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____Dollars ($_____).

B. Allowance for 750 SY of Plain Cement Concrete Sidewalk to be installed on an If and Where Directed Basis.

1. _____Dollars ($_____).

C. Allowance for 150 SY of Reinforced Concrete Driveway, 8” Thick to be installed on an If and Where Directed Basis.

1. _____Dollars ($_____).

D. Allowance for 500 LF of Plain Cement Concrete Curb, Including Permanent Pavement Restoration to be installed on an If and Where Directed Basis.

1. _____Dollars ($_____).

E. Allowance for 2,500 SY of Asphalt Pavement Mill and Resurfacing, 2” Depth, Milled Material to be Retained by Contractor to be installed on an If and Where Directed Basis.

1. _____Dollars ($_____).

F. Allowance for 500 LF of 18” High Density Polyethylene Pipe, 6-8’ Depth, Complete Installation to be installed on an If and Where Directed Basis.

1. _____Dollars ($_____).

G. Allowance for excavation and removal of 2,500 CY of soil and import, spread and compaction of Clean Fill on an If and Where Directed Basis. Contractor shall assume that excavated soil is removed as clean fill.

1. _____Dollars ($_____).

1.3 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within **10** days after a written Notice of Award, if offered within **60** days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting ten percent (10%) of the Base Bid amount above:

1. _____ Dollars ($_____).

B. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.4 TIME OF COMPLETION

A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Engineer, and shall fully complete the Work within 180 calendar days.

1.5 ACKNOWLEDGEMENT OF ADDENDA

A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____.
2. Addendum No. 2, dated _____.
3. Addendum No. 3, dated _____.
4. Addendum No. 4, dated _____.

1.6 BID SUPPLEMENTS

A. The following supplements are a part of this Bid Form and are attached hereto.

B.

1. Bid Form Supplement - Bid Bond Form (AIA Document A310-2010).

1.7 CONTRACTOR'S LICENSE

A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in the Commonwealth of Pennsylvania, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.8 SUBMISSION OF BID

A. Respectfully submitted this ____ day of _____, 2026

B. Submitted By:_____(Name of bidding firm or corporation).

C. Authorized Signature:_____(Handwritten signature).

D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

F. Witness By:_____(Handwritten signature).

G. Attest:_____(Handwritten signature).

H. By:_____(Type or print name).

I. Title:_____(Corporate Secretary or Assistant Secretary).

J. Street Address:_____.

K. City, State, Zip:_____.

L. Phone:_____.

M. License No.:_____.

N. Federal ID No.:_____(Affix Corporate Seal Here).

END OF DOCUMENT 004116

004322 - UNIT PRICES FORM

1.1 BID INFORMATION

A. Bidder: _____.

B. Project Name:
   1. CUSD – Athletic Field Upgrades – Phase 1

C. Project Location:

   1. The Athletic Fields at STEM Academy: 1100 West 10th Street, Chester, PA 19013.

D. Owner: Chester Upland School District

1.2 BID FORM SUPPLEMENT

A. This form is required to be attached to the Bid Form.

B. The undersigned Bidder proposes the amounts below be added to or deducted from the Contract Sum on performance and measurement of the individual items of Work.

C. If the unit price does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."

1.3 UNIT PRICES

A. Unit Price No. 1:
   1. Description: Plain Cement Concrete Sidewalk
   2. Unit of Measurement: SY
   3. Coordinate unit price with allowance adjustment requirements in Division 01 Section "Allowances."

B. Unit Price No. 2:
   1. Description: Reinforced Concrete Driveway, 8” Thick
   2. Unit of Measurement: SY
   3. Quantity Allowance: Coordinate unit price with allowance adjustment requirements in Division 01 Section "Allowances."

C. Unit Price No. 3:
   1. Description: Plain Cement Concrete Curb, Including Permanent Pavement Restorations
   2. Unit of Measurement: LF
   3. Coordinate unit price with allowance adjustment requirements in Division 01 Section "Allowances."

D. Unit Price No. 4:
   1. Description: Asphalt Pavement Mill and Resurfacing, 2” Depth, Milled Material to be Retained by Contractor
   2. Unit of Measurement: SY
   3. Coordinate unit price with allowance adjustment requirements in Division 01 Section "Allowances."

E. Unit Price No. 5:
   1. Description: 500 LF of 18” High Density Polyethylene Pipe, 6-8’ Depth, Complete Installation
   2. Unit of Measurement: LF
   3. Coordinate unit price with allowance adjustment requirements in Division 01 Section "Allowances."

1.4 SUBMISSION OF BID SUPPLEMENT

A. Respectfully submitted this ____ day of _____, 2026

B. Submitted By:_____(Insert name of bidding firm or corporation).

C. Authorized Signature:_____(Handwritten signature).

D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

END OF DOCUMENT 004322

SECTION 006000 - PROJECT FORMS

1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

A. The following form of Owner/Contractor Agreement and form of the General Conditions shall be used for Project:

1. The General Conditions are included in the Project Manual
2. The Supplementary Conditions for Project are separately prepared and included in the Project Manual.

1.2 ADMINISTRATIVE FORMS

A. Administrative Forms: Additional administrative forms are specified in Division 01 General Requirements.

B. Copies of AIA standard forms may be obtained from the American Institute of Architects; www.aiacontractdocsaiacontracts.org; (800) 942-7732.

C. Preconstruction Forms:

1. Form of Performance Bond and Labor and Material Bond: included in Project Manual
2. Form of Certificate of Insurance: AIA Document G715-2017 "Supplemental Attachment for ACORD Certificate of Insurance 25."

D. Information and Modification Forms:

1. Form for Requests for Information (RFIs): AIA Document G716-2004 "Request for Information (RFI)."
2. Form of Request for Proposal: AIA Document G709-2018 "Proposal Request."
3. Change Order Form: AIA Document G701-2017 "Change Order."
4. Form of Architect's Memorandum for Minor Changes in the Work: AIA Document G710-2017 "Architect's Supplemental Instructions."
5. Form of Change Directive: AIA Document G714-2017 "Construction Change Directive."

E. Payment Forms:

1. Schedule of Values Form: AIA Document G703-1992 "Continuation Sheet."
2. Payment Application: AIA Document G702-1992/703-1992 "Application and Certificate for Payment and Continuation Sheet."
3. Form of Contractor's Affidavit: AIA Document G706-1994 "Contractor's Affidavit of Payment of Debts and Claims."
4. Form of Affidavit of Release of Liens: AIA Document G706A-1994 "Contractor's Affidavit of Payment of Release of Liens."
5. Form of Consent of Surety: AIA Document G707-1994 "Consent of Surety to Final Payment."

END OF SECTION 006000

ADDITIONAL CONTRACT PROVISIONS

SECTION 006000.1 – ADDITIONAL CONTRACT PROVISIONS AND FORMS

SUBCONTRACTOR DECLARATION FORM

Each prime contractor is required to submit a list of subcontractors it intends to use on the project.

Subcontractor	Business Address	Type of Work

_____

Project Name

_____

Prime Contractor

_____

Signature Title Date

NONDISCRIMINATION CLAUSE

During the term of this contract, Contractor agrees as follows:

1. In the hiring of any employee(s) for the manufacture of supplies, performance of work, or any other activity required under the grant agreement or any subgrant agreement, contract, or subcontract, the Grantee, a subgrantee, a contractor, a subcontractor, or any person acting on behalf of the Grantee shall not discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the Pennsylvania Human Relations Act (PHRA) and applicable federal laws, against any citizen of this Commonwealth who is qualified and available to perform the work to which the employment relates.

2. The Grantee, any subgrantee, contractor or any subcontractor or any person on their behalf shall not in any manner discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, against or intimidate any of its employees.

3. Neither the Grantee nor any subgrantee nor any contractor nor any subcontractor nor any person on their behalf shall in any manner discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, in the provision of services under the grant agreement, subgrant agreement, contract or subcontract.

4. Neither the Grantee nor any subgrantee nor any contractor nor any subcontractor nor any person on their behalf shall in any manner discriminate against employees by reason of participation in or decision to refrain from participating in labor activities protected under the Public Employee Relations Act, Pennsylvania Labor Relations Act or National Labor Relations Act, as applicable and to the extent determined by entities charged with such Acts' enforcement, and shall comply with any provision of law establishing organizations as employees' exclusive representatives.

5. The Grantee, any subgrantee, contractor or any subcontractor shall establish and maintain a written nondiscrimination and sexual harassment policy and shall inform their employees in writing of the policy. The policy must contain a provision that sexual harassment will not be tolerated and employees who practice it will be disciplined. Posting this Nondiscrimination/Sexual Harassment Clause conspicuously in easily-accessible and well-lighted places customarily frequented by employees and at or near where the grant services are performed, shall satisfy this requirement for employees with an established work site.

6. The Grantee, any subgrantee, contractor or any subcontractor shall not discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, against any subgrantee, contractor, subcontractor or supplier who is qualified to perform the work to which the grant relates.

7. The Grantee, and each subgrantee, contractor and subcontractor represents that it is presently in compliance with and will maintain compliance with all applicable federal, state, and local laws and regulations relating to nondiscrimination and sexual harassment. The Grantee and each subgrantee, contractor and subcontractor further represents that it has filed a Standard Form 100 Employer Information Report ("EEO-1") with the U.S. Equal Employment Opportunity Commission ("EEOC") and shall file an annual EEO-1 report with the EEOC as required for employers subject to Title VII of the Civil Rights Act of 1964, as amended, that have 100 or more employees and employers that have federal government contracts or first-tier subcontracts and have 50 or more employees. The Grantee, any subgrantee, any contractor or any subcontractor shall, upon request and within the time periods requested by the Commonwealth, furnish all necessary employment documents and records, including EEO-1 reports, and permit access to their books, records, and accounts by the granting agency and the Bureau of Diversity, Inclusion and Small Business Opportunities for the purpose of ascertaining compliance with the provisions of this Nondiscrimination/Sexual Harassment Clause.

8. The Grantee, any subgrantee, contractor or any subcontractor shall include the provisions of this Nondiscrimination/Sexual Harassment Clause in every subgrant agreement, contract or subcontract so that those provisions applicable to subgrantees, contractors or subcontractors will be binding upon each subgrantee, contractor or subcontractor.

9. The Grantee's and each subgrantee's, contractor's and subcontractor's obligations pursuant to these provisions are ongoing from and after the effective date of the grant agreement through the termination date thereof. Accordingly, the Grantee and each subgrantee, contractor and subcontractor shall have an obligation to inform the Commonwealth if, at any time during the term of the grant agreement, it becomes aware of any actions or occurrences that would result in violation of these provisions.

10. The Commonwealth may cancel or terminate the grant agreement and all money due or to become due under the grant agreement may be forfeited for a violation of the terms and conditions of this Nondiscrimination/Sexual Harassment Clause. In addition, the granting agency may proceed with debarment or suspension and may place the Grantee, subgrantee, contractor, or subcontractor in the Contractor Responsibility File.

CONTRACTOR _____ Date _____

CONFLICT OF INTEREST

Interest of Local Public Officials

No member of the governing body of the locality or entity and no other officer, employee, agent or public official of such locality, who exercises any functions or responsibilities in connection with the planning and carrying out of the program, shall have any personal financial interest, direct or indirect, in this contract; and the governing body contractor shall take appropriate steps to assure compliance.

Interest of Contractor and Employees

The Contractor covenants that he presently has no interest and shall not acquire interest, direct or indirect, in the study area or any parcels therein or any other interest which would conflict in any manner or degree with the performance of his services hereunder. The Contractor further covenants that in the performance of this Contract, no person having any such interest shall be employed.

RECORDS AND AUDITS

The Contractor shall maintain accounts and records, including personnel, property and financial records, adequate to identify and account for all costs pertaining to the Contract and such other records as may be deemed necessary by the Municipality and County to assure proper accounting for all project funds. These records will be made available for audit purposes to the Municipality and County or any authorized representative, and will be retained for three years after the close out of the project by the County unless stipulated otherwise by the County.

The undersigned contractor agrees to abide by the above provisions.

By: _____ _____

Contractor Date

AFFIDAVIT RE
ACCEPTING PROVISIONS OF THE WORKMEN'S COMPENSATION ACT

State of)
)
) ss:
)

County of)

being duly sworn according to law deposes and says that he/she/it has (they have) accepted the provisions of the Workmen's Compensation Act of 1916 of the Commonwealth of Pennsylvania, with its supplements and amendments, and has (have) insured his/her (their) liability thereunder in accordance with the terms of said Act with:

_____
(Surety Company)

_____
(Type or Print) Contractor

BY _____
Signature

Sworn to and subscribed before me this _____ day of _____ A.D. 20_____

My Commission Expires _____

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project Name:	Chester Upland School District Athletic Field Upgrades - Phase 1
General Description:	The project includes athletic field renovations at the Chester Upland School District. The work will include new grandstands, artificial turf field, track surfacing, and other incidental site improvements.
Project Locality	City of Chester
Awarding Agency:	Chester Upland School District
Contract Award Date:	12/15/2026
Serial Number:	26-09719
Project Classification:	Highway
Determination Date:	11/10/2026
Assigned Field Office:	Philadelphia
Field Office Phone Number:	(215)560-1858
Toll Free Phone Number:	
Project County:	Delaware County

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 26-09719 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	5/1/2026		$64.51	$50.26	$114.77
Boilermaker (Commercial, Institutional, and Minor Repair Work)	3/1/2026		$41.34	$19.23	$60.57
Boilermakers	1/1/2026		$58.00	$36.57	$94.57
Bricklayer	5/1/2025		$50.00	$32.57	$82.57
Bricklayer	5/1/2026		$51.15	$34.92	$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2026		$55.83	$30.39	$86.22
Carpenter - Chief of Party (Surveying & Layout)	5/1/2027		$58.03	$30.74	$88.77
Carpenter - Chief of Party (Surveying & Layout)	5/1/2028		$60.29	$31.09	$91.38
Carpenter - Chief of Party (Surveying & Layout)	5/1/2029		$62.63	$31.44	$94.07
Carpenter - Instrument Person (Surveying & Layout)	5/1/2026		$48.55	$30.39	$78.94
Carpenter - Instrument Person (Surveying & Layout)	5/1/2027		$50.46	$30.74	$81.20
Carpenter - Instrument Person (Surveying & Layout)	5/1/2028		$52.43	$31.09	$83.52
Carpenter - Instrument Person (Surveying & Layout)	5/1/2029		$54.46	$31.44	$85.90
Carpenter - Instrument Person (Surveying & Layout)	5/1/2030		$56.55	$31.79	$88.34
Carpenter - Rodman (Surveying & Layout)	5/1/2026		$24.28	$21.99	$46.27
Carpenter - Rodman (Surveying & Layout)	5/1/2027		$25.23	$22.34	$47.57
Carpenter - Rodman (Surveying & Layout)	5/1/2028		$26.22	$22.69	$48.91
Carpenter - Rodman (Surveying & Layout)	5/1/2029		$27.23	$23.04	$50.27
Carpenter - Rodman (Surveying & Layout)	5/1/2030		$28.28	$23.39	$51.67
Carpenters	5/1/2026		$48.55	$30.39	$78.94
Carpenters	5/1/2027		$50.46	$30.74	$81.20
Carpenters	5/1/2028		$52.43	$31.09	$83.52
Carpenters	5/1/2029		$54.46	$31.44	$85.90
Carpenters	5/1/2030		$56.55	$31.79	$88.34
Cement Finishers & Plasterers	5/1/2022		$38.57	$32.39	$70.96
Cement Masons	5/1/2025		$48.70	$32.46	$81.16
Dockbuilder, Pile Drivers	5/1/2026		$56.98	$37.99	$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		$66.54	$41.74	$108.28
Dockbuilder/pile driver tender	5/1/2026		$56.98	$37.99	$94.97
Drywall Finisher	5/1/2025		$40.14	$32.35	$72.49
Electricians	6/1/2026		$55.25	$41.28	$96.53
Electricians	5/31/2027		$57.33	$42.80	$100.13
Electricians	5/29/2028		$59.49	$44.14	$103.63
Electricians	5/28/2029		$61.64	$45.49	$107.13
Elevator Constructor	1/1/2026		$74.86	$46.86	$121.72
Floor Coverer	5/1/2026		$52.84	$32.86	$85.70
Glazier	5/1/2026		$51.30	$39.37	$90.67
Interior Finish	5/1/2023		$34.60	$25.80	$60.40
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		$53.20	$45.01	$98.21
Iron Workers (Riggers)	7/1/2025		$44.77	$36.27	$81.04
Iron Workers (Riggers)	7/1/2026		$48.84	$36.52	$85.36
Iron Workers (Rodman/Reinforcing)	7/1/2025		$47.80	$36.65	$84.45
Iron Workers (Rodman/Reinforcing)	7/1/2026		$52.39	$36.90	$89.29
Laborers (Class 01 - See notes)	5/1/2025		$37.25	$26.10	$63.35

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 26-09719 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 02 - See notes)	5/1/2025		$41.00	$27.70	$68.70
Laborers (Class 03 - See notes)	5/1/2025		$37.67	$26.28	$63.95
Laborers (Class 04 - See notes)	5/1/2025		$37.67	$26.28	$63.95
Laborers (Class 05 - See notes)	5/1/2025		$37.25	$26.10	$63.35
Landscape Laborer	5/1/2025		$32.15	$24.30	$56.45
Marble Finisher	5/1/2026		$42.07	$31.85	$73.92
Marble Mason	5/1/2023		$47.20	$31.95	$79.15
Marble Setter	5/1/2026		$51.50	$33.80	$85.30
Mason Tender, Cement	5/1/2023		$35.02	$25.98	$61.00
Millwright	5/1/2026		$60.20	$35.81	$96.01
Operators (Building, Class 01 - See Notes)	5/1/2025		$54.52	$34.49	$89.01
Operators (Building, Class 01 - See Notes)	5/1/2026		$55.67	$35.34	$91.01
Operators (Building, Class 01A - See Notes)	5/1/2025		$57.52	$35.38	$92.90
Operators (Building, Class 01A - See Notes)	5/1/2026		$58.68	$36.22	$94.90
Operators (Building, Class 02 - See Notes)	5/1/2025		$54.27	$34.42	$88.69
Operators (Building, Class 02 - See Notes)	5/1/2026		$55.43	$35.26	$90.69
Operators (Building, Class 02A - See Notes)	5/1/2025		$57.29	$35.29	$92.58
Operators (Building, Class 02A - See Notes)	5/1/2026		$58.44	$36.14	$94.58
Operators (Building, Class 03 - See Notes)	5/1/2025		$50.18	$33.22	$83.40
Operators (Building, Class 03 - See Notes)	5/1/2026		$51.34	$34.06	$85.40
Operators (Building, Class 04 - See Notes)	5/1/2025		$49.88	$33.13	$83.01
Operators (Building, Class 04 - See Notes)	5/1/2026		$51.04	$33.97	$85.01
Operators (Building, Class 05 - See Notes)	5/1/2025		$48.16	$32.62	$80.78
Operators (Building, Class 05 - See Notes)	5/1/2026		$49.32	$33.46	$82.78
Operators (Building, Class 06 - See Notes)	5/1/2025		$47.17	$32.33	$79.50
Operators (Building, Class 06 - See Notes)	5/1/2026		$48.34	$33.16	$81.50
Operators (Building, Class 07A- See Notes)	5/1/2025		$66.26	$39.55	$105.81
Operators (Building, Class 07A- See Notes)	5/1/2026		$67.73	$40.48	$108.21
Operators (Building, Class 07B- See Notes)	5/1/2025		$65.97	$39.46	$105.43
Operators (Building, Class 07B- See Notes)	5/1/2026		$67.44	$40.39	$107.83
Painters Class 1 (see notes)	5/1/2026		$45.71	$35.22	$80.93
Painters - Line Stripping	12/1/2025		$45.12	$29.41	$74.53
Painters Class 4 (see notes)	5/1/2026		$48.45	$35.22	$83.67
Plasterers	5/1/2024		$39.88	$33.08	$72.96
plumber	5/1/2025		$70.53	$39.46	$109.99
plumber	5/1/2026		$73.73	$40.36	$114.09
Pointers, Caulkers, Cleaners	5/1/2025		$51.35	$31.80	$83.15
Pointers, Caulkers, Cleaners	5/1/2026		$53.35	$32.30	$85.65
Roofers (Composition)	5/1/2024		$44.13	$34.77	$78.90
Roofers (Composition)	5/1/2026		$47.53	$35.22	$82.75
Roofers (Shingle)	5/1/2024		$34.35	$22.20	$56.55
Roofers (Slate & Tile)	5/1/2024		$37.35	$22.20	$59.55
Sheet Metal Workers	5/1/2025		$62.62	$52.17	$114.79
Sheet Metal Workers	5/1/2026		$65.06	$54.48	$119.54

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 26-09719 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Sign Makers and Hangars	7/15/2025		$33.48	$26.41	$59.89
Sign Makers and Hangars	7/15/2026		$36.38	$25.01	$61.39
Sprinklerfitters	1/1/2023		$62.23	$31.99	$94.22
Sprinklerfitters	5/1/2025		$70.37	$34.85	$105.22
Steamfitters	5/1/2024		$70.32	$43.09	$113.41
Steamfitters	5/1/2025		$72.52	$44.89	$117.41
Stone Masons	5/1/2025		$50.00	$32.80	$82.80
Stone Masons	5/1/2026		$51.50	$33.80	$85.30
Terrazzo Finisher	5/1/2025		$45.61	$29.41	$75.02
Terrazzo Finisher	5/1/2026		$47.78	$29.61	$77.39
Terrazzo Grinder	5/1/2025		$45.88	$29.41	$75.29
Terrazzo Grinder	5/1/2026		$47.78	$29.61	$77.39
Terrazzo Mechanics	5/1/2025		$52.21	$31.26	$83.47
Terrazzo Mechanics	5/1/2026		$53.36	$32.61	$85.97
Tile Finisher	5/1/2025		$41.17	$30.75	$71.92
Tile Finisher	5/1/2026		$42.07	$31.85	$73.92
Tile Setter	5/1/2025		$52.21	$31.26	$83.47
Tile Setter	5/1/2026		$53.36	$32.61	$85.97
Truckdriver class 1(see notes)	5/1/2026		$38.57	$23.87	$62.44
Truckdriver class 2 (see notes)	5/1/2026		$38.67	$23.87	$62.54
Truckdriver class 3 (see notes)	5/1/2026		$38.92	$23.87	$62.79
Window Film / Tint Installer	6/1/2025		$27.42	$15.13	$42.55
Window Film / Tint Installer	6/1/2026		$28.35	$15.60	$43.95

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 26-09719 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Bricklayer	5/1/2026		$51.15	$34.92	$86.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2025		$65.96	$30.09	$96.05
Carpenter - Chief of Party (Surveying & Layout)	5/1/2026		$67.52	$30.44	$97.96
Carpenter - Instrument Person (Surveying & Layout)	5/1/2025		$58.39	$29.06	$87.45
Carpenter - Instrument Person (Surveying & Layout)	5/1/2026		$60.09	$29.06	$89.15
Carpenter - Rodman (Surveying & Layout)	5/1/2025		$45.88	$23.19	$69.07
Carpenter - Rodman (Surveying & Layout)	5/1/2026		$46.97	$23.54	$70.51
Carpenter	5/1/2026		$58.71	$30.44	$89.15
Cement Masons	5/1/2025		$46.55	$32.66	$79.21
Dockbuilder, Pile Drivers	5/1/2026		$56.98	$37.99	$94.97
Dockbuilder/Pile Driver Diver	5/1/2026		$61.88	$45.47	$107.35
Dockbuilder/pile driver tender	5/1/2026		$56.98	$37.99	$94.97
Electric Lineman	6/3/2024		$62.07	$33.96	$96.03
Electric Lineman	6/2/2025		$65.10	$34.45	$99.55
Iron Workers (Bridge, Structural, Ornamental, Precast)	7/1/2024		$53.20	$45.01	$98.21
Iron Workers (Riggers)	7/1/2023		$42.53	$34.14	$76.67
Iron Workers (Rodman/Reinforcing)	7/1/2023		$45.70	$34.77	$80.47
Laborers (Class 01 - See notes)	5/1/2025		$40.20	$27.80	$68.00
Laborers (Class 01 - See notes)	5/1/2026		$41.65	$27.90	$69.55
Laborers (Class 02 - See notes)	5/1/2025		$40.40	$27.80	$68.20
Laborers (Class 02 - See notes)	5/1/2026		$41.85	$27.90	$69.75
Laborers (Class 03 - See notes)	5/1/2025		$40.40	$27.80	$68.20
Laborers (Class 03 - See notes)	5/1/2026		$41.85	$27.90	$69.75
Laborers (Class 04 - See notes)	5/1/2025		$35.00	$27.80	$62.80
Laborers (Class 04 - See notes)	5/1/2026		$36.45	$27.90	$64.35
Laborers (Class 05 - See notes)	5/1/2025		$41.05	$27.80	$68.85
Laborers (Class 05 - See notes)	5/1/2026		$42.50	$27.90	$70.40
Laborers (Class 06 - See notes)	5/1/2025		$41.10	$27.80	$68.90
Laborers (Class 06 - See notes)	5/1/2026		$42.55	$27.90	$70.45
Laborers (Class 07 - See notes)	5/1/2025		$40.95	$27.80	$68.75
Laborers (Class 07 - See notes)	5/1/2026		$42.40	$27.90	$70.30
Laborers (Class 08 - See notes)	5/1/2025		$40.70	$27.80	$68.50
Laborers (Class 08 - See notes)	5/1/2026		$42.15	$27.90	$70.05
Laborers (Class 09 - See notes)	5/1/2025		$40.55	$27.80	$68.35
Laborers (Class 09 - See notes)	5/1/2026		$42.00	$27.90	$69.90
Laborers (Class 10- See notes)	5/1/2025		$40.70	$27.80	$68.50
Laborers (Class 10- See notes)	5/1/2026		$42.15	$27.90	$70.05
Laborers (Class 11 -See Notes)	5/1/2025		$40.60	$27.80	$68.40
Laborers (Class 11 -See Notes)	5/1/2026		$42.05	$27.90	$69.95
Laborers (Class 12 -See Notes)	5/1/2025		$42.30	$27.80	$70.10
Laborers (Class 12 -See Notes)	5/1/2026		$42.85	$27.90	$70.75
Laborers (Class 13 -See Notes)	5/1/2025		$44.33	$27.80	$72.13
Laborers (Class 13 -See Notes)	5/1/2026		$45.78	$27.90	$73.68
Laborers (Class 14 -See Notes)	5/1/2025		$40.90	$27.80	$68.70

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 26-09719 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 14 -See Notes)	5/1/2026		$41.90	$27.90	$69.80
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2026		$35.52	$19.83	$55.35
Laborers Utility (PGW ONLY)	5/1/2026		$42.55	$19.83	$62.38
Landscape Laborer	5/1/2025		$31.73	$24.15	$55.88
Millwright	5/1/2026		$60.20	$35.81	$96.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2025		$54.52	$34.49	$89.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2026		$55.67	$35.34	$91.01
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2025		$57.52	$35.38	$92.90
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2026		$58.68	$36.22	$94.90
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2025		$54.27	$34.42	$88.69
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2026		$55.43	$35.26	$90.69
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2025		$57.29	$35.29	$92.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2026		$58.44	$36.14	$94.58
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2025		$50.18	$33.22	$83.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2026		$51.34	$34.06	$85.40
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2025		$49.88	$33.13	$83.01
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2026		$51.04	$33.97	$85.01
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2025		$48.16	$32.62	$80.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2026		$49.32	$33.46	$82.78
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2025		$47.17	$32.33	$79.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2026		$48.34	$33.16	$81.50
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2025		$66.26	$39.55	$105.81
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2026		$67.73	$40.48	$108.21
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2025		$65.97	$39.46	$105.43
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2026		$67.44	$40.39	$107.83
Painters - Line Stripping	12/1/2025		$45.12	$29.41	$74.53
Painters Class 2 (see notes)	2/1/2026		$51.61	$35.00	$86.61
Painters Class 3 (see notes)	2/1/2026		$62.57	$35.04	$97.61
Pointers, Caulkers, Cleaners	5/1/2025		$51.35	$31.80	$83.15
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2025		$68.89	$44.73	$113.62
Truckdriver class 1(see notes)	5/1/2026		$38.42	$23.87	$62.29

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 26-09719 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Truckdriver class 2 (see notes)	5/1/2024		$36.74	$22.54	$59.28
Truckdriver class 2 (see notes)	5/1/2026		$38.52	$23.87	$62.39
Truckdriver class 3 (see notes)	5/1/2026		$38.77	$23.87	$62.64

BIDDER'S QUALIFICATIONS

All questions must be answered and the date given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit additional information if he so desires.

1. Name of Bidder:
2. Permanent main office address:
3. When Organized:
4. If a corporation, where incorporated:
5. How many years have you been engaged in the contracting business under your present firm or trade name?
6. Contracts on hand: Schedule these showing amount of each contract and the appropriate anticipated dates of completion.
7. General character of work performed by your company:
8. Have you ever failed to complete any work awarded to you? If so, where and why.
9. Have you ever defaulted on a contract? If so, where and why.
10. List the more important projects recently completed by your company, stating the approximate cost for each and the month and year completed.
11. List your major equipment available for this contract:
12. List experience in construction work similar in importance to this project:
13. List background and experience of the principal members of your organization, including the officers:
14. List credit available: $
15. List bank references:
16. Will you, upon request, fill out a detailed financial statement and furnish any other information which may be required by the Owner?
17. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the Owner in verification of the recitals comprising this Statement of Bidder's Qualifications.

Bidder: _____

By: _____

Title: _____

Dated this _____ day of _____, 20_____.

State of _____ §

County of _____:

_____being duly sworn deposes and says that he is _____of and that the answers to the foregoing questions and all statements therein contained are true and correct.

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

_____Notary Public

My commission expires: _____

PUBLIC WORK EMPLOYMENT VERIFICATION ACT

General. In accordance with Act 127 of 2012, known as the Public Works Employment Verification Act ("the Act"), effective January 1, 2013, 43 P.S. §§167.1-167.11, use the Federal Government's E-Verify system to ensure that all employees performing work on the project, including subcontractor's employees, are authorized to work in the United States.

Verification Form. Verify the employment eligibility of each new employee hired after January 1, 2013 and submit the Commonwealth Public Works Employment Verification Form ("Form") included in the bid package attachments to the Department.

Contractor. Fax the Form, signed by authorized representative of the Contractor, possessing sufficient knowledge to make the representations and certifications in the Form to Contract Awards at 717-705-1504 within 7 days of the bid opening. Failure or refusal to provide the Form will be considered a refusal to comply with bidding requirements, will result in rejection of the bid, and will be subject to the enforcement activities, sanctions and civil penalties specified in the Act.

Subcontractor. Obtain a signed Form from every subcontractor performing work on the project, signed by authorized representative of the subcontractor, possessing sufficient knowledge to make the representations and certifications in the Form and submit it to the Representative when requesting subcontractor approval. Failure or refusal to provide the Form will be considered a refusal to comply with subcontractor approval requirements, will result in rejection of the subcontractor request, and will subject the subcontractor to the enforcement activities, sanctions and civil penalties specified in the Act.

Include information about the requirements of the Act in all the subcontracts.

The Department of General Services is the Commonwealth agency responsible for enforcement and administration of the Act. Please direct questions about the Act to:

Department of General Services Public Works
Employment Verification Compliance Office
Room 105 Tent Building
18th and Herr Streets
Harrisburg, PA 17125
Fax: 717-214-3669

COMMONWEALTH OF PENNSYLVANIA

PUBLIC WORKS EMPLOYMENT VERIFICATION FORM

Date _____

Business or Organization Name (Employer)_____

Address _____

City _____ State_____ Zip Code _____

☐ Contractor ☐ {dzōŏ2yűNJI-ŏűŽNJ óŏKŜŏʅ 2yŜú

Contracting Public Body _____

Contract/Project No _____

Project Description _____

Project Location _____

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

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

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

_____

Authorized Representative Signature

GENERAL REQUIREMENTS

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 GENERAL

A. Only major items of work are given in the Bid Form, but it is the intent of the specifications to secure a completely interconnected and functionable system, and should any workmanship or materials be required which are obviously necessary to carry out the full intent and meaning of the plans and specifications or to be reasonably inferred therefrom, the cost of such workmanship or materials shall be included in the items in the bid form.

B. The Contractor, in the construction of the project, shall not stockpile materials or store equipment on any private property; except areas designated by the plans or as directed by the Engineer. If so required, the Engineer may direct the Contractor to have equipment removed from any project during weekend hours.

C. All notes on plans shall be made a part of the specifications.

D. The Contractor shall notify the Engineer at least forty-eight (48) hours in advance of any work scheduled for Saturdays.

1.2 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.

1.3 PROJECT INFORMATION

A. Facility Owner Information:

1. Owner Name: Chester Upland School District
2. Engineer:
    a. Mike Galante. mgalante@mgeassoc.com
    b. Direct all questions to Engineer.

B. Facility Information:

1. The Athletic Field at STEM Academy: 1100 West 10th Street, Chester, PA 19013

1.4 SUMMARY

A. Contract work includes the upgrades to the athletic field as detailed in the plans and specifications.

1.5 GENERAL REQUIREMENTS OF CONTRACTS

A. Extent of Contract: Unless the Agreement contains a more specific description of the Work of each Contract, requirements indicated on Drawings and in Specification Sections determine which contract includes a specific element of Project.

1. Unless otherwise indicated, the work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
2. Blocking, backing panels, sleeves, and metal fabrication supports for the work of each contract shall be provided.
3. Furnishing of access panels for the work.
4. Cutting and Patching provided for the work
5. Through-penetration firestopping for the work.
6. Contractors' Startup Construction Schedule: Within five working days after startup horizontal bar-chart-type construction schedules showing construction operations sequenced and coordinated with overall construction.

B. Close-out Procedures: Contractor shall be responsible for:

a. Preparation and submission of Project Record Documents (as-builts, record specifications, record shop drawings, etc.) for work completed.
b. Preparation and submission of operation and maintenance manuals.
c. Assembly and submission of extra materials and attic stock to Owner.
d. Preparation and submission of warranties.

C. Type of Contract:

1. The project will be constructed under a single-prime contract.

1.6 ACCESS TO SITE

A. Use of Site, Limited: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

1. Use of Site: Limit use of Project site to work in areas indicated and as directed by Owner. Do not disturb portions of Project site beyond areas in which the Work is indicated, including designated lay-down areas.

2. Driveways, Walkways and Entrances: Keep driveways, facility loading areas, 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 by construction operations.

    b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

B. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.7 COORDINATION WITH OCCUPANTS

A. Owner Occupancy: Owner will occupy site including existing and adjacent building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.

2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7:00 a.m. to 5:00 p.m., any day of the week, unless otherwise indicated.

1. Weekend Hours: Permitted

2. Early Morning Hours: As permitted by Owner and local ordinance..

3. Hours for Utility or Services Shutdowns: As permitted by Owner..

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others

D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than two days in advance of proposed disruptive operations.

2. Obtain Owner's written permission before proceeding with disruptive operations.

E. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.

F. Controlled Substances: Use of other controlled substances on the Project site is not permitted.

G. Employee Screening: Comply with Owner's requirements for background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.

2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.

1.10 MAINTENANCE AND PROTECTION OF TRAFFIC

A. The Contractor shall erect or place and maintain in good condition, barricades, warning signs, lights, flares, approved yellow-flashing light units, rubber traffic cones, and other warning and danger signals and devices, appropriate and adequate for the specific needs and subject to the Engineer's approval, at working sites, necessary for the protection of pedestrian traffic.

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

C. The cost of all work as specified hereinbefore and all other work required to protect public safety and maintaining traffic flow shall be included in the prices bid for the Lump Sum Price Bid.

1.11 MATERIAL STORAGE AND REMOVAL

A. The Contractors are required to remove and dispose of materials in a lawful manner. Under no circumstance shall the contractor leave trash and debris around the perimeter of the site, and all material shall be stored in a dumpster or approved removal container. All costs shall be included in the lump sum price bid. The General Contractor is responsible for cleanliness of the site.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011200

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:
   1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
   2. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

1.3 DEFINITIONS

A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

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: See 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. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 "Schedule of Unit Prices" Article contain requirements for materials described under each unit price.

PART 2 -PRODUCTS (Not Used)

PART 2 - EXECUTION

2.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. 1:

1. Description: Plain Cement Concrete Sidewalk
2. Unit of Measurement: SY
3. Quantity Allowance: 750 SY

B. Unit Price No. 2:

1. Description: Reinforced Concrete Driveway, 8” Thick
2. Unit of Measurement: SY
3. Quantity Allowance: 150 SY

C. Unit Price No. 3:

1. Description: Plain Cement Concrete Curb, Including Permanent Pavement Restorations
2. Unit of Measurement: LF
3. Quantity Allowance: 500 LF

D. Unit Price No. 4:

1. Description: Asphalt Pavement Mill and Resurfacing, 2” Depth, Milled Material to be Retained by Contractor
2. Unit of Measurement: SY
3. Quantity Allowance: 2,500 SY

E. Unit Price No. 5:

1. Description: 500 LF of 18” High Density Polyethylene Pipe, 6-8’ Depth, Complete Installation
2. Unit of Measurement: LF
3. Quantity Allowance: 500 LF

END OF SECTION 012200

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:
   1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.

   1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
   2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

   1. Substitution Request Form: Use form acceptable to Engineer.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

      a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
      b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
      c. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

d. Samples, where applicable or requested.
e. Certificates and qualification data, where applicable or requested.
f. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
g. Cost information, including a proposal of change, if any, in the Contract Sum.
h. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.

3. Engineer’s Action: If necessary, Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Engineer's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Requested substitution will not adversely affect Contractor's construction schedule.
c. Requested substitution has received necessary approvals of authorities having jurisdiction.
d. Requested substitution is compatible with other portions of the Work.

e. Requested substitution has been coordinated with other portions of the Work.
f. Requested substitution provides specified warranty.
g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Engineer will consider requests for substitution if received within **60** days after the Notice to Proceed Requests received after that time may be considered or rejected at discretion of Engineer.

1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
2. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

1.3 MINOR CHANGES IN THE WORK

A. Engineer 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.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Engineer 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. Work Change Proposal Requests issued by Engineer are not instructions either to stop work in progress or to execute the proposed change.
2. Within 10 days, when not otherwise specified 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 costs of labor and supervision directly attributable to the change.
    d. 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.

e. Quotation Form: Use forms acceptable to Engineer.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Engineer.

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 costs of labor and supervision directly attributable to the change.
5. 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.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Engineer

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Engineer will issue a Change Order for signatures of Owner and Contractor on **AIA Document G701**

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: **Engineer** may issue a Construction Change Directive on **AIA Document G714**. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:
   1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
   2. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Submit the schedule of values to Engineer at earliest possible date, but no later than 10 days before the date scheduled for submittal of initial Applications for Payment.
   1. Use 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.
   2. Identification: Include the following Project identification on the schedule of values:
   3. Arrange 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 of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.

1) Labor.
2) Materials.
3) Equipment.

4. 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.
5. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
6. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Engineer, and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Submit Application for Payment to Engineer by the 15 of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.

1. Submit draft copy of Application for Payment **seven** days prior to due date for review by Engineer.

D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

1. Other Application for Payment forms proposed by the Contractor may be acceptable to Engineer and Owner. Submit forms for approval with initial submittal of schedule of values.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. **Engineer** 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 for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

G. Transmittal: Submit 1 signed and notarized original copies of each Application for Payment to **Engineer** electronically. 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.

H. 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 (preliminary if not final).
5. Sustainable design action plans, including preliminary project materials cost data.
6. Schedule of unit prices.
7. Submittal schedule (preliminary if not final).
8. List of Contractor's staff assignments.
9. List of Contractor's principal consultants.
10. Copies of building permits.
11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
12. Initial progress report.
13. Report of preconstruction conference.
14. Certificates of insurance and insurance policies.
15. Performance and payment bonds.
16. Data needed to acquire Owner's insurance.

I. Application for Payment at Substantial Completion: After Engineer issues 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.

    a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 "Closeout Procedures."

2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: After completing Project closeout requirements, 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. Certification of completion of final punch list items.
3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. Updated final statement, accounting for final changes to the Contract Sum.
5. AIA Document G706.
6. AIA Document G706A.
7. AIA Document G707.
8. Evidence that claims have been settled.
9. 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.
10. Proof that taxes, fees, and similar obligations are paid.
11. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

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. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Concealed Work photographs.
3. Periodic construction photographs.
4. Final Completion construction photographs.

B. Related Requirements:

1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.

1.3 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each **photograph**. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

B. Digital Photographs: Submit image files within 5 days of taking photographs.

1. Submit photos **by uploading to project management site**. Include copy of key plan indicating each photograph's location and direction.
2. Identification: Provide the following information with each image description **in web-based Project management site**:

a. Name of Project.
b. Name and contact information for photographer.
c. Name of Engineer
d. Name of Contractor.
e. Date photograph was taken.
f. Description of location, vantage point, and direction.
g. Unique sequential identifier keyed to accompanying key plan.

1.4 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs with maximum depth of field and in focus.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by **Engineer.**

1. Flag excavation areas before taking construction photographs.
2. Take 5 photographs to show existing conditions adjacent to property before starting the Work.
3. Take 20 photographs of existing buildings either on or adjoining property, to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

C. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work.

D. Periodic Construction Photographs: Take **20** photographs **weekly**. Select vantage points to show status of construction and progress since last photographs were taken.

E. Final Completion Construction Photographs: Take **50** photographs after date of Substantial Completion for submission as Project Record Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:
1. Section 013100 "Project Management and Coordination"
2. Section 013200 "Construction Progress Documentation" f
3. Section 013233 "Photographic Documentation"
4. Section 014000 "Quality Requirements"
5. Section 017700 "Closeout Procedures"
6. Section 017839 "Project Record Documents"

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.3 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.

2. Format: Arrange the following information in a tabular format:

a. Scheduled date for first submittal.

b. Specification Section number and title.
c. Submittal Category: Action; informational.
d. Name of subcontractor.
e. Description of the Work covered.
f. Scheduled date for Engineer's final release or approval.

1.4 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Engineer.
4. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
5. Category and type of submittal.
6. Submittal purpose and description.
7. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
8. Drawing number and detail references, as appropriate.
9. Indication of full or partial submittal.
10. Location(s) where product is to be installed, as appropriate.
11. Other necessary identification.
12. Remarks.
13. Signature of transmitter.

B. Options: Identify options requiring selection by Engineer.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Engineer on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

E. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.5 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Engineer by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Engineer.

a. Engineer will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

2. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.

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. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Engineer's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Engineer's action stamp.

E. 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.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Engineer's and Construction Manager's action stamp.

1.6 SUBMITTAL REQUIREMENTS

A. 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 published data are unsuitable 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 catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams that show factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. 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: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.
    f. Relationship and attachment to adjoining construction clearly indicated.
    g. Seal and signature of professional engineer if specified.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

    a. Project name and submittal number.
    b. Generic description of Sample.
    c. Product name and name of manufacturer.
    d. Sample source.
    e. Number and title of applicable Specification Section.
    f. Specification paragraph number and generic name of each item.
3. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
4. 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.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.

    a. Number of Samples: Submit **one** full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Engineer, will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or 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.

    a. Number of Samples: Submit **three** sets of Samples. Engineer will retain **two** Sample sets; remainder will be returned.

        1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
        2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least **three** sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, 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 indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineers and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a 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. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit 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 substrate preparation and primers required.
2. Field Test Reports: Submit written reports 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 in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

4. Preconstruction Test Reports: Submit 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 in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. 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.
6. Research Reports: Submit 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:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.7 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp, and indication in web-based Project management software. Include 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.

    1. Engineer will not review submittals received from Contractor that do not have Contractor's review and approval.

1.8 ENGINEER'S REVIEW

A. Action Submittals: Engineer will review each submittal, indicate corrections or revisions required.

    1. PDF Submittals: Engineer will indicate, via markup on each submittal, the appropriate action.
        1) APPROVED: The work involved may proceed, and no further submission is required.
        2) APPROVED AS NOTED: The work involved may proceed incorporating comments. Annotations do not authorize changes to Contract Sum.
        3) REVISE AND RESUBMIT: The work involved may not proceed. Submittal must be corrected and resubmitted.

4) REJECTED: The submittal is not in accordance with the Contract Documents, and a completely new submittal is required

2. Submittals by Web-Based Project Management Software: Engineer will indicate, on Project management software website, the appropriate action.

a. Actions taken by indication on Project management software website have the following meanings:
1) APPROVED: The work involved may proceed, and no further submission is required.
2) APPROVED AS NOTED: The work involved may proceed incorporating comments. Annotations do not authorize changes to Contract Sum.
3) REVISE AND RESUBMIT: The work involved may not proceed. Submittal must be corrected and resubmitted.
4) REJECTED: The submittal is not in accordance with the Contract Documents, and a completely new submittal is required

B. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Engineer.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents will be returned by Engineer without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

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. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Engineer, Owner, **Commissioning Authority,** or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of **five** previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.

1. Mockups are used for one or more of the following:

a. Verify selections made under Sample submittals.
b. Demonstrate aesthetic effects.
c. Demonstrate the qualities of products and workmanship.
d. Demonstrate successful installation of interfaces between components and systems.
e. Perform preconstruction testing to determine system performance.

2. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Engineer.

1.4 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Reports: Prepare and submit certified written reports and documents as specified.

F. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.5 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within **10** days of **Notice to Proceed**, and not less than five days prior to preconstruction conference. Submit in format acceptable to Engineer. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.

B. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

C. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.

D. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Engineer has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.6 REPORTS AND DOCUMENTS

A. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical 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 of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

1.7 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

1.8 QUALITY CONTROL

A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.
3. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and

provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspection equipment at Project site.

C. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

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. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.3 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Implementation and Termination Schedule: Within **15** days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.

C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed.

F. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.

B. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches (914 by 1524 mm).

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. General: Install temporary service or connect to existing service.

C. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project Area. Provide temporary, directional signs for construction personnel and visitors.

D. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

F. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.

G. Temporary Heat and Ventilation
   1. Provide temporary heat as necessary for protection or completion of the Work.
   2. Provide temporary heat and ventilation to assure safe working conditions; maintain enclosed areas at a minimum of 50°F.

3.2 FIELD OFFICE

A. Provision of a field office is not required unless specified in the conditions of this contract. If the Contractor chooses to provide one, locate it in a place approved by the Owner Representative.

3.3 STORAGE OF MATERIALS

A. Provide adequately ventilated, watertight storage facilities with floor above ground level for materials and equipment susceptible to weather damage.

B. Storage of materials not susceptible to weather damage may be on blocks off the ground.

C. Store materials in a neat and orderly manner. Place materials and equipment to permit easy access for identification, inspection and inventory.

D. Contractor is responsible for materials and equipment stored on and off site.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

   1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

   1. Comply with work restrictions specified in Section 011000 "Summary."

C. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

D. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

1. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
2. Paint and maintain appearance of walkway for duration of the Work.

E. Temporary Enclosures: Construct dustproof partitions with gypsum wallboard, with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
1. Construct dustproof partitions with two layers of 6-mil polyethylene sheet on each side. Cover floor with two layers of 6-mil polyethylene sheet, extending sheets 18 inches up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood.
2. Provide walk-off mats at each entrance through temporary partition.

F. Protection Of Installed Products.
1. Provide protection of installed products to prevent damage from subsequent operations. Remove protection facilities when no longer needed, prior to completion of Work.
2. Control traffic to prevent damage to equipment, materials, and surfaces.

G. Roads And Parking
1. Prevent interference with traffic and Owner operations on existing roads.
2. Designate temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking. Locate as approved by Owner.
3. Minimize use by construction traffic of existing residential streets and driveways.
4. Do not allow heavy vehicles or construction equipment in existing parking areas.

H. Environmental Controls
1. Provide and maintain methods, equipment, and temporary construction as necessary for controls over environmental conditions at the construction site and adjacent areas.
2. Comply with statutes, regulations, and ordinances which relate to the proposed Work for the prevention of environmental pollution and preservation of natural resources, including but not limited to the National Environmental Policy Act of 1969, PL 91-190, Executive Order 11514.
3. Burning of rubbish, debris or waste materials is not permitted.

I. Pollution Control
1. Provide methods, means, and facilities required to prevent contamination of soil, water or atmosphere by discharge of noxious substances from construction operations.
2. Provide equipment and personnel to perform emergency measures required to contain any spillage, and to remove contaminated soils or liquids. Excavate and dispose of any contaminated earth off-site in accordance with laws and regulations, and replace with suitable compacted fill and topsoil.
3. Take special measures to prevent harmful substances from entering public waters. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.
4. Provide systems for control of atmospheric pollutants. 1. Prevent toxic concentrations of chemicals.
    a. Prevent harmful dispersal of pollutants into the environment.

5. Use equipment during construction that conforms to current Federal, State, and local laws and regulations.

J. Pest And Rodent Control
1. Provide rodent and pest control as necessary to prevent infestation of construction or storage areas.
2. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.

K. Noise Control
1. Provide vehicles, equipment, and construction activities that minimize noise to the greatest degree practicable. Noise levels shall conform to the latest OSHA standards and Township Ordinances and in no case will noise levels be permitted which create a nuisance in the surrounding neighborhoods.
2. Conduct construction operations during daylight hours except as approved by Owner Representative.

L. Dust Control
1. Control objectionable dust caused by operation of vehicles and equipment. Apply water or use other methods, subject to approval of the Owner Representative, which will control the amount of dust generated.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with 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 Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - 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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
2. Section 012500 "Substitution Procedures" for requests for substitutions.
3. Section 01770 "Closeout Procedures" for submitting warranties.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.

E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."

F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

a. Contractors are responsible for providing products and construction methods compatible with products and construction methods of other contractors.
b. If a dispute arises between the multiple contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:

    a. Name of product and manufacturer.
    b. Model and serial number.
    c. Capacity.
    d. Speed.
    e. Ratings.

3. See individual identification Sections in Divisions -22, and 26 for additional equipment identification requirements.

1.5 COORDINATION

A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:

1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger Project structure.
4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
3. Where products are accompanied by the term "as selected," Engineer will make selection.
4. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
5. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

a. Submit additional documentation required by Engineer in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Engineer, whose determination is final.

B. Product Selection Procedures:

1. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."

2. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience **will** be considered

a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."

3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require the phrase "match Engineer's sample," provide a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Engineer from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Engineer will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

E. Sustainable Product Selection: Where Specifications require product to meet sustainable product characteristics, select products complying with indicated requirements. Comply with requirements in Division 01 sustainability requirements Section and individual Specification Sections.

1. Select products for which sustainable design documentation submittals are available from manufacturer.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Engineer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Engineer may return requests without action, except to record noncompliance with the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of Engineers and owners, if requested.
5. Samples, if requested.

B. Engineer's Action on Comparable Products Submittal: If necessary, Engineer will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."

1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
2. Use product specified if Engineer does not issue a decision on use of a comparable product request within time allocated.

C. Submittal Requirements, Two-Step Process: Approval by the Engineer of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
   1. Installation of the Work.
   2. Cutting and patching.
   3. Coordination of Owner-installed products.
   4. Progress cleaning.
   5. Starting and adjusting.
   6. Protection of installed construction.
   7. Correction of the Work.

B. Related Requirements:
   1. Section 017700 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.3 QUALITY ASSURANCE

A. Professional Engineer Qualifications: Refer to Section 014000 "Quality Requirements."

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
   1. 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 results in increased maintenance or decreased operational life or safety.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.

B. In-Place Materials: Use materials for patching 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 provide a match acceptable to Engineer for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

C. 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.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

B. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

3.3 INSTALLATION

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

B. Install products at the time and under conditions that will ensure satisfactory results as judged by Engineer. Maintain conditions required for product performance until Substantial Completion.

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

D. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

E. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

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

G. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Engineer. Fit exposed connections together to form hairline joints.

3.4 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of Work to be cut.

D. 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.

E. 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 **minimize** interruption to occupied areas.

F. 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 neatly to minimum 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.

G. 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 practicable, as judged by Engineer. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical 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, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. 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 and ensures thermal and moisture integrity of building enclosure.

H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.5 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

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

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

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

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

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

F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

G. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

H. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.6 CORRECTION OF THE WORK

A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Restore permanent facilities used during construction to their specified condition.

D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

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. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage and recycling of at least 75 percent by weight of total non-hazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means

to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:

Demolition Waste:

a. Asphalt paving.
b. Concrete.
c. Concrete reinforcing steel.
d. Brick.
e. Concrete masonry units.
f. Wood studs.
g. Wood joists.
h. Plywood and oriented strand board.
i. Wood paneling.
j. Wood trim.
k. Structural and miscellaneous steel.
l. Rough hardware.
m. Roofing.
n. Insulation.
o. Doors and frames.
p. Door hardware.
q. Windows.
r. Glazing.
s. Metal studs.
t. Gypsum board.
u. Equipment.
v. Supports and hangers.
w. Mechanical equipment.

2. Construction Waste:
   a. Masonry and CMU.
   b. Lumber.
   c. Wood sheet materials.
   d. Wood trim.
   e. Metals.
   f. Roofing.
   g. Insulation.
   h. Piping.
   i. Electrical conduit.
   j. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
      1) Paper.
      2) Cardboard.
      3) Boxes.
      4) Plastic sheet and film.
      5) Polystyrene packaging.
      6) Wood crates.
      7) Plastic pails.

1.5 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed.
   1. Establish construction and demolition waste diversion goals for the Project. Identify at least five materials (both structural and non-structural) targeted for diversion and identify the approximate percentage of the overall Project waste that these materials represent. Specify whether materials will be separated or commingled and describe the diversion strategies planned for the Project.Describe where the materials will be taken and how the recycling facility will process the material.INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:
   1. Material category.
   2. Generation point of waste.
   3. Total quantity of waste in tons (tonnes).
   4. Quantity of waste salvaged, both estimated and actual in tons (tonnes).
   5. Quantity of waste recycled, both estimated and actual in tons (tonnes).
   6. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
   7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.7 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of projects with similar requirements.

B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

2.2 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to ASTM E 1609 and requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

A. Waste Identification: Indicate anticipated types and quantities of demolition and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

B. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
   1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
   2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
   3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
   4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
   5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
   6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

C. 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.
6. Savings in hauling and tipping fees by donating materials.
7. Savings in hauling and tipping fees that are avoided.
8. Handling and transportation costs. Include cost of collection containers for each type of waste.
9. Net additional cost or net savings from waste management plan.

PRODUCTS (Not Used)

EXECUTION

4.2 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
   1. Comply with operation, termination, and removal requirements in Section 01 5000 "Temporary Facilities and Controls."

A. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
   1. Distribute waste management plan to everyone concerned within three days of submittal return.
   2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
   2. Comply with Section 01 5000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

5.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.
   5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

A. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

B. Plumbing Fixtures: Separate by type and size.

C. Lighting Fixtures: Separate lamps by type and protect from breakage.

D. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

6.2 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
   a. Inspect containers and bins for contamination and remove contaminated materials if found.
2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor.

6.3 RECYCLING DEMOLITION WASTE

A. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.

B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
   1. Pulverize concrete to maximum 4-inch (100-mm) size.

C. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
   1. Pulverize masonry to maximum 4-inch (100-mm) size.
   2. Clean and stack undamaged, whole masonry units on wood pallets.

D. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

E. Metals: Separate metals by type.
   1. Structural Steel: Stack members according to size, type of member, and length.
   2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

F. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.

G. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

H. Conduit: Reduce conduit to straight lengths and store by type and size.

7.2 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:
1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

7.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 017419

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.

B. Related Requirements:

1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
2. Section 013233 "Photographic Documentation" for submitting Final Completion construction photographic documentation.
3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.3 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Engineer's use prior to Engineer's inspection, to determine if the Work is substantially complete.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.5 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

1.6 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by **Engineer**. Label with manufacturer's name and model number.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of **10** days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or

additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1. 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.

1.7 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.
5. Submit Final Completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Engineer, will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer 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. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.8 LIST OF INCOMPLETE ITEMS

A. Organization 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, listed by room or space number.
2. Organize items applying to each space by major element, including categories for ceilings, 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 Engineer,
    d. Name of Contractor.

e. Page number.

4. Submit list of incomplete items in the following format:

a. MS Excel Electronic File: Engineer, will return annotated file.
b. Web-Based Project Software Upload: Utilize software feature for creating and updating list of incomplete items (punch list).

1.9 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit on digital media acceptable to Engineer, by uploading to web-based project software site.

D. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch 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.

E. 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 FINAL CLEANING

A. General: Perform 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.

a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
b. Remove tools, construction equipment, machinery, and surplus material from Project site.
c. Remove snow and ice to provide safe access to building.
d. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
e. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
f. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
g. Remove labels that are not permanent.
h. Wipe surfaces of mechanical and electrical equipment**,** elevator equipment**,** and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
i. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
j. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
k. Clean ducts, blowers, and coils, if units were operated without filters during construction or that display contamination with particulate matter on inspection.

l. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
m. Clean strainers.
n. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls." Section 017419 "Construction Waste Management and Disposal.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

017823 - OPERATION AND MAINTENANCE DATA

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. Section includes administrative and procedural requirements for preparing, product maintenance manuals.

B. Related Requirements:

1. Section 011200 "Multiple Contract Summary" for coordinating operation and maintenance manuals covering the Work of multiple contracts.
2. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
3. Section 019113 "General Commissioning Requirements" for verification and compilation of data into operation and maintenance manuals.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Engineer will comment on whether content of operation and maintenance submittals is acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:

1. Submit on digital media acceptable to Engineer, by uploading to web-based project software site. Enable reviewer comments on draft submittals.

C. Initial Manual Submittal: Submit draft copy of each manual at least **30**days before commencing demonstration and training. Engineer will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 1**5** days before commencing demonstration and training. Engineer will return copy with comments.

1. Correct or revise each manual to comply with Engineer's comments. Submit copies of each corrected manual within **15** days of receipt of Engineer's and prior to commencing demonstration and training.

E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.6 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

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. Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:
1. Section 017700 "Closeout Procedures" for general closeout procedures.
2. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
1. : Submit copies of Record Drawings as follows:

a. Initial Submittal:
1) Submit PDF electronic files of scanned record prints
2) Submit Record Digital Data Files
3) Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:
1) Submit PDF electronic files of scanned Record Prints
2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit **annotated PDF electronic files** of Project's Specifications, including addenda and Contract modifications.

C. Record Product Data: Submit **annotated PDF electronic files and directories** of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit **annotated PDF electronic files and directories** of each submittal.

E. Reports: Submit written report **weekly** indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications 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.

B. Format: Submit record specifications as **annotated PDF electronic file**

1.5 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

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

C. Format: Submit Record Product Data as **annotated PDF electronic file**.

1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

TECHNICAL DIVISIONS

SECTION 00000 - SCOPE OF WORK

PART 1 - GENERAL

1.01 SITE LOCATIONS

1. The Athletic Fields at STEM Academy: 1100 West 10th Street, Chester, PA 19013

1.02 PROJECT DESCRIPTION AND SCOPE OF WORK

A. GENERAL

1. For the limits of work, proposed improvements, construction details, and project requirements, refer to the Contract Drawings appended to and incorporated into these Specifications.
2. The Contractor shall furnish all labor, materials, equipment, supervision, tools, transportation, and incidental services necessary to complete the Phase 1 improvements in accordance with the Contract Drawings and Specifications, except for work expressly excluded or designated to be performed under a separate contract.
3. The Phase 1 Contract Drawings and Specifications shall govern the scope of work included in this Contract. Improvements identified as Phase 2, Phase 3, or separate procurement shall not be considered part of the Phase 1 Contract solely because they are depicted on the overall project plans for reference, coordination, or future construction.

B. **OVERALL PROJECT DESCRIPTION**

The Chester Upland School District is proposing comprehensive upgrades to the existing athletic facilities at STEM Academy. The overall project includes, but is not limited to, the following improvements:

1. Construction of a new multi-sport synthetic turf athletic field to replace the existing football field.
2. Construction of a new eight (8) lane synthetic rubber running track.
3. Installation of new home and visitor grandstands.
4. Construction of a new toilet room facility.
5. Construction of a new ticket booth.
6. Construction of a new concession stand.
7. Construction of an Athletic Achievement Wall.
8. Construction of a new pavilion.
9. Installation of football and softball field scoreboards.
10. Installation of new sports lighting.
11. Construction of a new athletic training facility.
12. Site and R.O.W. Lighting

13. Parking lot and roadway improvements.
14. Stormwater management system improvements.
15. Tennis court and softball field improvements.
16. Associated site improvements, utilities, pedestrian facilities, landscaping, fencing, and other improvements as depicted on the Contract Drawings.

C. PHASE 1 – EXCLUSIONS AND SEPARATELY PROCURED WORK

Phase 1 of the project shall include the improvements depicted on the Phase 1 Contract Drawings and described herein. The overall project will be constructed through multiple phases and/or separate procurement contracts.

The following improvements are specifically excluded from the Phase 1 Contract, except where associated site preparation, foundations, drainage, grading, or other supporting work is expressly identified as part of Phase 1 on the Contract Drawings:

1. **Home and Visitor Grandstands:** Furnishing and installation of the grandstand structures shall be procured separately. Construction of the grandstand foundations shall be included in Phase 1.
2. **Toilet Room Facility:** Building construction shall be included under a separate Phase 2 contract.
3. **Ticket Booth:** Building construction shall be included under a separate Phase 2 contract.
4. **Concession Stand:** Building construction shall be included under a separate Phase 2 contract.
5. **Athletic Achievement Wall:** Construction shall be included under a separate Phase 2 contract.
6. **Football Field Scoreboard:** Furnishing and installation shall be included under a separate Phase 2 contract.
7. **Softball Field Scoreboard:** Furnishing and installation shall be included under a separate Phase 2 contract.
8. **Sports Lighting:** Furnishing and installation of the sports lighting system, including light poles, foundations, underground electrical conduits, duct banks, wiring, associated electrical infrastructure, and equipment, shall be included under a separate Phase 2 contract.
9. **Site and R.O.W. Lighting –** Furnishing and installation of the site lights, including all light poles, foundations, underground electrical conduits, duct banks, wiring and associated electrical infrastructure, and equipment, shall be included under a separate Phase 2 contract.
10. **Athletic Training Facility:** Building construction shall be included under a separate Phase 3 contract.

11. **Water and Sanitary Sewer Utilities:** Installation of the proposed water and sanitary sewer utility improvements shall be included under a separate Phase 2 contract, except where specifically identified as part of Phase 1.

Phase 2 improvements are anticipated to be advertised and bid separately in the near future. The Phase 1 Contractor shall recognize that portions of the overall project will be constructed under subsequent contracts.
The Contractor shall coordinate Phase 1 improvements with the anticipated construction of subsequent project phases. Work completed under Phase 1 shall not unnecessarily obstruct or interfere with future improvements.

The Contractor shall not be responsible for furnishing or installing improvements specifically excluded from Phase 1 unless otherwise expressly required by the Phase 1 Contract Documents.

D. PHASE 1 – SCOPE OF WORK

As part of the Phase 1 Contract, the Contractor shall furnish all labor, materials, equipment, and incidentals necessary to complete the improvements depicted on the Phase 1 Contract Drawings. The scope of work includes, but is not limited to, the following:

1. **General Site Improvements:** Complete all required sitework associated with the proposed improvements, including site clearing, demolition, excavation, earthwork, grading, subgrade preparation, fill placement, compaction, asphalt pavement, concrete curbing, concrete sidewalks, pedestrian facilities, fencing, retaining walls, decorative paving, roof drainage piping to the proposed building locations where indicated, and all miscellaneous site improvements required to achieve the proposed grades and conditions.
2. **Synthetic Turf Athletic Field:** Furnish and install the complete multi-sport synthetic turf athletic field system, including required excavation, subbase preparation, drainage systems, synthetic turf materials, field markings, infill materials, and associated accessories in accordance with the Contract Drawings and Specifications.
3. **Synthetic Running Track:** Construct the complete eight (8) lane running track, including required subgrade preparation, aggregate base, asphalt pavement, synthetic rubber running surface, lane markings, and associated track improvements.
4. **Tennis Court Improvements:** Construct the proposed asphalt tennis courts, including excavation, grading, aggregate base, asphalt pavement, acrylic sports surfacing, court striping, perimeter fencing, gates, and associated improvements.
5. **Grandstand Foundations:** Furnish and install all required foundations, footings, anchorages, and associated structural improvements for the proposed home and visitor grandstands, as indicated on the Contract Drawings. The Contractor shall coordinate foundation dimensions, elevations, anchorage requirements, loading

criteria, and installation tolerances with the separately procured grandstand manufacturer and the Engineer. Structural design and certification responsibilities shall be as established in the Contract Documents.

6. **Stormwater Management Improvements:** Furnish and install all required onsite and offsite stormwater management improvements, including storm sewer piping, inlets, manholes, drainage structures, stormwater management basin, outlet structures, and associated erosion and sediment control measures, as depicted on the Contract Drawings.
7. **Landscaping and Site Restoration:** Complete all required landscaping, topsoil placement, seeding, mulching, planting, stabilization, and restoration of areas disturbed by construction.
8. **Softball Field Improvements:** Construct the proposed softball field, including field grading, playing surfaces, dugouts, provide benches, backstop, fencing, sidewalks, bleachers, and all associated improvements depicted on the Contract Drawings.
9. **Dumpster Enclosure:** Construct the proposed dumpster enclosure, including foundations, concrete pads, enclosure walls and/or fencing, gates, bollards, and associated improvements as indicated on the Contract Drawings.
10. **Roadway and Parking Improvements:** Complete the proposed roadway, access drive, and parking lot improvements, including pavement milling and resurfacing, pavement reconstruction where indicated, speed tables, pavement markings, traffic signs, parking space striping, and associated improvements.
11. **Future Building Drainage Connections:** Install underground storm drainage piping, roof drainage connections, capped stubs, and other stormwater infrastructure intended to serve future buildings, only where specifically depicted on the Phase 1 Contract Drawings.
12. **UST Tank Removal:** There is an existing 1,000-gallon heating oil tank that needs to be removed. Contractor will be responsible for removal and all environmental work will be completed by the District Engineer.
13. **Miscellaneous and Incidental Work:** Perform all additional work, including construction layout, temporary facilities, erosion and sediment control, protection of existing facilities, testing, inspections, coordination, cleanup, and final restoration necessary to provide a complete and functional Phase 1 project in accordance with the Contract Documents.

E. COORDINATION WITH SUBSEQUENT CONSTRUCTION PHASES

1. The Contractor shall recognize that Phase 1 constitutes a portion of the overall STEM Academy Athletic Field Upgrades Project and that Phase 2 construction is anticipated to be separately advertised and bid in the near future.
2. The Phase 1 Contractor shall coordinate construction activities, sequencing, access, staging, and site operations with the Owner, Engineer, and other contractors performing work at the project site.

3. The Owner reserves the right to award separate contracts for subsequent phases and to authorize other contractors to perform work at the project site during the Phase 1 construction period, subject to reasonable coordination and applicable contract requirements.
4. The Contractor shall provide reasonable access to other contractors and shall coordinate its operations to minimize interference with separately contracted improvements. Any required adjustments to established construction sequencing shall be coordinated with the Owner and Engineer.
5. The Contractor shall protect completed improvements and existing facilities and shall be responsible for damage caused by its operations, personnel, or subcontractors.
6. The Phase 1 Contractor shall not be responsible for construction, installation, or completion of improvements specifically excluded from Phase 1 unless such work is authorized through a written change order or other contract modification.
7. The Contractor shall promptly notify the Engineer upon identifying conflicts between Phase 1 construction and improvements anticipated under subsequent phases.
8. The scheduling of Phase 2 or Phase 3 construction shall not expand the Phase 1 Contractor's scope of work or modify its contractual obligations without written authorization.

F. CONTRACT DOCUMENT INTERPRETATION AND LIMITS OF WORK

1. The scope of Phase 1 shall be determined by the Phase 1 Contract Drawings, Specifications, Addenda, and executed Contract Documents.
2. Overall development plans, future-phase layouts, conceptual improvements, and details depicting work intended for separate procurement may be included in the Contract Documents for reference and coordination purposes. Such information shall not, by itself, constitute authorization or a requirement to perform future-phase work under Phase 1.
3. Where a discrepancy exists between the Phase 1 scope of work and improvements depicted on the overall project plans, the Contractor shall request written clarification from the Engineer prior to proceeding with the affected work.
4. Improvements specifically identified as excluded from Phase 1 shall remain excluded unless expressly incorporated into the Phase 1 Contract through an Addendum issued prior to bidding or an authorized written contract modification after award.
5. The Contractor shall include in its bid all work required to provide complete and functional Phase 1 improvements, including incidental work reasonably necessary to complete the expressly identified Phase 1 scope. This provision shall not be interpreted to require the Contractor to furnish or install improvements specifically assigned to future phases or separate procurement.

G. COORDINATION WITH OTHER CONTRACTORS

1. **Separate Construction Contracts:** The Chester Upland School District anticipates awarding separate construction contracts for subsequent phases of the STEM Academy

Athletic Field Upgrades Project, including Phase 2, which is expected to be advertised and bid in the near future. The Owner reserves the right to award and administer separate contracts for improvements within or adjacent to the Phase 1 project limits.

2. **Concurrent Construction Activities:** The Phase 1 Contractor shall acknowledge that construction activities associated with Phase 2 and other separately procured improvements may occur concurrently with Phase 1 construction. The Contractor shall cooperate with the Owner, Engineer, Construction Manager, if applicable, and other contractors to facilitate the orderly progression of the overall project.
3. **Construction Scheduling:** The Contractor shall prepare and maintain a construction schedule identifying major activities, anticipated completion dates, critical milestones, and work areas that may affect subsequent construction phases. The Contractor shall participate in coordination meetings as reasonably required by the Owner or Engineer and shall promptly identify potential scheduling conflicts.
4. **Site Access and Staging:** The Contractor shall coordinate construction entrances, access drives, material deliveries, equipment storage, temporary facilities, and staging areas with the Owner and other contractors. The Contractor shall not unreasonably obstruct access to areas designated for work by separate contractors. Staging areas shall be subject to approval by the Owner and shall not interfere with school operations, emergency access, or other authorized construction activities.
5. **Protection of Completed Improvements:** The Contractor shall protect all completed and partially completed Phase 1 improvements, including synthetic turf, running track surfaces, athletic courts, sidewalks, pavement, drainage systems, landscaping, and other site improvements, from damage resulting from its construction operations. Other contractors shall be responsible under their respective contracts for damage caused by their operations. The Phase 1 Contractor shall not be responsible for damage caused solely by others.
6. **Construction Sequencing:** The Contractor shall sequence its work to reasonably accommodate the construction of improvements under subsequent phases, including future buildings, sports lighting, utilities, scoreboards, and other facilities. The Contractor shall coordinate work in areas where multiple contracts interface and shall identify potential conflicts before completing improvements that would restrict access for future construction.
7. **Temporary Access and Protection:** The Contractor shall provide and maintain temporary access, barricades, fencing, pedestrian protection, erosion and sediment controls, and other temporary measures required for its work. Where access to completed Phase 1 improvements is requested for subsequent construction activities, the Owner and affected contractors shall coordinate the appropriate protection measures before such access is permitted.
8. **Coordination of Underground Improvements:** Prior to installing underground drainage systems, foundations, retaining walls, pavement, or other improvements that may conflict with subsequent construction, the Contractor shall review the applicable Phase 1 Contract Drawings and available coordination information for future phases. Any identified

conflicts shall be brought to the Engineer's attention before proceeding with the affected work.

9. **Responsibility for Damage and Restoration:** Each contractor shall be responsible for damage to existing facilities, completed improvements, and work performed by others to the extent caused by its own operations. Where damage occurs, the responsible contractor shall repair or replace the affected improvements to the satisfaction of the Owner and Engineer. The Phase 1 Contractor shall not be required to repair damage caused by separately contracted work without appropriate written authorization and compensation, unless otherwise required by the Contract Documents.

10. **Delays and Interference:** The Contractor shall promptly notify the Owner and Engineer in writing of any actual or anticipated delays, conflicts, or interference resulting from separately contracted work. Claims for additional compensation or extensions of contract time shall be evaluated in accordance with the applicable Contract Documents. Nothing in this Section shall constitute a waiver of the Contractor's rights or remedies under the Contract.
11. **School District Operations:** The Contractor shall coordinate all construction activities with the School District to maintain safe access, emergency vehicle circulation, and necessary school operations. Construction activities shall not interfere with school functions beyond limitations approved by the Owner. The Contractor shall maintain required safety measures and secure construction areas against unauthorized access.
12. **Scope Limitations:** Coordination with separate contractors shall not obligate the Phase 1 Contractor to furnish labor, materials, equipment, or services for improvements expressly excluded from Phase 1. Any additional work requested by the Owner outside the Phase 1 Contract scope shall require written authorization in accordance with the Contract Documents.
13. **No Guarantee of Subsequent Contract Timing:** The anticipated advertisement, award, and commencement of subsequent construction phases are provided for informational and coordination purposes only. The Owner does not guarantee the timing or award of separate contracts. The Phase 1 Contractor shall perform its contractual obligations in accordance with the approved Phase 1 construction schedule and shall not condition completion of its work upon commencement of a subsequent phase unless expressly required by the Contract Documents.

1.03 GENERAL REQUIREMENTS

A. Construction layout of all proposed elements of construction to the specified lines and grades. All limits of work shall be marked out and approved by the Engineer prior to excavation. Grades shall be verified in the field during construction layout.

B. Removal of existing features as incidental to the contract work items, including but not limited to the following: metal plates, bleachers, grandstands, pipes, concrete slabs, stone, bricks, and all foreign materials encountered during excavation for contract items

1.04 ADDITIONAL REQUIREMENTS

A. All Base Bid work by the Contractor must be 100% complete within the contract time limit of 180 calendar days. The contract time limit shall begin once a written Notice to Proceed order has been issued to the contractor.

B. The cost of all related incidental work, dust control, erosion control, cleaning and restorations shall be measured for this project.

C. All materials, construction procedures, type and use of equipment, measurement and payment shall be in accordance with the Commonwealth of Pennsylvania Department of Transportation Specifications, Publication 408, unless otherwise noted and/or modified by these specifications.

E. The contractor shall establish contact with an individual from each local utility prior to commencement of construction. The contractor shall notify the Engineer and the utility owner immediately should a conflict occur in the limits of construction. The contractor shall be responsible for coordination of all work to be performed by the utility owner with regards to the work included in this contract. Additional payment will not be made for any delays incurred or any additional work performed due to conflicts with existing utilities.

F. All paved asphalt or concrete areas disturbed during construction shall be restored to a condition at least equal to that which existed prior to the start of construction.

G. All grassed areas disturbed during construction shall be topsoiled, fertilized and seeded. No additional payment will be made for restoration of grassed areas, but the cost shall be included in the various items of the proposal.

H. Any areas of the buildings occupied by the contractor that are damaged shall be replaced in kind.

I. The contractor shall be responsible for the location and preservation of underground and surface utilities and structures at / or adjacent to the site of construction. It shall be at the contractor's own expense to repair or replace anything that is damaged by the contractor.

J. A building permit will be required. Contractor is responsible for obtaining a building permit for work that requires a building permit, but the School District will pay the permit fee.

K. The project plans are appended and hereby included with the project specifications.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 – QUANTITY AND PAYMENT

Not Used

END OF SECTION

SECTION 01000
GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 General

A. Only major items of work are given in the Bid Form, but it is the intent of the specifications to secure a completely interconnected and functioning system, and should any workmanship or materials be required which are obviously necessary to carry out the full intent and meaning of the plans and specifications, or to be reasonably inferred therefrom, the cost of such workmanship or materials shall be included in the items in the bid form.

B. Where construction is being performed in traveled roadways or rights-of-way, the Contractor is to provide all necessary traffic controls and devices in accordance with the current Pennsylvania Department of Transportation standards.

C. The Contractor shall notify all utility companies prior to construction of utilities, curbing, and paving.

D. Prior to any excavation, the Contractor shall have all utilities marked and shall excavate or otherwise determine the exact location and elevations of said utilities. The Contractor shall notify the Engineer of any conflicts. The Contractor shall arrange for any necessary utility relocations or field changes and shall reschedule his operations appropriately.

E. The Contractor, in the construction of the project, shall not stockpile materials or store equipment on any private property, except areas designated by the plans or as directed by the Engineer. If required, the Engineer may direct the Contractor to have equipment removed from any project during weekend hours.

F. All work of refilling sunken ditches, repaving over trenches, and keeping streets and sidewalks in passable condition shall be done to the satisfaction of the Owner during the construction of the project, as well as during the maintenance period. If any remedial work is not done within three (3) days after written notice is given by the Engineer, the work may be done by the Owner and charged to the Contractor.

G. Special care shall be taken to prevent contamination, siltation, or interference of any kind with the stream flows or ponds along the line of work. No waste matter of any kind will be allowed to discharge into the stream flows or impounded water of any ponds or other bodies of water.

H. The Contractor is to insure that proper measures for erosion control are employed and provide for the early establishment of vegetation that will help avoid erosion problems during and after construction. It is expected that the Contractor will anticipate possible

problems and provide timely and adequate control to prevent or minimize adverse effects.

I. The Contractor is to notify residents by door-hangers at least forty-eight (48) hours in advance of starting construction work that will directly affect their property frontage, driveway(s), and/or on-street parking.

J. All notes on plans shall be made a part of the specifications.

K. The Contractor shall notify the Engineer at least forty-eight (48) hours in advance of any work scheduled for Saturdays.

L. Separate payment will not be made for construction layout. The costs for construction layout for all site work shall be included in the various items of the proposal.

1.02 Public Utilities

A. The Contractor is required to ascertain all the facts concerning the location of utilities.

B. The Contractor shall cooperate with the utility Owners in the adjustment of their facilities and shall notify the utility Owners not less than ten (10) days in advance of the time scheduled to perform any work that will impact or affect their facilities.

C. The Contractor shall permit the Owners of utilities, or their agents, access to the site of the work at all times in order to relocate, construct, or protect their lines, and shall cooperate with them in performing this work.

D. Separate payments will not be made for the coordination and cooperation of the Contractor with the utility companies, nor for the protection or replacement of utilities as specified hereinbefore, and the bidder shall include all such costs in the prices bid for the various scheduled items in the Bid Form.

1.03 Preconstruction Video

A. The Contractor shall, at no extra cost to the Owner, take DVD video recordings of the site prior to the commencement of construction. The video recording shall accurately depict the existing preconstruction condition of all curbs, sidewalks, driveways, fences, lawns, landscaped area, mailboxes, street furniture, and all other appurtenances within or outside a 25 foot radius of the limits of the construction of the project. One (1) copy of the video recording shall be provided to the Engineer. The date of the DVD video, as well as identification as to the location which the video depicts, must be provided.

1.04 Maintenance and Protection of Traffic

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

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

C. Road construction signs shall be placed at each end of the project along with every connecting intersection. At the start and end of each day, detour signs shall be placed if required.

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

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

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

1.05 Reference to the Standard Specifications

A. Portions of the work performed under this contract shall comply with the requirements of the Commonwealth of Pennsylvania Department of Transportation Publication 408, latest edition and supplements, the Pennsylvania Department of Transportation Standard

Construction Details as applicable, and all requirements modified, as amended or supplemented, and whose specifications are made part of these specifications.

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

1.06 Dust Control

A. The Contractor will be required to maintain all excavations, embankments, stockpiles, haul roads, permanent access roads, plant sites, waste areas, borrow areas, and all other work areas within or outside the project boundaries free from dust which would cause a hazard or nuisance to others. Approved temporary methods of stabilization, consisting of sprinkling, chemical treatment, light bituminous treatment, or similar methods, will be permitted to control dust. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor must have sufficient competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs. If any dust control is not done within twenty-four (24) hours after written notice is given by the Engineer, the work may be done by the Owner and charged to the Contractor. Costs for dust control shall be included in the prices bid for the various items in the bid form.

1.07 Mobilization

A. This work is the assembly and set-up of the general plant required to comply with the contract and with local and State laws and regulations. General plant includes Contractor's offices, shops, plants, storage areas, and sanitary or other facilities. This work includes obtaining the required permits, insurance, bonds, and any other initial items required for the start of the work. These materials and furnishings will not be considered a part of the other completed contract items.

B. Mobilization shall be performed in strict compliance with Section 608 of the Commonwealth of Pennsylvania Department of Transportation, Publication 408.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01010

AS-BUILT DRAWINGS

1.01 GENERAL

The contractor shall provide a set of reproducible as-built drawings prior to final payment.

2.01 MATERIALS

A. As-builts shall be a reproducible of the original contract drawings including any additional sheets required. All deviations from the original contract drawings shall be on the as-builts. The drawings shall be legible, neat, and of a quality acceptable to the Engineer.

B. The Engineer shall provide a set of reproducibles at the beginning of the project.

3.01 EXECUTION

A. The contractor shall be responsible for keeping the as-built up-to-date as the project progresses.

B. Storm Sewer: Any change in invert location, grate elevation, pipe size, class, or type, and any utility sleeves shall be indicated on the drawings.

C. This section is intended to provide a minimum level of acceptance. Any section with more stringent requirements shall have precedence over this section.

4.01 PAYMENT

A. No separate payment will be made for work performed under this section. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION

SECTION 02015

TEST PITS

1.01 DESCRIPTION

A. Includes the excavation of test pits to ascertain the location of buried utilities or subsurface conditions.

B. Before laying pipes or constructing any structures, the contractor shall ascertain the location and grade of utility pipes and other subsurface which may interfere with such construction. Test pits shall be excavated wherever necessary to obtain the required information, subject to the approval of the ENGINEER.

C. Before any excavation commences the Contractor shall perform subsurface investigations to determine the following:

1. Perpendicular dimension from survey base line to utility crossing

2. Top and bottom elevation of utility.

All dimensions and elevations shall be obtained by the Contractor and transmitted to the ENGINEER. Refer to the Scope of Work for additional scheduling requirements.

The subsurface investigations shall be performed at the locations as shown on the drawings and as directed by the Engineer.

The work will be paid in accordance with the quantity and payment paragraphs contained in this section.

1.02 MATERIALS

A. Materials required for backfill and pavement restoration.

1.03 METHODS OF WORK

A. The approximate locations of known utility structures and facilities that may be encountered within and adjacent to the limits of the work are shown on the plans. The accuracy and completeness, of this information is not guaranteed by the ENGINEER, and the bidder is advised to ascertain for himself all the facts concerning the location of these utilities.

B. The Contractor shall adhere to Section 105.09, Cooperation with Utilities, of the Standard Specifications regarding location of and construction around public utilities.

C. All test pits shall be excavated and backfilled in accordance with Section 02227. In paved areas all test pits shall be restored in accordance with standards as specified and shown.

D. The Contractor shall permit the owners of the utilities or their agents, access to the site of the work at all times, in order to relocate or protect their facilities, and he shall cooperate with them in performing this work.

E. The Contractor shall cooperate with the utility owners concerned and shall notify them not less than ten (10) days in advance of the time he proposes to perform any work that will endanger or affect their facilities.

F. Contractor shall maintain all temporary restorations.

1.04 QUANTITY AND PAYMENT

A. Unless specified or noted otherwise, no separate measurement and no separate payment will be made for test pits conducted to investigate soil and groundwater conditions or for test pits conducted relative to structures and/or utilities shown on the plans. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION

SECTION 02010
CLEANING AND RESTORATIONS

PART 1 - GENERAL

1.01 Description

A. Contractor shall provide all equipment, labor and materials required to clean and restore the site to at least the pre-existing condition.

B. Maintain premises and public and/or private properties free from accumulations of waste, debris and rubbish caused by work operations.

C. At the completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials; clean all visually exposed surfaces; leave project clean and ready for occupancy.

D. At the completion of work, restore or replace, where and as directed by the Owner, any public or private property disturbed or damaged by Contractor's work operations to a condition at least equal to that existing prior to beginning work, or as otherwise specified. Materials, equipment and methods shall be approved by the Owner.

PART 2 - PRODUCTS

2.01 Materials

A. For restorations, use the following materials. All materials shall comply with the following Articles of the Commonwealth of Pennsylvania, Department of Transportation Specifications latest revision and these specifications.

B. Grass restorations: See Sections 802, "Topsoil Furnished and Placed", Section 804 “Seeding and Soil Supplements”, and Section 809 "Sodding".

C. Pavement restorations: See Section 409 "Superpave Asphalt".

D. Restoration of curbs and other concrete structures:

1. Concrete:
   a. Shall be Class AA conforming to Section 704, “Cement Concrete”
   b. Design Compressive Strength: 3,500 psi at 28 days.
   c. Air-entrainment shall be 6.0% + / - 1.5%.

2. Joint Fillers: Section 705.4.

3. Curing Compound: Section 711.2.

E. All other Materials: As approved by the Owner or authorities having jurisdiction.

PART 3 – EXECUTION

3.01 Methods of Conducting Work - Cleaning

A. Requirements of regulatory agencies:

All excess material shall be removed from the site and disposed of by the Contractor at his expense. Cost to be included in the Base Bid for the Project. The disposal site shall be in permanently established licensed landfills.

B. Cleaning during construction:

Provide periodic cleaning to keep the work, the site, and adjacent properties free from accumulations of waste materials, rubbish and windblown debris resulting from construction operations. This includes dust, dirt and mud.

Provide on-site containers for the collection of waste materials, debris and rubbish. Maintain containers as required. Containers shall be covered as required to prevent unauthorized use.

C. The Contractor will be required to maintain all excavations, embankments, stockpiles, haul roads, permanent access roads, plant sites, waste areas, borrow areas, and all other work areas within or without the project boundaries free from dust which would cause a hazard or nuisance to others. Approved temporary methods of stabilization consisting of sprinkling, chemical treatment, light bituminous treatment or similar methods will be permitted to control dust. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor must have sufficient competent equipment on the job to accomplish this if sprinkling is used.
Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs. If any dust control is not done within twenty four (24) hours after written notice is given by the Engineer, the work may be done by the Owner and charged to the Contractor.

3.02 Methods of Construction

A. General: All existing structures, unpaved areas and paved areas disturbed or damaged during the work under this contract shall be restored or replaced to a condition at least equal to that existing prior to beginning work, or as otherwise specified. The methods of conducting this work shall, as a minimum, conform to the following Articles of the Commonwealth of Pennsylvania Department of Transportation Specifications.

B. Grass Restorations:

See Section 802 “Topsoil Furnished and Placed”, and Section 804 "Seeding and Soil Supplements", and Section 809 "Sodding".

C. Pavement Restorations:

Restoration type and thickness shall be as shown on the contract drawings or as otherwise directed.

D. Restorations of Curbs and Other Concrete Structures:

1. Curbs: Section 630 “Plain Cement Concrete Curb”.

2. Other concrete structures: Restore in accordance with applicable Articles of the Standard Specifications.

E. All Other Restorations:

Restore in accordance with applicable Articles of the Standard Specifications, or as approved by the Owner or authorities having jurisdiction.

PART 4 – QUANTITY AND PAYMENT

4.01 Cleaning and Restorations

A. Quantity of Cleaning and Restorations will not be measured for this project, but the work shall be performed as necessary to restore all disturbed areas to at least the pre-existing condition.

B. Payment for Cleaning and Restorations will not be made for this project, but the cost shall be included in the lump sum price bid.

END OF SECTION

SECTION 02393
MANHOLE ADJUSTMENT

PART 1 – GENERAL

1.01 Description

A. This item shall include adjustment of existing manhole frames as necessary within the project limits to meet proposed pavement grades.

PART 2 - PRODUCTS

2.01 Materials

A. Should adjustment of a manhole casting or other appurtenances necessitate mason reconstruction, the Contractor shall remove the casting, build the manholes up to the proper elevation with brick and mortar, and replace the casting in a full bed of mortar. The exposed exterior face of the manhole shall receive a one inch thick parge coating. Castings located within areas to be repaved shall be adjusted to an elevation five-eights of an inch (5/8") below the proposed pavement surface. Arrangements for the adjustments of valve boxes, other utilities, manholes, and any other facility shall be made by the Contractor in advance of any paving operations. All adjustments shall be coordinated with the City Engineer and appropriate Public Utility Authorities.

B. Manhole adjustment risers shall be in accordance with Pennsylvania Department of Transportation Publication 408.

PART 3 – EXECUTION

3.01 Methods of Construction

A. Methods of construction shall be in conformance with Pennsylvania Department of Transportation Publication 408, Section 606.

B. Under this contract, the Contractor shall be responsible to reset all existing water valve boxes and manhole, rims whether presently visible or not, prior to starting the project. The Contractor will locate and paint all valve boxes and manholes, visible or buried.

PART 4 – QUANTITY AND PAYMENT

4.01 Manhole Adjustments

A. Quantity of Manhole Adjustments will not be measured for this project, but the work shall be performed as necessary to complete the Scope of Work.

B. Payment for Manhole Adjustments will not be made for this project, but the cost to perform the related work shall be included in the Lump Sum Price Bid

C. Should the need arise to replace a damaged manhole casting, assuming the damage occurred prior to this project, the contractor shall be reimbursed for the material cost of the manhole casting. Installation of the new manhole casting shall be incidental to the manhole adjustment, and warrants no additional payment.

END OF SECTION

SECTION 02394
UTILITY ADJUSTMENT

PART 1 – GENERAL

1.01 Description

A. This item shall include adjustment of existing utility covers and valve boxes as necessary within the project limits to meet proposed pavement grades.

B. Utility adjustments shall be applicable to utility covers and valves within the limits of asphalt paving.

C. Adjustments to utility covers and valves beyond the edge of pavement or behind concrete curb shall be performed as incidental to concrete sidewalk or grass strip restorations as applicable.

D. All utility adjustments shall be coordinated with the City Engineer and subsequently the Public Utility Authorities.

PART 2 – PRODUCTS

2.01 Materials

A. Materials shall be in conformance with Pennsylvania Department of Transportation Publication 408, Section 606.

B. Utilities located within areas to be repaved shall be adjusted to an elevation five-eights of an inch (5/8") below the proposed pavement surface. Arrangements for the adjustments of utility covers, valve boxes, manholes and any other facility shall be made by the Contractor in advance of any paving operations.

PART 3 – EXECUTION

3.01 Methods of Construction

A. Methods of construction shall be in conformance with Pennsylvania Department of Transportation Publication 408, Section 606.

B. The Contractor shall be responsible to reset all existing utility covers and valve boxes whether presently visible or not, prior to starting the project. The Contractor will locate and paint all valve boxes and manholes visible or buried.

PART 4 – QUANTITY AND PAYMENT

4.01 Utility Adjustments

A. Quantity of Utility Adjustments will not be measured for this project, but the work be performed to complete necessary scope of work.

B. Payment for Utility Adjustments will not be made for this project, but the cost to perform related work shall be included in the Lump Sum Price Bid.

END OF SECTION

SECTION 02405
MILLING OF BITUMINOUS CONCRETE

PART 1 – GENERAL

1.01 Description

A. This item shall consist of cutting an existing asphalt surface and planing and/or shaving the surface irregularities out of the existing bituminous pavement such as to produce a smooth surface and cutting the pavement down to a pre-determined grade. The finished surface shall be free from gouges, grooves, ridges, and other imperfections of surface quality.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 Equipment

A. The milling machine shall be specifically designed and built for cold milling bituminous pavement. It shall be self-propelled and have the means for milling the existing surface and blading the material into windows. It shall have the capability of loading the milled cuttings into waiting dump trucks as the operation proceeds. It shall be capable of being operated at speeds from ten (10) to forty (40) feet per minute with a positive slope and depth controls to within 1/8". The cutting width of the machine shall not be less than sixty (60) inches, unless milling around manholes and valve boxes.

3.02 Method of Construction

A. The milling operation is to be done according to Section 491 of PennDOT Publication 408, as revised. The temperature at which the work is performed, the nature and condition of the equipment and the manner of performing the work shall be such that the pavement is not torn, gouged, broken, or otherwise injured by the milling operation. Sufficient passes or cuts shall be made so that all irregularities or high spots are eliminated, and 100% of the surface area has been milled to the desired grade or to the satisfaction of the Township Engineer.

B. Prior to milling each location the contractor is responsible for taking inventory and documenting all traffic striping, stop bars, crosswalks, etc. All milling and sweeping work must be completed by the contractor before the paving operations start on each designated street.

C. At the end of each day's milling operation the exposed road base shall be test rolled by a fully loaded truck. The entire road surface must meet the approval of the Engineer prior to commencement of paving operations.

D. Milling shall commence from the centerline of the roadway and proceed toward the curbline.

E. All milled material shall be picked up and removed from the project area immediately after milling. All milled areas shall be cleaned by vacuum or mechanical sweepers immediately after completion of the milling operation each day by the contractor and done so in a manner satisfactory to the Engineer.

F. The asphalt concrete removed by this operation shall become the property of the contractor, *unless otherwise specified* **however the Township may take possession of any quantity of millings as they see fit**. **No additional payment will be made for the transportation or stockpiling of millings requested by the Township.**

G. The contractor shall provide all necessary labor, materials, and equipment to load the asphalt cuttings into dump trucks supplied and operated by the contractor.

H. Maximum depth of milling is to be in accordance with plans and details. Depth along the curb will be at the direction of the Engineer. The notches required at the intersection of the paved street and an existing street are to be milled to the depth of the overlay. The notches are to be at least 6'-0" wide. See Section 02513 for additional information.

I. The material being removed shall be removed in a manner so that the new material that is to be placed (during resurfacing) shall have a lip to tie into.

J. The contractor shall mill around all utility boxes and/or manholes and inlets. The contractor will be responsible for replacing those utilities that are damaged or ruined by the milling operation. Areas adjacent to all utility structures not accessible to the milling machine will be removed by other methods by the contractor at no extra charge.

K. Milling shall be performed no more seven (7) calendar days before paving is completed. If milling takes place and paving has been completed by the seventh (7th) calendar day, the contractor will take all responsibility for repairs in the base. Any and all contract work performed while a previously milled roadway remains unpaved beyond seven (7) calendar days shall warrant no payment. Where stone base material has been exposed by milling operation, contractor shall be responsible to keep area stable preventing erosion of the road and existing stone base. If erosion of road base does occur during poor weather conditions, the contractor shall be responsible to re-establish the road base at no additional cost. The contractor will respond within twenty four (24) hours of notice from the Owner. If repairs are not made within 24 hours as specified, the Owner reserves the right to complete the work and deduct the cost of the work from the contract.

PART 4 – QUANTITY AND PAYMENT

A. No separate payment will be made and all costs shall be included in Lump Sum Price Bid.

END OF SECTION

SECTION 02140
DEWATERING AND FLOW DIVERSION

PART 1 – GENERAL

1.01 Description

A. Inlet flow diversion and dewatering during excavation and replacement of inlets.

PART 2 – PRODUCTS

2.01 Materials

A. Furnish pumps, carrier pipe, hoses, plugs, temporary lighting, shoring, and other equipment required for dewatering and flow diversion work.

PART 3 – EXECUTION

3.01 Methods of Work

A. Performance:

1. Dewatering:

   a. Prevent surface water and subsurface or groundwater from flowing into excavations and from flooding project site and surrounding area.

   b. Keep excavations and structures dry until all work is completed. Do not use trench excavations as temporary drainage ditches.

   c. Dispose of water in suitable manner, without damage to work site or adjacent property.

   d. Any sediment laden water from trench dewatering shall be filtered through approved sediment barriers prior to discharging onto the surrounding areas.

2. Flow Diversion:

   a. The flow diversion system components must be removable in the case of an emergency.

   b. One week prior to all damming and diverting of flows the Contractor shall notify the Owner and the Engineer.

PART 4 – QUANTITY AND PAYMENT

4.01 Dewatering and Flow Diversion

A. Quantity for Dewatering and Flow Diversion will not be measured for this project, but the work shall be performed as necessary to keep excavations, trenches and structures dry throughout the duration of the project.

B. Payment for Dewatering and Flow Diversion will not be made for this project, but the cost shall be included in the Lump Sum Price Bid.

END OF SECTION

SECTION 02531
ATHLETIC SURFACE - TEXTURED WHITE LINE PAINT

PART 1 – GENERAL

1.01 Description

A. This work shall consist athletic surface line painting on asphaltic surfaces.

B. All court surfaces lines shall be applied to the dimensions and thickness shown on the Court Striping Detail.

PART 2 – PRODUCTS

2.01 Materials

A. All materials shall be a WHITE 100% acrylic emulsion type containing no alkyds, butadiene styrene, or vinyls and shall be thinned with water only.

B. Texture shall be provided by fine rounded silica sand.

C. The paint shall be suitable for application by brush, spray or roller.

D. The paint shall be compatible with the paint system utilized for the project.

PART 3 – EXECUTION

3.01 Methods of Construction

A. Application shall be by brush, roller, or spray equipment.

B. Apply only when ambient temperature is 50 degrees and rising.

C. Do not apply when rain or high humidity is imminent.

D. Do not apply when the surface temperature is less than 50 degrees or more than 140 degrees.

E. Allow proper curing time for line marking installation.

PART 4 – QUANTITY AND PAYMENT

4.01 Line Paint

A. No separate payment will be made and all costs shall be included in the Lump Sum Price Bid.

END OF SECTION

SECTION 02790
ASPHALT COURT SURFACE COLOR COATING SYSTEM

PART 1 – GENERAL

1.01 Section Includes

A. Asphalt Tennis & multi-purpose court surface color coating system.

1.02 Related Requirements

A. Section 02513– Superpave Asphalt

1.03 Reference Standards

A. American Sports Builders Association (ASBA).

B. United States Tennis Association (USTA) Rules of Tennis.

C. National Basketball Association (NBA) Official Rules

D. National Federation of State High School Associations (NFHS) Rule Book

E. National Collegiate Athletic Association (NCAA) Rule Book

1.04 Submittals

A. Product Data: Submit manufacturer's product data.

B. Samples: Submit manufacturer's color samples of color coating.

C. Test Reports: Submit independent test results for solar reflectance index.

D. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

E. Manufacturer's Project References: Submit manufacturer's list of successfully completed asphalt tennis & multi-purpose court surface color coating system projects, including project name, location, and date of application.

F. Applicator's Project References: Submit applicator's list of successfully completed asphalt tennis & multi-purpose court surface color coating system projects, including project name, location, type and quantity of color coating system applied, and date of application.

G. Warranty Documentation: Submit manufacturer's standard warranty.

1.05 Quality Assurance

A. Manufacturer's Qualifications:
   1. Manufacturer regularly engaged, for past 5 years, in manufacture of asphalt tennis & multi-purpose court surface color coating systems of similar type to that specified.
   2. United States owned company.
   3. Member: ASBA.

B. Applicator's Qualifications:
   1. Applicator regularly engaged, for past 3 years, in application of basketball & multi-purpose court surface color coating systems of similar type to that specified.
   2. Employ persons trained for application of basketball & multi-purpose court surface color coating systems.

1.06 Delivery, Storage, and Handling

A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage and Handling Requirements:
   1. Store and handle materials in accordance with manufacturer's instructions.
   2. Keep materials in manufacturer's original, unopened containers and packaging until application.
   3. Store materials in clean, dry area indoors.
   4. Store materials out of direct sunlight.
   5. Keep materials from freezing.
   6. Protect materials during storage, handling, and application to prevent contamination or damage.
   7. Close containers when not in use.

1.07 Ambient Conditions

A. Do not apply asphalt tennis & multi-purpose court surface color coating system when air or surface temperatures are below 50 degrees F during application or within 24 hours after application.

B. Do not apply asphalt tennis & multi-purpose court surface color coating system when rain is expected during application or within 24 hours after application.

PART 2 – PRODUCTS

2.01 Manufacturer

A. Novacrylic, as manufactured by Nova Sports U.S.A., 6 Industrial Road. Bldg.#2 Milford MA 01757. Phone: 1-800-USA-NOVA, or approved equal.

2.02 Materials

A. Asphalt Tennis Court & Multi-Purpose Court Surface Color Coating System: Nova Play , Novacrylic Combination Surface, or equal

B. Acrylic Resurfacer: Nova Sports "Novasurface Acrylic Resurfacer, or equal".
   1. Applied over Asphalt surface

C. Coating System: Novacrylic Combination Surface, or equal.
   1. Applied over Nova Sports Acrylic Resurfacer.
   2. Color to be selected by owner.

F. Line Primer: Nova Sports "Seal A Line", or equal

G. Line Paint: Nova Sports "Novatex"., or equal
   1. Color: White.

PART 3 – EXECUTION

3.01 Examination

A. Examine asphalt tennis & multi-purpose court surfaces to receive color coating system.

B. Verify asphalt tennis & multi-purpose courts meet ASBA requirements.

C. Notify Architect of conditions that would adversely affect application or subsequent use.

D. Do not begin surface preparation or application until unacceptable conditions are corrected.

3.02 Surface Preparation

A. Protection of In-Place Conditions: Protect adjacent surfaces and landscaping from contact with asphalt tennis & multi-purpose court surface color coating system.

B. Prepare surfaces in accordance with manufacturer's instructions.

C. Cure new asphalt surfaces a minimum of 30 days before application of multi-purpose court surface color coating system.

D. Remove dirt, dust, debris, oil, grease, vegetation, loose materials, and other surface contaminants which could adversely affect application of asphalt tennis & multi-purpose court surface color coating system. Pressure wash entire surface.

E. Repair cracks, depressions, and surface defects in accordance with manufacturer's instructions before application of filler course and color coating.

F. Level depressions 1/8 inch and deeper with patch binder in accordance with manufacturer's instructions.

G. Apply 1 or 2 coats of filler course as required by surface roughness and porosity to provide smooth underlayment for application of color coating.

H. Ensure surface repairs are flush and smooth to adjoining surfaces.

3.03 Application

A. Apply asphalt tennis & multi-purpose court surface color coating system in accordance with manufacturer's instructions at locations indicated on the Drawings.

3.04 Line Markings

A. Lay out court line markings in accordance with appropriate governing body:
   a. USTA Rules of Tennis.
   b. NBA Official Rules for professional basketball
   c. NFHS Rules for high school basketball
   d. NCAA Rules for college basketball
   e. Other required game layout

B. Apply line markings primer, after masking tape has been laid, to seal voids between masking tape and court surface to prevent bleed-under when line paint is applied.

C. Apply a minimum of 1 coat of line paint in accordance with manufacturer's instructions.

3.05 Protection

A. Allow a minimum of 24 hours curing time before opening tennis & multi-purpose courts for play.

B. Protect applied asphalt tennis court & multi-purpose court surface color coating system to ensure that, except for normal weathering, coating system will be without damage or deterioration at time of Substantial Completion.

PART 4 – QUANTITY AND PAYMENT

4.01 Quantity and Payment

A. A. No separate payment will be made for work in this section. All costs shall be included in the lump sum price bid.

END OF SECTION

SECTION 02200
SITE CLEARING AND EARTHWORK

PART 1 – GENERAL

1.01 Description

A. The work covered by this section consists of all earthwork and related/incidental work required to complete the project as indicated on the drawings and specified herein, including but not limited to:
   1. Site demolition and clearing
   2. Stripping, stockpiling, and respreading topsoil
   3. Mechanical stone removal
   4. Soil erosion and sedimentation control
   5. Rough grading
   6. Excavation
   7. Trenching
   8. Filling and backfilling
   9. Shoring and bracing
   10. Footing drains
   11. Stone base under slabs on earth
   12. Soil compaction
   13. Disposal of excess material
   14. Quality control testing

1.02 Work Not Included

A. The following related items of work are included in other sections of these specifications:
   1. Final preparation of subgrade or provision of subbase for bituminous paving
   2. Finished grading, lawns, planting, sodding, and seeding
   3. Quality Assurance testing

1.03 Basis of Contract

A. Excavation for this project shall be considered unclassified and shall include all types of earth and soil, any pebbles, boulder, and bedrock, municipal trash, rubbish, and garbage, and all types of debris of the contruction industry such as wood, stone, concrete, plaster, brick, mortar, steel and iron shapes, pipe, wire, asphaltic materials, paper, and glass. All such materials encountered which are identified by this paragraph as unclassified shall be removed to the required widths and depths to create a finished product as shown and/or noted on the drawings and as written in the specifications. No additional compensation shall be made to the Contractor for this unclassified excavation. The materials defined by this paragraph as unclassified will not be considered to be concealed conditions or unknown physical conditions below the surface of the ground.

1.04 Protection

A. Existing monuments, bench marks, or other markers must not be damaged or disturbed. Suitable protected must be provided where required before starting work.

B. Before starting work, any trees or shrubs shown or designated to be saved must be protected by boxing, wood, wire, or plastic fencing staked securely in place or other approved means, maintained until completion of work or until removal is approved by the Engineer.

C. Any damage occurring because of failure of the Contractor to adequately provide protection shall be corrected at no additional cost to the Owner.

1.05 Disposition of Utilities

A. Rules and regulations of the various utility companies and other authorities having jurisdiction over such work shall be observed in the performance of all excavating, backfilling, and rough grading. The Contractor shall comply with the requirements of House Bill No. 1735 (of December 1986), Amendments to Act 287 of 1974.

B. Active underground lines owned by utility companies or by the Owner shown on the drawings shall be adequately protected and shall be removed or relocated only as indicated or specified.

C. The Contractor shall bear the burden of locating existing utilities prior to excavation. The Engineer and Owner shall be notified immediately should active utilities not indicated on the drawings be encountered. Such utilities shall be adequately protected, supported, or relocated as directed by the Engineer and the Owner. All work associated with a utility shall be coordinated with the utility company at no additional cost to the Owner.

D. Abandoned utilities not indicated on the drawings which are encountered in excavating within the limits of the construction shall be removed to a point at least three (3) feet outside of building walls, or as required by local regulations. Except as otherwise specified above, abandoned utilities may remain in place, provided they do not interfere with the new construction, in which case they shall be removed to the full extent of such interference. Remaining lines shall be suitably plugged or capped.

1.06 Subsurface Information

A. Refer to Attached Geotech Report.

PART 2 – PRODUCTS

2.01 Products

A. Approval: All fill material shall be subject to the approval of the Engineer and the Owner.

B. Notification: The Engineer shall be notified at least seven working days in advance of intention to import material to the site so that the Engineer may inspect the borrow area and review the tests to be assured of the quality of the material. If on-site material from excavations is to be used as fill, the Contractor shall allow the Engineer five working days to review tests performed on this material prior to commencing fill placement.

2.02 Fill Materials

A. Soil Fill Materials:
   1. Satisfactory Fill: Satisfactory fill or backfill, whether from on-site or borrowed off-site, shall be of soil classification group GW, GP, GM, GC, SW, SP, SM, or SC, as defined in ASTM D2487. The material shall be clean earth containing no organic matter, rubbish, or debris, but may contain sound rocks, pieces of concrete, and masonry material not over 6" in size if well distributed in earth, but not in the top 12" or against foundations, walls, grades beams, or similar construction. Select granular material, Penndot 2RC, complying with Form 408, Section 703.3, is also satisfactory fill.
   2. Unsatisfactory Fill: Unsatisfactory fill or backfill shall be soil in classification groups CL, ML, OL, CH, MH, OH, and PT. For Engineered fill, defined as fill supporting building footings, slabs, or paving, GC and SC is also unsatisfactory.

B. Crushed Stone or Gravel:
   1. All material shall comply with PennDOT Publication 408, Section 703.2, Type "A" aggregate.
   2. Base course under sidewalks shall be PennDOT No. 2A Coarse Aggregate. Base course under concrete and asphalt paving shall be PennDOT No. 2A Coarse Aggregate.

C. Topsoil:
   1. Topsoil stripped from the site is acceptable for respreading. Borrowed topsoil shall be tested for organic content, size of coarse fragments, and undesirable particles. The samples shall be submitted as requested.

PART 3 – EXECUTION

3.01 Site Demolition and Clearing

A. Remove all improvements, abandoned structures, paved surfaces, utility lines and other items shown on the drawings and indicated to be removed or required to be removed in order to install new work as shown.

B. Remove all objectionable material, rubbish, and junk within the project limits.

C. Clear and grub the site of small caliper vegetative matter and roots. Hand grub under drip line of trees designated to remain.

D. Remove trees, including stumps and root systems, unless specifically indicated to remain.

E. Salvage items indicated on the plan and deliver as directed by the Engineer.

F. Dispose of removed material off site in accordance with requirements of this specification. Burning of waste material on the site is not permitted.

3.02 Stripping Topsoil

A. Before starting rough grading, top soil shall be removed to its full depth and hauled from the site or stockpiled on site at suitable approved locations for use in future finish grading. Heavy growths of grass shall be removed before stripping topsoil.

3.03 Soil Erosion and Sedimentation Control

A. No water transporting sediment resulting from earth moving, demolition, or other construction activities shall be permitted to discharge into the Waters of the Commonwealth or beyond the contract limits of the project.

B. Natural surface water shall be diverted away from the work area. Diversion terraces and channels shall be constructed up-grade of the work area, as required, to convey tributary runoff around and beyond the outer limits of the area subject to earth moving, demolition, or other construction activities. Interception channels shall be constructed within the project area, as required, to control the discharge of sediment due to construction activities.

C. All surface runoff from the project area and all discharge resulting from the de-watering of excavations shall be collected and diverted to facilities for removal of sediment. Water collected by interceptor channels shall be conveyed to sedimentation basins or to vegetated areas, but not directly to streams or storm drains.

D. Earthmoving activities shall be planned to minimize the area, extent, and duration of exposure of disturbed land.

E. Surfaces of cut and fill slopes, ditches, swales, earth stockpiles, and areas denuded of topsoil shall be stabilized to minimize surface erosion immediately after exposure.

F. Temporary stabilization shall generally be accomplished by vegetative measures and seeding and with rapidly growing plants, such as annual rye grass, small grain, sudan grass, or field brome grass. This planting should be supplemented by mulches and protective netting as required or directed.

G. Temporary erosion control facilities shall be maintained for the duration of construction and shall be removed only after the permanent drainage and erosion control features of the project have been completed and established in operation.

H. Each Contractor is responsible for soil erosion and sedimentation control measures required by his earthwork. The lead Contractor shall coordinate all erosion and sedimentation control activity.

I. Soil erosion and sedimentation control drawings have been reviewed and approved as to general scope of work required. Contractors are responsible for compliance with all regulations pertaining to soil erosion and sedimentation control during construction, notwithstanding the specifics of referenced drawings and specifications.

3.04 Rough Grading

A. All areas within the construction area shall be rough graded to subgrade elevations, which shall be finished grades less thicknesses of finish materials as shown on the drawings. Only Satisfactory Fill, as previously specified, shall be used.

B. If fill for construction of embankments is to be placed on existing slopes steeper than 4:1, benches shall be cut into the slope so that fill can be placed in level lifts. Benches shall be cut wide enough to allow passage of compaction equipment.

C. Fill shall be placed and compacted in accordance with requirements of this section.

D. At the end of each working day the fill surfaces shall be sealed by rolling to promote surface runoff and graded to prevent ponding of water.

3.05 Excavation

A. The Contractor shall perform all excavation to accommodate all facilities and underground improvements and work incidental thereto. All work shall be performed with equipment suited to the task and operated by experienced operators. Sides of excavations shall be in accordance with OSHA and other applicable regulations and shall

provide adequate space for inspection and access to work. All loose material shall be removed from excavations, and bottoms shall be carefully leveled to grade.

B. The Contractor shall erect and maintain barricades, fences, warning lights, and other protection required to comply with all applicable regulations for safety of all persons at excavations according to requirements of "General Requirements."

C. Excavated materials shall be piled away from the edge of excavations a sufficient distance to prevent overloading the bank, and graded in such a way as to prevent surface water from entering the excavated area. Excess material from excavation not suitable nor required for backfill or other purposes shall be disposed of in accordance with requirements of this specification and local ordinances.

D. Excavations shall not be carried below existing building or wall foundations until underpinning and/or sheathing or shoring has been completed.

E. Excavation to full depth is not to be done when rain or freezing conditions are imminent. Excavated foundation bearing surfaces shall be protected from frost. Where bearing surfaces are damaged by water, mud, or otherwise disturbed, all loose mud or other materials shall be removed and the surface regraded. Where the foundation excavation has been carried below plan grade due to errors in excavation, freezing, removal of mud, or other loose materials, or overshot or pitted rock surface, the foundation bearing surface shall be restored to plan grade with the same strength concrete as that specified for the footing above it at no additional cost to the Owner.

F. When cutting of paved surfaces is required, the surface shall be machine cut in a neat, uniform manner. No paving shall be broken except that which has been previously cut. Edges of the cut pavement shall be protected during excavation and construction. Any edges which become broken shall be squared prior to pavement replacement.

G. Hand excavation shall be done in any circumstance where machine excavation could damage existing or new structures or other underground improvements. Exploratory pits shall be hand dug to locate existing underground lines at connection points or points of crossing.

3.06 Blasting

A. Blasting is not permitted on the site.

3.07 Approval of Bearing Strata

A. The Contractor shall furnish adequate advance notification to the Owner and the Engineer of times when footing excavations are to be completed so that the bearing quality of the footings bottoms may be inspected and/or tested and approved. Form work and concreting shall follow only after this approval.

B. Should the bearing at the levels indicated be found by the Engineer and the Owner to be inadequate, they may order the excavation carried down to sound bearing. Such excavation shall be classed as additional work and payment be made on the basis of an agreed price according to the General Conditions. Should suitable bearing be found at a lesser depth than indicated, the Engineer and the Owner may order the reduction of excavation specified or shown on the drawings and the Contractor shall allow a credit for excavation thus omitted on the same basis.

C. All footings shall rest on level surfaces and rock shall be stepped and cleaned to a hard surface.

3.08 Filling and Backfilling

A. Fill or backfill may not be done over frozen subgrade nor may any frozen material be used in fill or backfill.

B. Excavations and areas to be filled must be cleaned of all topsoil, vegetable matter, refuse, and debris before placing any fill or backfill.

C. No backfilling shall be done around any parts of the structures until such parts have been inspected and the backfilling authorized by the Inspector. No filling inside the building, or backfilling against foundation walls or areaways shall be done until concrete forms have been removed, pointing and dampproofing of concrete and masonry work has been completed, and the concrete is thoroughly cured.

D. All fill shall be placed in 6" – 8" layers unless approved for thicker layers based upon Quality Control Agent's recommendation, considering soil, location, and compaction equipment. Excavations against walls to be waterproofed are not to be backfilled until waterproofing is completed, protected and approved.

E. Filling and backfilling is to be performed carefully so as not to damage or otherwise affect the stability of any construction. Backfilling may be done only when the structure is fully capable of withstanding the resulting pressure and shall take place concurrently on both sides of walls.

F. Where wood sheet piling, form work, bracing or shoring is used, it shall be removed as the work progresses and the voids left shall be backfilled with 2500 lb. concrete below the top of adjacent footings and foundations.

G. Additional earth for fill or backfill to raise or change the exterior or interior subgrade to the required elevations shown on the drawings, required in excess of acceptable material from excavations on the site, shall be provided by the Contractor from a source approved by the Engineer and the Owner at no additional cost to the Owner.

H. Any excavations improperly backfilled, or where settlement occurs, shall be opened to the depth required for proper compaction and then refilled in lifts and compacted in accordance with requirements of this section.

3.09 Compaction

A. General: Compaction control shall be exercised during construction to provide no less than the minimum density specified for each class of area and type of material as indicated below.

B. Cohesive soil fill shall be compacted with a suitable sheeps foot or segmented roller and shall be compacted to not less than the following percentages of maximum dry density as determined in accordance with laboratory test, ASTM D1557 (Modified Proctor) and field tests, ASTM D1556 (sand cone) or D2922 (nuclear):
   1. Footings: Where footings are to be placed on Engineered fill, subgrade and succeeding lifts of fill material shall be compacted to 98% of maximum dry density at ±2% of optimum moisture.
   2. Building Slabs and Steps: Subgrade and each layer of fill material shall be compacted to 95% of maximum dry density at ±2% of optimum moisture.
   3. Walkways: Subgrade and each layer of fill materials shall be compacted to 92% of maximum dry density at ±2% of optimum moisture.
   4. Lawns or Unpaved Areas: Subgrade and each layer of fill materials shall be compacted to 90% of maximum dry density at ±2% of optimum moisture content.
   5. Paved Areas and Roadway Embankments: Subgrade and each layer of fill materials for paved areas shall be compacted to 98% of maximum dry density. Where paved area is to be constructed on embankment, the top three feet shall be compacted to 98% of maximum dry density, with the balance to 95%.

C. For free draining, granular soils where Proctor test procedures may be inappropriate, the degree of compaction shall be 75% of Relative Density as determined by ASTM D4253.

D. Crushed Stone shall achieve compaction by the application of appropriate mechanical compaction of the stone in succeeding lifts. Stone subbase for slabs and paving shall be compacted with a 10 ton (static weight) vibratory roller.

E. Compaction of shale or other material which degrades upon compaction shall only be used if approved and then compacted in an approved manner.

F. Prior to installing the stone base for slabs or concrete paving on earth, the subgrade shall be proof-rolled with a 10 ton roller until no displacement occurs or a minimum of 10 passes.

3.10 Moisture Control

A. Cohesive soil must achieve moisture conditioning before compaction by the addition of water applied uniformly to the surface, scarified and mixed by discing or harrowing before compacting. If the soil is too wet to achieve proper compaction, it must be scarified and air dried before compacting, or it must be removed and replaced.

B. Soil material too wet for proper compaction, which has been removed, may be stockpiled or spread and allowed to dry. Material may be reused when moisture content has been lowered sufficiently to allow proper compaction.

C. Soil material which has been stockpiled for future incorporation into the project shall be protected from becoming saturated. Stockpiled fill in a loose and/or unprotected condition, which becomes too wet for use, shall be spread and allowed to dry until suitable for use or replaced with borrowed fill material at no additional cost to the Owner.

3.11 Stone Base under Slab on Earth

A. Crushed stone or crushed gravel base course shall be provided under all floor slabs, paving slabs, or platforms on earth. Stone shall be as specified in this section and of thicknesses shown on the drawings.

3.11 Quality Control Testing

A. The Contractor shall perform all necessary Quality Control (Q.C.) tests and procedures for the performance of the work in accordance with this section to produce the end results specified. The Contractor shall maintain clear and orderly records of such tests and procedures, and make them available for field review and approval of the Engineer and the Owner. The Contractor's bid shall include the cost of all Q.C. tests.

B. The Contractor shall submit the plan for Q.C. testing to the Engineer and the Owner for review and comments.

C. Q.C. tests shall include tests on fill material, optimum moisture content, and maximum density and field density tests of fill layers. The Q.C. testing agent shall comment on the suitability of all subgrades, and the subgrades shall be acceptable to the Q.C. Agency.

D. Handwritten copies of field test reports shall be provided to the Contractor by the Q.C. Agency. They should be given to the Contractor and inspector within two (2) hours of completion, but in no event shall the technician leave the site without providing the Contractor and inspector with a copy of the test results. This shall include density, % moisture, plan location, elevation, comments, and any other relevant data. Comments shall include any condition that might have an adverse affect on the operations, including weather, drainage, etc.

E. The Contractor shall consult the Consulting Soils/Foundation Engineer on any problems that arise during construction. Copies of the daily in-place soil density tests shall be faxed to the consultant by the Contractor through the testing agency within twenty-four (24) hours of the time the tests are made.

F. The Contractor shall approve each subgrade and each fill layer before proceeding to the next layer. Any area which does not meet density, % moisture, or other requirements at any time, shall be suitably reworked and retested by the Contractor at his own expense.

3.13 Shoring and Bracing

A. The Contractor shall provide and maintain sheeting, shoring, and bracing as necessary to protect workmen and work of this project and existing structures. Restoration of damaged areas to original condition is the Contractor's responsibility. The Contractor shall submit his plan for sheeting, shoring, and bracing for approval before commencing work.

B. It is also the Contractor's responsibility to remove temporary sheeting, shoring, bracing, and protection when no longer required by adjacent conditions and completion of foundation construction or backfill and rough grading as approved by the Engineer and The Owner.

C. Contractor is to submit for approval his plan for excavation for underpinning, whether or not sheeting, shoring, or bracing is planned.

3.14 Pumping and Drainage

A. The Contractor shall pump out, or otherwise remove, any water which may be found in the excavation, and shall provide drainage ditches, underdrains, flumes, well points, pumping equipment, and suction and discharge lines as necessary to keep the excavation entirely clear of water while the foundations are being built or other operations are being performed requiring a dry condition.

3.15 Respreading Topsoil

A. Upon completion of concrete work, utilities, paving, drainage, and grading operations, the Contractor shall rough spread topsoil to a depth of 4" over disturbed and new lawn areas and to depths noted at planting beds. Additional topsoil needed to meet this requirement shall be supplied by the Contractor at no cost to the Owner.

3.16 Disturbed Areas

A. The Contractor shall restore all paving, roadways, walkways, lawns, and other surfaces disturbed by this work to the condition prior to execution of the contract. The Contractor shall repair any damages to existing or new structures, site, or underground or above ground improvements caused directly or indirectly by this work.

3.17 Cleanup

A. Any paved area (either new or existing) over which hauling operations or other moving equipment are conducted, shall be kept clean and any soil or other material which may be

spilled or left upon the paved surfaces shall be removed. Paved surfaces shall be left broom clean. Wet down surfaces as required to prevent excessive airborne dust.

3.18 Disposal

A. All debris and excess earth must be removed from the site using procedures resulting in full compliance with all applicable regulations. The Contractor shall obtain approval of the dump site(s) from the Engineer and the Owner, which approval will not relieve the Contractor of his responsibility herein.

PART 4 - QUANTITY AND PAYMENT

Unless specified or noted otherwise, no separate measurement and no separate payment will be made for site clearing and earthwork. All material and labor costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications

END OF SECTION

SECTION 02925 - SYNTHETIC GRASS SURFACING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes synthetic grass surfacing.

1.2 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Submit manufacturer's catalog cuts, material safety data sheets (MSDS), brochures, specifications; preparation and installation instructions and recommendations; storage, handling requirements and recommendations.
   2. Submit fiber manufacturer's name, type of fiber and composition of fiber.
   3. Submit data in sufficient detail to indicate compliance with the contract documents.
   4. Submit manufacturer's instructions for installation.
   5. Submit manufacturer's instructions for maintenance for the proper care and preventative maintenance of the synthetic turf system, including painting and markings.

B. Shop Drawings: For synthetic grass surfacing.
   1. Indicate field layout; field marking plan and details for the specified sports; i.e., NCAA Football; roll/seaming layout; methods of attachment, field openings and perimeter conditions.
   2. Show installation methods and construction indicating field verified conditions, clearances, measurements, terminations, drainage.
   3. Provide joint submission with related trades when requested by Architect.

C. Samples: Submit a synthetic turf sample, 12 x 12 inches, representing the turf carpet portion of the product proposed for this project

D. Product Certification:
   1. Submit manufacturer’s certification that products and materials comply with requirements of the specifications.
   2. Submit test results indicating compliance with Reference Standards.

E. Project Record Documents: Record actual locations of seams, drains and other pertinent information in accordance with Division 1 Specifications Series, General Requirements.

F. List of existing installations: Submit list including respective Owner’s representative and telephone number.

G. Warranties: Submit warranty and ensure that forms have been completed in Owner's name and registered with approved manufacturer.

H. Testing data to the Owner to substantiate that the finished field meets the required shock attenuation, as per ASTM F1936.

I. Submit Bills of Lading/Material Delivery Receipts for synthetic turf infill materials. Bills of lading shall bear the name of the project/delivery address, quantity of materials delivered, source/location of origin of infill materials and/or manufacturer, and date of delivery.

J. Testing Certification: Submit certified copies of independent (third-party) laboratory reports on ASTM testing:
   1. Pile Height, Face Weight & Total Fabric Weight, ASTM D5848.
   2. Primary & Secondary Backing Weights, ASTM D5848.
   3. Tuft Bind, ASTM D1335.
   4. Grab Tear Strength, ASTM D1682 or D5034.
   5. Shock Attenuation, ASTM F1936
   6. Water Permeability, ASTM F1551

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section. The turf contractor and/or the turf manufacturer:
   1. Shall be experienced in the manufacture and installation of specified type of infilled slit-film/monofilament synthetic grass system for a minimum of three years. This includes a slit-film/monofilament fiber, backing, the backing coating, and the installation method.
   2. Shall have 500 fields or more in play for at least two years. Fields shall be 65,000 ft² or more
   3. Shall have a minimum of 100 fields that are at least 8 years old, which is equal to the respective warranty period, with the same infill system.
   4. The manufacturer must have ISO 9001, ISO 14001 and OHSAS 18001 certifications demonstrating its manufacturing efficiency with regards to quality, environment and safety management systems.
   5. Shall have a minimum of 50 installations in the State/Province of Pennsylvania.
   6. Manufacturer must provide proof that its turf systems have been subject to long-term independent, epidemiological and peer reviewed studies proving its ability to provide for a safe surface.
   7. The monofilament fiber being proposed for this project, as part of a 2.5” turf carpet, must have a documented Fiber Performance Index (FPI) score of at least 80.

B. Installer: Company shall specialize in performing the work of this section. The Contractor shall provide competent workmen skilled in this specific type of synthetic grass system installation.

   1. The designated Supervisory Personnel on the project shall be certified, in writing by the turf manufacturer, as competent in the installation of specified monofilament material and proper installation of the infill mixture.
   2. Installer shall be certified by the manufacturer and licensed.

3. The installer supervisor shall have a minimum of 5 years experience with a minimum of five (5) field installations as either a construction manager or a supervisor of synthetic turf installations.

1.6 WARRANTY AND GUARANTEE

A. The Manufacturer/Contractor shall submit a warranty which guarantees the usability and playability of the synthetic turf system for its intended uses for a minimum eight (8) year period commencing with the date of substantial completion. The warranty coverage shall not be prorated or limited to the amount of the usage, and shall include the following:

1. A non-prorated, non-cancellable up-front pre-paid, third-party insured warranty. Warranty shall be covered by a third party insurance policy, non-cancelable and pre-paid, and is in effect covering this installation, and underwritten by a best "a" rated (or better) insurance carrier listed in the a.m. best key rating guide.

2. Insurance carrier must confirm that the policy is in force and premiums prepaid for entire warranty duration in full.

3. The policy must include a minimum annual aggregate of $5,000,000 per year and be based on claims arising from fields installed and completed only during the policy year.

4. The policy must provide full coverage for eight (8) years (minimum) from the date of notice of completion.

5. The policy shall cover all costs associated with full field replacement with new equal or better turf material, including labor, materials and any other costs to repair or replace the field.

6. The Owner shall not be responsible for any deductible.

7. Warranty shall have no restrictions on hourly amount of use limitations as long as the primary athletic use on the field is as anticipated in the original design.

8. Contractor shall include in the warranty the cost to replace high use areas such as, but not limited to, goal mouths of soccer pitch's and lacrosse field's center circle, etc. Replacement shall be one time for each area during the warranty period at a time of the warranty holder's discretion. The replacement area shall include the required square footage needed to replace the damaged areas up to the closest field line or change in turf color.

9. Product specifications, including general wear and damage caused from UV degradation.

10. Must have a provision to either make a cash refund or repair or replace such portions of the installed materials that are no longer serviceable to maintain a serviceable and playable surface.

11. The warranty must be from a single source covering workmanship and all self-manufactured or procured materials.

12. Guarantee the availability of replacement material for the synthetic turf system installed for the full warranty period.

13. Turf must maintain an ASTM F355 G-Max of less than 150 for the life of the warranty.

14. The name on the warranty shall be the City of Plainfield.

15. Contractor shall verify that its onsite representative has inspected the installation and that the work conforms to the manufacturer's requirements. The manufacturer shall submit written certification that the policy is in effect, fully funded and that the installation is added to the policy upon completion and acceptance.

16. The Synthetic Turf Manufacturer must not have had more than five (5) fields replaced, under warranty, during the past five (5) years.

1.7 MAINTENANCE SERVICE

A. Contractor shall train the Owner's facility maintenance staff in the use of the turf manufacturer's recommended groomer.

PART 2 - PRODUCTS

2.1 Basis of Design

A. Basis of design are as follows:

1. FieldTurf USA Inc.
175 N. Industrial Blvd
Calhoun, GA 30701
P: 800-724-2969
484 432 9380 Bill Bamber

Model: FieldTurf Vertex Core 2.25"

2. **Or Approved Equal**

2.2 MATERIALS AND PRODUCTS

A. Artificial grass FieldTurf system materials shall consist of the following:
1. Carpet made of slit-film and dual polymer monofilament polyethylene fibers tufted together into each individual stitch, into a non-perforated backing. Alternating row monofilament and slit-film carpet constructions are not permitted.
2. Infill: Controlled mixture of graded sand and cryogenic rubber crumb that partially covers the carpet.
3. Glue, thread, paint, seaming fabric and other materials used to install and mark the artificial grass slit-film/monofilament FieldTurf.

B. The installed artificial grass slit-film/monofilament FieldTurf shall have the following properties:

Standard	Property	Specification
	Pile Yarn Type	UV-resistant polyethylene
	Yarn Structure – A	Slit-Film
ASTM D1907	Yarn Denier - A	5,000
	Yarn Structure – B	Ridged Monofilament
	Yarn Denier – B	14,000
ASTM D5823	Pile Height	2.25”
ASTM D5793	Stitch Gauge	3/4”
ASTM D5848	Pile Weight	43oz/square yard
ASTM D5848	Primary Backing	7+oz/square yard
ASTM D5848	Secondary Backing	14+oz/square yard
ASTM D5848	Total Weight	64+oz/square yard
ASTM D1335	Tuft Bind (Without Infill)	8+lbs
ASTM D5034	Grab Tear (Width)	200 lbs/force
ASTM D5034	Grab Tear (Length)	200 lbs/force
ASTM F1551	Carpet Permeability	>40 inches/hour
ASTM F1936	Impact Attenuation (Gmax)	<200
	Infill Material Depth	1.5 inches
	Sand Infill Component	6.2lbs/square foot
	Cryogenic Infill Component	2.2lbs/square foot
	Total Product Weight	1274oz/square yard

Variation of +/- 5% on above listed properties is within normal manufacturing tolerances

C. Carpet shall consist of slit-film/monofilament fibers tufted into a primary backing with a secondary backing.

D. Carpet Rolls shall be 15’ wide rolls.
   1. Rolls shall be long enough to go from field sideline to sideline.
   2. Where the playing field is for football, the perimeter white line shall be tufted into the individual sideline rolls.

E. Backing:
   1. Primary backing shall be a double-layered polypropylene fabric.
   2. Secondary backing shall consist of an application of porous, heat-activated urethane to permanently lock the fiber tufts in place.
   3. Perforated (with punched holes), backed carpet are unacceptable.

F. Monofilament fibers shall be 14,000 denier, slit-film fibers shall be 5000 denier - both fibers shall be low friction, and UV-resistant, measuring not less than 2.25 inches high. Each monofilament fiber is extruded with two layers of polyethylene polymers. A rigid polyethylene polymer as the inner core of the fiber for superior resilience and a soft yet extremely durable polyethylene polymer as the outer shell of the fiber for a realistic grass-like feel.

G. Infill materials shall be approved by the manufacturer.
   1. Infill shall consist of a resilient 3-layered granular system, comprising selected and graded dust-free silica sand and SBR rubber crumb.
   2. Artificial Grass products without SBR rubber will not be acceptable.

H. Non-tufted or inlaid lines and markings shall be painted with paint approved by the synthetic turf manufacturer.

I. Thread for sewing seams of turf shall be as recommended by the synthetic turf manufacturer.

J. Glue and seaming fabric for inlaying lines and markings shall be as recommended by the synthetic turf manufacturer.

2.3 QUALITY CONTROL IN MANUFACTURING

A. The manufacturer shall own and operate its own manufacturing plant in North America. Both tufting of the field fibers into the backing materials and coating of the turf system must be done in-house by the turf manufacturer. Outsourcing of either is unacceptable.

B. The manufacturer shall have full-time certified in-house inspectors at their manufacturing plant that are experts with industry standards.

C. The manufacturer's full-time in-house certified inspectors shall perform pre-tufting fiber testing on tensile strength, elongation, tenacity, denier, shrinkage, and twist i.e., turns per inch, upon receipt of fiber spools from fiber manufacturer.

D. Primary backing shall be inspected by the manufacturer's full-time certified in-house inspectors before tufting begins.

E. The manufacturer's full-time in-house certified inspectors shall verify "pick count", yarn density in relation to the backing, to ensure the accurate amount of face yarn per square inch.

F. The manufacturer's full-time, in-house, certified inspectors shall perform turf inspections at all levels of production including during the tufting process and at the final stages before the turf is loaded onto the truck for delivery.

G. The manufacturer shall have its own, in-house laboratory where samples of turf are retained and analyzed, based on standard industry tests, performed by full-time, in-house, certified inspectors.

H. The manufacturer must have ISO 9001, ISO 14001 and OHSAS 18001 certifications demonstrating its manufacturing efficiency with regards to quality, environment and safety management systems.

2.4 FIELD GROOMER & SWEEPER

A. Supply field groomer as part of the work.
   1. Field Groomer shall include a towing attachment compatible with a field utility vehicle.
   2. Field Groomer shall be a FieldTurf GroomRight, or approved equal
   3. Field Sweeper shall include a towing attachment compatible with a field utility vehicle.
   4. Field Sweeper shall be a FieldTurf FieldSweep, or approved equal

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that all sub-base leveling is complete prior to installation.

B. Installer shall examine the surface to receive the synthetic turf and accept the sub-base planarity in writing prior to the beginning of installation.

1. Acceptance is dependent upon the Contractor's test results indicating compaction and planarity are in compliance with manufacturer's specifications.

2. The surface shall be accepted by Installer as "clean" as installation commences and shall be maintained in that condition throughout the process.

C. Correct conditions detrimental to timely and proper completion of Work.

D. Do not proceed until unsatisfactory conditions are corrected.

E. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

A. Prior to the beginning of installation, inspect the sub-base for tolerance to grade.

B. Sub-base acceptance shall be subject to receipt of test results for compaction and planarity that sub-base is in compliance with manufacturer's specifications and recommendations. Testing shall be performed by Contractor and observed by the Engineer.

C. Dimensions of the field and locations for markings shall be measured by a registered surveyor to verify conformity to the specifications and applicable standards. A record of the finished field as-built measurements shall be made.

D. Installed sub-base shall be tested for porosity prior to the installation of the turf. A sub base that drains poorly is an unacceptable substrate.

3.3 INSTALLATION - GENERAL

A. The installation shall be performed in full compliance with approved Shop Drawings.

B. Only trained technicians, skilled in the installation of athletic caliber synthetic turf systems working under the direct supervision of the approved installer supervisors, shall undertake any cutting, sewing, gluing, shearing, topdressing or brushing operations.

C. The designated Supervisory personnel on the project must be certified, in writing by the turf manufacturer, as competent in the installation of this material, including sewing seams and proper installation of the Infill mixture.

D. Designs, markings, layouts, and materials shall conform to all currently applicable National Collegiate Athletic Association rules, NFHSA rules, and/or other rules or standards that may apply to this type of synthetic grass installation. Designs, markings and layouts shall first be approved by the Engineer or Owner in the form of final shop drawings. All markings will be installation full compliance with final shop drawings.

3.4 INSTALLATION

A. Install at location(s) indicated, to comply with final shop drawings, manufacturers'/installer's instructions.

B. The Contractor shall strictly adhere to specified procedures. Any variance from these requirements shall be provided in writing, by the manufacturer's on-site representative, and submitted to the Engineer and/or Owner, verifying that the changes do not in any way affect the Warranty. Infill materials shall be approved by the manufacturer and installed in accordance with the manufacturer's standard procedures.

D. Carpet rolls shall be installed directly over the properly prepared aggregate base. Extreme care shall be taken to avoid disturbing the aggregate base, both in regard to compaction and planarity.

1. Repair and properly compact any disturbed areas of the aggregate base as recommended by manufacturer

E. Full width rolls shall be laid out across the field.

1. Turf shall be of sufficient length to permit full cross-field installation from sideline to sideline.
2. No head or cross seams will be allowed in the main playing area between the sidelines.
3. Each roll shall be attached to the next roll utilizing standard state-of-the- art sewing procedures. Gluing of rolls will not be acceptable.
4. When all of the rolls of the playing surface have been installed, the sideline areas shall be installed at right angles to the playing field.

F. Artificial turf panel seams shall be sewn. Seams secured by other means including gluing are unacceptable. Installation shall be 99% sewn.

1. Minimum gluing will only be permitted to repair problem areas, corner completions, and to cut in any logos or inlaid lines as required by the specifications.
2. All seams shall be sewn using double bagger stitches and polyester thread or, in the case of inlays only, adhered using seaming tape and high grade adhesive (per the manufacturer's standard procedures).
3. Seams shall be flat, tight, and permanent with no separation or fraying.

G. Infill Materials:

1. Infill materials shall be applied in numerous thin lifts. The turf shall be brushed as the mixture is applied. The infill material shall be installed to a depth determined by the manufacturer.
2. Inlays shall conform to the manufacturer's specifications, directions and recommendations.

H. All lines and marking shall be tufted or inlaid. No painting of the turf will be performed.

I. Synthetic turf shall be attached to the perimeter edge detail in accordance with the manufacturer's standard procedures.

J. Upon completion of installation, the finished field shall be inspected by the installation crew and an installation supervisor.

3.5 FIELD MARKINGS

A. Field markings shall be installed in accordance with approved shop drawings.

B. Balance of sports markings will be inlaid in accordance with the Drawings.

3.6 ADJUSTMENT AND CLEANING

A. Do not permit traffic over unprotected surface.

B. Contractor shall provide the labor, supplies, and equipment as necessary for final cleaning of surfaces and installed items.

C. All usable remnants of new material shall become the property of the Owner.

D. The Contractor shall keep the area clean throughout the project and clear of debris.

E. Surfaces, recesses, enclosures, and related spaces shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Owner.

3.7 PROTECTION

A. Protect installation throughout construction process until date of final completion.

PART 4 - PAYMENT

4.1 METHOD OF MEASUREMENT AND PAYMENT

No separate payment will be made for work performed under this section. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION 02925

SECTION 02926 - SYNTHETIC TURF BASE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes construction of synthetic grass base.

1.2 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 Perimeter Edge: Concrete curb edge as shown on the plans and details.

2.2 Underdrain System: ADS AdvanEdge or approved equal.

A. 1 inch by 12 inch flat drain.

PART 3 - EXECUTION

3.1 EXAMINATION

A. The contractor/sub-contractor shall construct all excavation and aggregate layers utilizing equipment that is equipped with laser control and automatic slope control devices. The laser level that is used to control this work shall be recently calibrated and certified as to the accuracy of the instrument. The contractor/sub-contractor shall be required to furnish a report, from an independent Professional Engineer or Licensed Surveyor in the state of New Jersey, certifying that the installed sub-base for this project meets or exceeds the related guidelines and requirements for Synthetic Turf Construction as required per the specifications for this project.

B. Installer shall examine the surface to receive the synthetic turf and accept the sub-base planarity in writing prior to the beginning of installation of the turf.

1. Acceptance is dependent upon the Contractor’s test results indicating compaction and planarity are in compliance with manufacturer’s specifications.

2. The surface shall be accepted by Installer as “clean” as installation commences and shall be maintained in that condition throughout the process.

C. Correct conditions detrimental to timely and proper completion of work.

D. Do not proceed until unsatisfactory conditions are corrected.

E. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

A. Prior to the beginning of installation, inspect the sub-base for tolerance to grade.

B. Sub-base acceptance shall be subject to receipt of test results for compaction and planarity that sub-base is in compliance with manufacturer's specifications and recommendations. Testing shall be performed by Contractor and observed by the Engineer.

C. Dimensions of the field and locations for markings shall be measured by a registered surveyor to verify conformity to the specifications and applicable standards. A record of the finished field as-built measurements shall be made.

D. Installed sub-base shall be tested for porosity prior to the installation of the turf. A sub base that drains poorly is an unacceptable substrate.

3.3 INSTALLATION

A. Permeable Aggregate Base Layer

A layered system of quarry processed stone shall be placed over the entire subbase, which has been covered with the permeable liner. The aggregates shall be comprised of a minimum 6" compacted, stable, permeable, processed stone. Care shall be taken to maintain the grade designed for the subbase. Aggregate shall durable and not exceed 12% loss of materials as determined by a sulfate soundness test (ASTM C88). The layered processed stone layer shall be compacted to a minimum of 95% of maximum density (per ASTM D698). Nuclear density tests should be performed during aggregate placement and rolling to ensure specified compaction.

Contractor shall have an independent testing agency conduct a field infiltration test per ASTM D3385, Standard Test Method for Infiltration Rate of Soils in Field Using Test Method BSI 7044 Method #4 or equivalent percolation test to affirm the stone drainage base water permeability rate exceeds twenty (20) inches per hour. Testing will be a minimum of two (2) tests, one (1) per each side of field.

The layered system of quarry processed stone shall be constructed as per plans.

END OF SECTION 02926

SECTION 02930 - ENCAPSULATED SYNTHETIC TRACK SURFACING

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish all labor, materials, equipment, supervision and services necessary for proper completion of the BSS 300 Encapsulated Synthetic Track Surfacing System, Or approved equal and related work indicated on the Drawings and specified herein.

B. Install an impermeable polyurethane synthetic track system consisting of SBR rubber and BEYPUR single-component polyurethane binder, or approved equal, with BEYPUR poured-in-place, or approved equal, two-component, UV-stabilized elastomeric polyurethane wearing layer and encapsulated textured finish.

C. Lay out and paint all track lines and event markings in accordance with applicable IAAF and NCAA rules. Refer to the Drawings for surfacing locations; field verify all quantities and dimensions.

D. Coordinate work with the Owner's authorized representative to perform work at times and in a manner acceptable to the Owner.

1.2 REFERENCE STANDARDS

A. International Amateur Athletic Federation (IAAF) requirements and certification system for synthetic-surfaced outdoor athletics tracks, as referenced by the manufacturer's specification.

B. National Collegiate Athletic Association (NCAA) rules applicable to track layout, slopes, line striping, and event markings.

C. Applicable American Society for Testing and Materials (ASTM) material testing guidelines.

1.3 SUBMITTALS

A. Submit the following with the bid:

1. Manufacturer's standard printed specifications for the proposed synthetic track surfacing system.

1. Affidavit confirming proposed surfacing materials comply with the manufacturer's current published specifications and specified modifications.

1. A 6-inch by 6-inch sample of the exact proposed synthetic track surface.

1. List of outdoor track facilities installed within the previous two years using the exact proposed surfacing system.

1. Results from an approved IAAF testing laboratory confirming compliance with IAAF athletic track performance testing.

1. Current Certified Track Builder (CTB) certificate for the Contractor's full-time staff member.

B. Provide documentation establishing that the selected and installed system satisfies IAAF Performance Specifications for Synthetic Surfaced Athletics Tracks (Outdoor) and is certified under the applicable IAAF certification system.

C. At completion, furnish all computations and drawings necessary to document the event markings, together with a letter certifying their accuracy.

1.4 QUALITY ASSURANCE

A. Contractor shall have at least five years of experience installing poured-in-place, two-component elastomeric polyurethane synthetic track surfacing.

B. Contractor shall have operated under its present name for not less than five years and, when requested, furnish financial statements for the preceding five years.

C. Contractor shall employ full time at least one individual holding the Certified Track Builder (CTB) designation issued by the American Sports Builders Association.

D. Contractor shall document at least 10 outdoor track facilities completed within the prior two years using the exact IAAF-certified specified surfacing system.

E. Contractor shall have 10 years of experience with aliphatic coating.

F. Manufacturer shall have at least 10 years of experience producing compound two-part polyurethane for athletic surfaces and shall offer at least four IAAF-certified track systems.

1.5 PERFORMANCE REQUIREMENTS

A. Thickness: greater than 13 mm under stated performance criteria; see also specified nominal system thickness in Article 3.3.

B. Force reduction: 35 to 50 percent.

C. Modified vertical deformation: 0.6 to 1.8 mm.

D. Friction: greater than 47 TRRL skid resistance.

E. Tensile strength: greater than 0.5 MPa.

F. Elongation at break: greater than 40 percent.

1.6 WARRANTY AND GUARANTEE

A. Provide a five-year guarantee, commencing on the date of acceptance, against faulty workmanship and material failure.

B. Repair or replace, at no charge, surfacing found defective due to faulty workmanship or material failure upon written notice received during the guarantee period.

PART 2 - PRODUCTS

2.1 SYNTHETIC TRACK SURFACING SYSTEM

A. BSS 300 Encapsulated Synthetic Track Surfacing System, consisting of SBR granule base mat, polyurethane binder, polyurethane pore-sealing coat, UV-stabilized elastomeric polyurethane and EPDM wearing course, pigmented aliphatic protective coatings, and track marking paint., or approved equal

2.2 MATERIALS AND PRODUCTS

A. Elastomeric Polyurethane: BEYPUR two-component UV-stabilized elastomeric polyurethane compounded from polyol and isocyanate components based on 100 percent methylene diphenyl isocyanate (MDI). Toluene diisocyanate (TDI) is not permitted. Material shall be red.

B. EPDM Granulate: Peroxide-cured EPDM granules, 1 to 3 mm in size, color matched to UV-stabilized elastomeric polyurethane.

C. Base Course Rubber: Graded styrene-butadiene rubber (SBR) granules, 1 to 3 mm in size, with SBR not exceeding 82 percent by weight of the paved-in-place base layer.

D. Single-Component Binder: BEYPUR 300, long-cure single-component polyurethane binder, minimum 18 percent by weight of the paved-in-place base layer. See also Article 3.4, which specifies a minimum of 20 percent in the final base mixture.

E. Seal Coat: BEYPUR 200, two-component polyurethane pore sealer for paved rubber granule mats. Seal SBR and binder mat; do not use EPDM dust.

F. Aliphatic Protective Coating: Single-component, moisture-cured aliphatic coating, red and color matched to UV-stabilized elastomeric polyurethane. Clear coatings and two-component coatings are prohibited.

G. Line Marking Paint: Single-component, moisture-cured aliphatic polyurethane paint.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Install over approved substrate. General Contractor shall provide compaction test results of 95 percent or greater for installed subbase and asphalt surface.

B. For NCAA certification, asphalt substrate shall not vary from planned cross slope by more than +0.2 percent; maximum lateral slope shall be 1 percent from outside to inside; maximum slope in a running direction shall be 0.1 percent.

C. Finished asphalt shall not vary more than 1/8 inch under a 10-foot straightedge.

D. Asphalt-paving Contractor shall flood the asphalt as soon as it can accommodate traffic, and within 24 hours. Where birdbaths remain after 20 minutes drying time, Architect and Surfacing Contractor shall determine correction. Cold tar, skin patching, and sand-mix patching are prohibited.

E. Completely remove hydraulic oil, diesel, motor oil, and other oil-contaminated asphalt by chipping out or replacing with keyed-in new asphalt. Replacement depth shall be at least 1 inch.

F. Allow 28 days for asphalt base curing. Surfacing Contractor shall determine whether substrate is sufficiently cured before applying polyurethane.

G. General Contractor shall verify compliance of asphalt substrate with specified cross slopes, planarity and project requirements. Surfacing Contractor shall accept asphalt base planarity in writing before commencing work.

3.2 SITE CONDITIONS AND COORDINATION

A. Do not install while adjacent or concurrent construction produces dust, abrasives, or other material that, in the Installer’s opinion, could harm synthetic surfacing.

B. Delay installation whenever weather or climatic conditions are detrimental to proper placement. Preferred installation temperature is 50 degrees F and rising. Install only under dry conditions.

3.3 THICKNESS AND EQUIPMENT

A. Specified system thickness: 13 mm. The source performance criteria separately state thickness greater than 13 mm; reconcile prior to bidding or construction.

B. Use specially designed machinery and equipment. Base mat shall be installed with a mechanically operated paver with variable regulated speed and thermostatically controlled screed.

C. Install wearing course with automatic electronic proportioning equipment providing continuous mixing and feeding for controlled application.

3.4 INSTALLATION

A. Base Course: Mix SBR granules and BEYPUR 300 on site, limiting SBR to 82 percent by weight of base mat. The source installation requirement calls for minimum 20 percent BEYPUR 300 by weight of the final mixture (as distinct from 18 percent in the materials requirement). Mechanically place mixture with specified paver.

B. Seal Coat: Homogeneously mix two BEYPUR 200 components at prescribed ratio with suitable mixing equipment and squeegee-apply to base mat to create an impermeable surface.

C. Wearing Course: Incorporate 1 to 3 mm EPDM granules into BEYPUR throughout the full 5 mm wearing-course depth. Provide a resilient, embedded textured finish consisting of a dense matrix of exposed EPDM granules. Apply the homogeneous wearing course in situ with the base course.

D. Protective Coating: Spray-apply initial red pigmented aliphatic polyurethane coat at 150 to 175 square feet per gallon over the entire surface. Apply second red pigmented aliphatic coat at the same rate in the opposite direction.

3.5 LINE STRIPING AND EVENT MARKINGS

A. Lay out track line striping and event markings in accordance with applicable IAAF and NCAA rules.

B. Upon completion, submit computations, drawings, and certification letter attesting to the accuracy of the installed markings.

END OF SECTION 02930

SECTION 09614
CAST IN PLACE DETECTABLE/TACTILE WARNING SURFACES

PART 1 – GENERAL

1.01 Description

A. This Section specifies furnishing and installing Cast In Place Detectable/Tactile Warning Surface Tiles where indicated. Not recommended for asphalt applications.

1.02 Submittals

A. Product Data: Submit manufacturer's literature describing products, installation procedures and routine maintenance.

B. Samples for Verification Purposes: Submit two (2) tile samples minimum 6"x6" of the kind proposed for use.

C. Shop drawings are required for products specified showing fabrication details, composite structural system, tile surface profile, sound on cane contact amplification feature, plans of tile placement including joints, and material to be used as well as outlining installation materials and procedure.

D. Material Test Reports: Submit complete test reports from qualified accredited independent testing laboratory's to qualify that materials proposed for use are in compliance with requirements and meet or exceed the properties indicated on the specifications. All tests shall be conducted on a Cast In Place Detectable/Tactile Warning Surface Tile system as certified by a qualified independent testing laboratory and be current within a 24 month period.

E. Maintenance Instructions: Submit copies of manufacturer's specified installation and maintenance practices for each type of Detectable Warning Surface Tile and accessory as required.

PART 2 – PRODUCTS

2.01 Quality Assurance

A. Provide Cast In Place Detectable/Tactile Warning Surface Tiles and accessories as produced by a single manufacturer with a minimum of three (3) years experience in the manufacturing of Cast In Place Detectable/Tactile Warning Surface Tiles.

B. Installer's Qualifications: Engage an experienced Installer certified in writing by Cast In Place Detectable/Tactile Warning Surface Tile manufacturer as qualified for installation,

who has successfully completed installations similar in material, design, and extent to that indicated for Project.

C. Americans with Disabilities Act (ADA): Provide Surface Applied Detectable/Tactile Warning Surface Tiles which comply with the detectable warnings on walking surfaces section of the Americans with Disabilities Act (Title III Regulations, 28 CFR Part 36 ADA STANDARDS FOR ACCESSIBLE DESIGN, Appendix A, Section 4.29.2 DETECTABLE WARNINGS ON WALKING SURFACES).

D. Vitrified Polymer Composite (VPC) Cast In Place Detectable/Tactile Warning Surface Tiles shall be an epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes. The tile shall incorporate an in-line pattern of truncated domes measuring nominal 0.2" height, 0.9" base diameter, and 0.45" top diameter, spaced center-to-center 2.35" as measured on a diagonal and 1.67" as measured side by side. For wheelchair safety the field area shall consist of a non-slip surface with a minimum of 40 - 90° raised points 0.045" high, per square inch; "Armor-Tile" as manufactured by Engineered Plastics Inc., Tel: 800-682-2525, or approved equal.

1. Dimensions: Cast In Place Detectable/Tactile Warning Surface Tiles shall be held within the following dimensions and tolerances:

   Length and Width: 24"x48" nominal Depth: 1.375 (1-3/8") (+/-) 5% max. Face Thickness: 0.1875 (3/16") (+/-) 5% max. Warpage of Edge: 0.5% max.
   Embedment Flange Spacing: shall be no greater than 3.1"

2. Water Absorption of Tile when tested by ASTM D 570-98 not to exceed 0.05%.
3. Slip Resistance of Tile when tested by ASTM C 1028-96 the combined Wet and Dry Static Co-Efficients of Friction not to be less than 0.80 on top of domes and field area.
4. Compressive Strength of Tile when tested by ASTM D 695-02a not to be less than 28,000 psi.
5. Tensile Strength of Tile when tested by ASTM D 638-03 not to be less than 19,000 psi.
6. Flexural Strength of Tile when tested by ASTM D 790-03 not to be less than 25,000 psi.
7. Chemical Stain Resistance of Tile when tested by ASTM D 543-95 (re approved 2001) to withstand without discoloration or staining - 10% hydrochloric acid, urine, saturated calcium chloride, black stamp pad ink, chewing gum, red aerosol paint, 10% ammonium hydroxide, 1% soap solution, turpentine, Urea 5%, diesel fuel and motor oil.
8. Abrasive Wear of Tile when tested by BYK - Gardner Tester ASTM D 2486-00 with reciprocating linear motion of 37± cycles per minute over a 10" travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block is to be 3.2 lb. Average wear depth shall not exceed 0.060 after 1000 abrasion cycles when measured on the top

surface of the dome representing the average of three measurement locations per sample.

9. Resistance to Wear of Unglazed Ceramic Tile by Taber Abrasion per ASTM C501-84 (re approved 2002) shall not be less than 500.
10. Fire Resistance of Tile when tested to ASTM E 84-05 flame spread shall be less than 15.
11. Gardner Impact to Geometry "GE" of the standard when tested by ASTM D 5420-04 to have a mean failure energy expressed as a function of specimen thickness of not less than 550 in. lbf/in. A failure is noted when a crack is visible on either surface or when any brittle splitting is observed on the bottom plaque in the specimen.
12. Accelerated Weathering of Tile when tested by ASTM G 155-05a for 3000 hours shall exhibit the following result – $\Delta E < 4.5$, as well as no deterioration, fading or chalking of surface of tile color No 33538
13. Accelerated Aging and Freeze Thaw Test of Tile and Adhesive System when tested to ASTM D 1037-99 shall show no evidence of cracking, delamination, warpage, checking, blistering, color change, loosening of tiles or other detrimental defects.
14. Salt and Spray Performance of Tile when tested to ASTM B 117-03 not to show any deterioration or other defects after 200 hours of exposure.
15. AASHTO HB-17 single wheel HS20-44 loading "Standard Specifications for Highways and Bridges". The Cast In Place Tile shall be mounted on a concrete platform with a ½" airspace at the underside of the tile top plate then subjected to the specified maximum load of 10,400 lbs., corresponding to an 8000 lb individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs.
16. Embedment flange spacing shall be no greater than 3.1" center to center spacing as illustrated on the product Cast In Place drawing.

2.02 Delivery, Storage and Handling

A. Cast In Place Detectable/Tactile Warning Surface Tiles shall be suitably packaged or crated to prevent damage in shipment or handling. Finished surfaces shall be protected by sturdy plastic wrappings to protect tile from concrete residue during installation and tile type shall be identified by part number.

B. Cast In Place Detectable/Tactile Warning Surface Tiles shall be delivered to location at building site for storage prior to installation.

2.03 Site Conditions

A. Environmental Conditions and Protection: Maintain minimum temperature of 40°F in spaces to receive Cast In Place Detectable/Tactile Warning Surface Tiles for at least 24 hours prior to installation, during installation, and for not less than 24 hours after installation.

B. The use of water for work, cleaning or dust control, etc. shall be contained and controlled and shall not be allowed to come into contact with the general public. Provide barricades or screens to protect the general public.

2.04 Guarantee

A. Cast In Place Detectable/Tactile Warning Surface Tiles shall be guaranteed in writing for a period of five (5) years from date of final completion. The guarantee includes defective work, breakage, deformation, fading and loosening of tiles.

2.05 Manufacturers

A. The Vitrified Polymer Composite (VPC) Cast In Place Detectable/Tactile Warning Surface Tile specified is based on Armor-Tile manufactured by Engineered Plastics Inc. (800-682-2525). Existing engineered and field tested products, which have been in successful service for a period of three (3) years are subject to compliance with requirements, may be incorporated in the work and shall meet or exceed the specified test criteria and characteristics.

B. Color: Colonial Red (Federal Color No. 20109). Color shall be homogeneous throughout the tile.

PART 3 – EXECUTION

3.01 Installation

A. During Cast In Place Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.

B. Prior to placement of the Cast In Place Detectable/Tactile Warning Surface Tile system, review manufacturer and contract drawings with the Contractor prior to the construction and refer any and all discrepancies to the Engineer.

C. The specifications of the structural embedment flange system and related materials shall be in strict accordance with the contract documents and the guidelines set by their respective manufacturers. Not recommended for asphalt applications.

D. The physical characteristics of the concrete shall be consistent with the contract specifications while maintaining a slump range of 4 - 7 to permit solid placement of the Cast In Place Detectable/Tactile Warning Surface Tile system. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (25 lb) shall be placed on each tile.

E. The concrete pouring and finishing operations require typical mason’s tools, however, a 4’ long level with electronic slope readout, 25 lb. weights, and a large non-marring rubber mallet are specific to the installation of the Cast In Place Detectable/Tactile Warning Surface Tile system. A vibrating mechanism such as that manufactured by

Vibco can be employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least 1 foot square.

F. The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile.

G. When preparing to set the tile, it is important that no concrete be removed in the area to accept the tile. It is imperative that the installation technique eliminates any air voids under the tile. Holes in the tile perimeter allow air to escape during the installation process. Concrete will flow through the large holes in each embedment flange on the underside of the tile. This will lock the tile solidly into the cured concrete.

H. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete, the electronic level should be used to check that the required slope is achieved. The tile shall be placed true and square to the curb edge in accordance with the contract drawings. The Cast In Place Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface. The contract drawings indicate that the tile field level (base of truncated dome) is flush to adjacent surfaces to permit proper water drainage and eliminate tripping hazards between adjacent finishes.

I. In cold weather climates it is recommended that the Cast In Place Detectable/Tactile Warning Surface Tiles be set deeper such that the top of domes are level to the adjacent concrete on the top and sides of ramp and that the base of domes to allow water drainage. This installation will reduce the possibility of damage due to snow clearing operations.

J. Immediately after placement, the tile elevation is to be checked to adjacent concrete. The elevation and slope should be set consistent with contract drawings to permit water drainage to curb as the design dictates. Ensure that the field surface of the tile is flush with the surrounding concrete and back of curb so that no ponding is possible on the tile at the back side of curb.

K. While concrete is workable, a 3/8" radius edging tool shall be used to create a finished edge of concrete, then a steel trowel shall be used to finish the concrete around the tile's perimeter, flush to the field level of the tile.

L. During and after the tile installation and the concrete curing stage, it is imperative that there is no walking, leaning or external forces placed on the tile that may rock the tile causing a void between the underside of tile and concrete.

M. Following tile placement, review installation tolerances to contract drawings and adjust tile before the concrete sets. Two suitable weights of 25 lb each may be required to be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.

N. Following the concrete curing stage, protective plastic wrap is to be removed from the tile surface by cutting the plastic with a sharp knife, tight to the concrete/tile interface. If concrete bled under the plastic, a soft brass wire brush will clean the residue without damage to the tile surface.

O. If desired, individual tiles can be bolted together using ¼ inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that concrete does not rise up between the tiles during installation. Any protective plastic wrap which was peeled back to facilitate bolting or cutting, should be replaced and taped to ensure that the tile surface remains free of concrete during the installation process.

P. Tiles can be cut to custom sizes, or to make a radius, using a continuous rim diamond blade in a circular saw or mini-grinder. Use of a straightedge to guide the cut is advisable where appropriate.

Q. Any sound-amplifying plates on the underside of the tile, which are dislodged during handling or cutting, should be replaced and secured with construction adhesive. The air gap created between these plates and the bottom of the tile is important in preserving the sound on cane audible properties of the Armor-Tile system as required in various jurisdictions.

3.02 Cleaning, Protecting and Maintenance

A. Protect tiles against damage during construction period to comply with Tactile Tile manufacturer's specification.

B. Protect tiles against damage from rolling loads following installation by covering with plywood or hardwood.

C. Clean Tactile Tiles not more than four days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean Tactile Tile by method specified by Tactile Tile manufacturer.

D. Comply with manufacturers maintenance manual for cleaning and maintaining tile surface and it is recommended to perform annual inspections for safety and tile integrity.

PART 4 – QUANTITY AND PAYMENT

4.01 Cast-in-Place Detectable/Tactile Warning Surfaces

A. Quantity of Cast-in-Place Detectable/Tactile Warning Surfaces will not be measured for this project, and all costs shall be included in the Lump Sum Price Bid

END OF SECTION

SECTION 10350 -FLAGPOLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SYSTEM DESCRIPTION

A. Furnish and Install: Two new aluminum flagpoles, one new American flag, one new State of Pennsylvania flag and two concrete foundations as shown on the plans and specified herein.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's descriptive product data and current specifications and application instructions for each of the following:

1. flag pole.

2. flag.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Flagpoles: Flagpoles shall be cone tapered aluminum poles as manufactured by Arista Flag Corporation or approved equal. Pole shall be constructed of aluminum and be capable of supporting wind loads of 140 mph and gust loads of 182 mph. Height above grade shall be 30 feet. Poles shall consist of an internal halyard with locking cover.

B. Flags: One flag shall be an American flag and one flag shall be an State of Pennsylvania flag, minimum size of 4’ x 6’. Flags shall be of woven cloth material of sufficient weight to handle loads indicated above.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation: Install all components of each flagpole system in accordance with manufacturer's instructions and recommendations and as shown on the plans.

Part 4 - QUANTITY AND PAYMENT

A. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION 10350

SECTION 11480 ATHLETIC EQUIPMENT - FIELD

PART 1 GENERAL

1.01 WORK INCLUDED

A. Provide all equipment and materials, and do all work necessary to furnish and install the athletic equipment, as indicated on the drawings and as specified herein. Athletic equipment shall include, but not be limited to:

1. SG4950 Round Post Soccer Goal
2. LCG01 Lacrosse Goal

Note: The Chester Upland School District will accept Equal Alternatives for all products.

1.02 RELATED WORK

A. Examine contract documents for requirements that affect work of this section.

1.03 REFERENCES

A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. National Federation of State High School Associations (NFHS)
2. National Collegiate Athletic Association (NCAA)
3. International Amateur Athletic Association (IAAF)
4. American Sports Builders Association (ASBA)
5. American Wood Preserver's Association (AWPA)
6. Manufacturers Data and Recommended Installation Requirements

1.04 SUBMITTALS

A. Manufacturers Product Data

1. Provide manufacturers product data prior to actual field installation work, for Architects or Owners representatives review.

B. Shop Drawings

1. Provide drawings of the manufacturers recommended installation and foundation requirements prior to actual field installation work, for Architects or Owners representatives review.

1.05 QUALITY ASSURANCE

A. Manufacturers warranties shall pass to the Owner and certification made that the product materials meet all applicable grade trademarks or conform to industry standards and inspection requirements.

1.06 PRODUCT DELIVERY AND STORAGE

A. Materials delivered to the site shall be examined for damage or defects in shipping. Any defects shall be noted and reported to the Owners representative. Replacements, if necessary, shall be immediately re-ordered, so as to minimize any conflict with the construction schedule. Sound materials shall be stored above ground under protective cover or indoors so as to provide proper protection.

PART 2 PRODUCTS

2.01 Round Post Soccer Goal(s)

A. BASE: SG4950 Soccer Goal as manufactured by:

Sportsfield Specialties Inc., or equal
P.O. Box 231
41155 State Highway 10
Delhi, NY 13753
p. 888-975-3343
f. 607-746-8481
www.sportsfieldspecialties.com

B. COMPONENTS:

1. SG4950 Round Post Soccer Goal(s):

A. # SG4950-Top Cross Bar fabricated of 6061 T6 extruded aluminum tube, 4.375in square x 4.688in, having the following attributes:

a. Length: 24.0ft
b. Round Face with Radiused Backside Corners
c. 7 Ga. Steel Crossbar Attachment Brackets
d. Powder Coated White

B. # SG4950-End Frame fabricated of 6061 T6 extruded aluminum tube having the following attributes:

a. Corner Upright Posts, 4.375in x 4.688in
b. Rolled Side Frame, 2.0in x 3.0in x .125in, Tig Welded to Corner Upright Posts
c. Round Face with Radiused Backside Corners
d. Powder Coated White

C. # SG4950-Bottom Ground Bar fabricated of 6061 T6 extruded aluminum tube, 2.0in square x .250in thick having the following attributes:

a. Powder Coated White

D. Accessories:

a. Welded Aluminum Net Clips; Guaranteed for life.
b. Orange Polypropylene Soccer Net
c. Associated Stainless Steel Hardware
*Additional Net Colors Available with Upcharge

2. SG4955 SGMobile® - Soccer Goal Portable Wheel Mobility Kit:

A. Soccer Goal Wheel Insert
a. Welded 13 Ga. Stainless Steel Frame
b. UHMW Plastic Wheel
c. All Stainless Steel Hardware

B. Soccer Goal Mobility Handle:
a. Aluminum Frame
b. All Stainless Steel Hardware
c. Powder Coat: White

3. SG2S® - Soccer Goal Back Bar Safety Clamp Kit:

A. Safety Clamp
a. Fabricated of (.187) 3/16in Aluminum
b. Powder Coated White
c. Stainless Steel Hardware

B. Access Kit
a. Fabricated of 0.125in Aluminum and 16 Ga. Stainless Steel
b. Cover Plug fabricated of 0.187in Aluminum and 0.50in Weather Resistant Plywood
c. Stainless Steel Assembly Hardware
d. Galvanized Steel Anchoring Hardware

2.02 Lacrosse Goal(s)

A. BASE: LCG01 Lacrosse Goal as manufactured by:

Sportsfield Specialties Inc., or equal
P.O. Box 231
41155 State Highway 10
Delhi, NY 13753
p. 888-975-3343
f. 607-746-8481
www.sportsfieldspecialties.com

B. COMPONENTS:

1. Frame:
    a. Uprights and Top Bar Fabricated of 1.50in Schedule 40 Aluminum Pipe, Tig Welded
    b. Aluminum Welded Net Clips, Guaranteed for Life
    c. Powder Coat: Orange
2. Ground Bar:
    a. Fabricated of Steel Bar, Tig Welded
b. Welded Steel Net Clips, Guaranteed for Life
    c. Powder Coat: Orange
3. Optional Ground Sleeve Kit:
    a. Fabricated of 1.50in Schedule 40 Aluminum Pipe, 18in in length. Ground Sleeve Insert fabricated of 1.50in steel round stock.
    b. Stainless Steel Assembly Hardware.
4. Accessories:
    a. Standard White Nylon Net
    b. Stainless Steel Assembly Hardware

PART 3 EXECUTION

3.01 INSTALLATION OF EQUIPMENT

A. All athletic equipment shall be installed as recommended with manufacturer's written directions, and as indicated on the drawings.

END OF SECTION

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Hot-mix asphalt paving.

B. Related Requirements:

1. Section 02200 "Site Clearing and Earthwork" for subgrade preparation, fill material, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.
2. Section 321373 "Concrete Paving Joint Sealants" for joint sealants and fillers at pavement terminations.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by the Pennsylvania Department of Transportation (PENNDOT)

B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of PENNDOT for asphalt paving work.

1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Coarse Aggregate: ASTM D 692/D 692M, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.

B. Fine Aggregate: **ASTM D,** sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.

C. Mineral Filler: ASTM D 242/D 242M, rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: Shall conform with PENNDOT requirements.

B. Tack Coat: Shall conform with PENNDOT requirements.

2.3 AUXILIARY MATERIALS

A. Recycled Materials for Hot-Mix Asphalt Mixes: Reclaimed asphalt pavement; reclaimed, unbound-aggregate base material; and recycled tires, asphalt shingles, or glass from sources and gradations that have performed satisfactorily in previous installations, equal to performance of required hot-mix asphalt paving produced from all new materials.

B. Herbicide: Commercial chemical for weed control, registered by the EPA, and not classified as "restricted use" for locations and conditions of application. Provide in granular, liquid, or wettable powder form.

2.4 MIXES

A. Recycled Content of Hot-Mix Asphalt: Shall conform to PENNDOT requirements.

B. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by PENNDOT and complying with the following requirements:

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
2. Base Course: 19M64.
3. Surface Course: 9.5M64.

PART 3 - EXECUTION

3.1 PATCHING

A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches (300 mm) into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Portland Cement Concrete Pavement: Break cracked slabs and roll as required to reseat concrete pieces firmly.

1. Remove disintegrated or badly cracked pavement. Excavate rectangular or trapezoidal patches, extending into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Recompact existing unbound-aggregate base course to form new subgrade.

C. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq. m).

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

D. Placing Patch Material: Fill excavated pavement areas with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.

3.2 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

C. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

D. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd. (0.2 to 0.7 L/sq. m).

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.3 PLACING HOT-MIX ASPHALT

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Spread mix at a minimum temperature of 250 deg F (121 deg C).
2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet (3 m) wide unless infill edge strips of a lesser width are required.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.4 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches (150 mm).
3. Offset transverse joints, in successive courses, a minimum of 24 inches (600 mm).
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."

3.5 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F (85 deg C).

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent or greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

G. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.6 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch (13 mm).
2. Surface Course: Plus 1/4 inch (6 mm), no minus.

B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot (3-m) straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch (6 mm).
2. Surface Course: 1/8 inch (3 mm).
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch (6 mm).

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Replace and compact hot-mix asphalt where core tests were taken.

C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.8 WASTE HANDLING

A. General: Handle asphalt-paving waste according to approved waste management plan required in Section 017419 "Construction Waste Management and Disposal."

4.00 PAYMENT

A. No separate payment will be made for work performed under this section. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION 321216

SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes Concrete Paving including the following

1. Driveways.
2. Curbs.
3. Walks.
4. Concrete Pads.
5. Walks.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of product, ingredient, or admixture requiring color selection.

C. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.3 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

1.4 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on concrete paving mixtures.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 (ACI 301M) unless otherwise indicated.

2.2 STEEL REINFORCEMENT

A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, fabricated from as-drawn steel wire into flat sheets.

C. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, flat sheet.

D. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed.

E. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420) plain-steel bars[; zinc coated (galvanized) after fabrication according to ASTM A 767/A 767M, Class I coating]. Cut bars true to length with ends square and free of burrs.

F. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified.

2.3 CONCRETE MATERIALS

A. Regional Materials: Concrete shall be manufactured within 500 miles (800 km) of Project site from aggregates and cement that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site.

B. Cementitious Materials: Shall be in conformance with Pennsylvania Department of Transportation (PENNDOT) Pub. 408.

C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 4S, uniformly graded. Provide aggregates from a single source.

D. Air-Entraining Admixture: ASTM C 260/C 260M.

E. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

F. Water: Potable and complying with ASTM C 94/C 94M.

2.4 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) dry or cotton mats].

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

F. White, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B, dissipating.

2.5 RELATED MATERIALS

A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork in preformed strips.

B. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

2.6 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301 (ACI 301M), for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.

B. Cementitious Materials: In accordance with PENNDOT Pub. 408. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: In accordance with PENNDOT Pub. 408.

C. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

D. Concrete Mixtures: In accordance with PENNDOT Pub. 408.

2.7 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M [and ASTM C 1116/C 1116M]. Furnish batch certificates for each batch discharged and used in the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT INSTALLATION

A. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness[, to match jointing of existing adjacent concrete paving]:

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

B. Comply with ACI 301 (ACI 301M) requirements for measuring, mixing, transporting, and placing concrete.

C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

D. Screed paving surface with a straightedge and strike off.

E. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

1. Float Finish: In accordance with PENNDOT Pub. 408.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing curing compound or a combination of these.

3.9 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 (ACI 117M) and the PENNDOT Pub. 408.

3.10 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.

B. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

C. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313

SECTION 321723 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes painted markings applied to asphalt pavement or other surfaces as indicated on the plans.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 PAVEMENT-MARKING PAINT

A. Pavement-Marking Paint: Shall be in conformance with Pennsylvania Department of Transportation (PENNDOT) Publication 408.

PART 3 - EXECUTION

3.1 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Engineer.

B. Allow paving to age for a minimum of 30 days before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm).

1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils. Apply paint so that it cannot run beneath the stencil.
2. Broadcast glass beads uniformly into wet markings at a rate of 6 lb/gal. (0.72 kg/L).

4.00 PAYMENT

A. No separate payment will be made for work performed under this section. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION 321723

SECTION 323223 - SEGMENTAL RETAINING WALLS

1.1 SUMMARY

A. Section Includes:

1. Segmental retaining walls.

1.2 SUBMITTALS.

A. Product Data: Material description and installation instructions for each manufactured product specified.

B. Shop Drawings:

1. Show sizes, profiles, coursing, and locations of retaining wall units; including backfill and leveling base materials.
2. Show types, sizes, locations of soil reinforcing materials.
3. Signed and sealed by a registered professional engineer in the state of New Jersey responsible for their preparation.

C. Samples: Manufacturer's standard color sheets, showing full range of available colors and textures for segmental retaining wall units.

D. Design Calculations: Engineering design calculations prepared in accordance with the NCMA Design Manual For Segmental Retaining Walls, or the AASHTO Standard Specifications for Highway Bridges, Section 5.8 (whichever is applicable).

E. Test Reports: Independent laboratory reports stating moisture absorption and compressive strength properties of the concrete retaining wall units meet the Project Specifications when tested in accordance with ASTM C140, Sections 6, 8 and 9.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials in accordance with manufacturer's recommendations, in such a manner as to prevent damage. Check the materials upon delivery to assure that proper material has been received. Store above ground on wood pallets or blocking. Remove damaged or otherwise unsuitable material, when so determined, from the site.
1. Exposed faces of concrete wall units shall be free of chips, cracks, stains, and other imperfections detracting from their appearance, when viewed from a distance of 10 feet.
2. Prevent mud, wet cement, adhesives and similar materials which may harm appearance of units, from coming in contact with system components.

PART 2 - PRODUCTS

2.1 SEGMENTAL RETAINING WALL UNITS

A. Concrete Units: ASTM C1372, Normal Weight, except that maximum water absorption shall not exceed 7 percent by weight and units shall not differ in height more than plus or minus 1/16 inch (1.6 mm) from specified dimension.

1. **Segmental Retaining wall Shall be Allan Block AB Vertical, or approved equal.**
2. Provide units that comply with requirements in ASTM C1372 for freeze-thaw durability.

B. Color: **As selected by Owner**

C. Shape and Texture:

1. Provide units matching basic shape, dimensions, and face texture of basis-of-design product.

2.2 MATERIALS

A. Geosynthetic Reinforcement: Polyester fiber geogrid or geotextile, or polypropylene woven geotextile, as shown on the Drawings.

B. Leveling Pad Base.

1. Aggregate Base: Crushed stone or granular fill meeting the **following gradation** as determined in accordance with ASTM D448:
   a. Leveling Pad Base Thickness: 6 inches (minimum compacted thickness).
   b. Leveling Pad Base Width: minimum 24 inches.

C. Cap Adhesive: Product supplied or recommended by segmental retaining wall unit manufacturer for adhering cap units to units below.

D. Drainage Aggregate: Clean crushed stone or granular fill meeting the **following gradation** as determined in accordance with ASTM D448:

E. Backfill: Soil free of organics and debris and consisting of either GP, GW, SP, SW, or SM type, classified in accordance with ASTM D2487 and the USCS classification system.

1. Soils classified as SC and CL are considered suitable soils for segmental retaining walls with a total height of less than 15 feet unless the Plasticity Index (PI) is 20 or more.
2. Maximum particle size for backfill is 2 inches.
3. Unsuitable soils are organic soils and those soils classified as CH, OH, MH, OL, or PT

F. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

G. Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation of greater than 50 percent.

1. Apparent Opening Size: No. 70 to 100 (0.212 to 0.150 mm) sieve, maximum; ASTM D4751.
2. Minimum Grab Tensile Strength: 110 lb (49.9 kg); ASTM D4632/D4632M.
3. Minimum Weight: 4 oz./sq. yd. (132 g/sq. m).

H. Drainage Pipe: Perforated or slotted PVC or corrugated HDPE pipe manufactured in accordance with D3034 and/or ASTM F405. The pipe may be covered with a geotextile filter fabric to function as a filter.

I. Construction Adhesive: Exterior grade adhesive as recommended by the retaining wall unit manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION OF RETAINING WALLS

A. General: Place units in accordance with NCMA's "Segmental Retaining Wall Installation Guide" and segmental retaining wall unit manufacturer's written instructions.

B. Do not use units with chips, cracks, or other defects that are visible at a distance of 10 feet (3 m) where such defects are exposed in the completed Work.

C. Leveling Base: Place and compact base material to thickness indicated and with not less than 95 percent maximum dry unit weight in accordance with ASTM D698.

D. First Course: Place first course of segmental retaining wall units for full length of wall. Place units in firm contact with each other, properly aligned and level.

1. Tamp units into leveling base as necessary to bring tops of units into a level plane.

E. Subsequent Courses: Remove excess fill and debris from tops of units in course below. Place units in firm contact, properly aligned, and directly on course below.

F. Cap Units: Place cap units and secure with cap adhesive.

3.2 FILL PLACEMENT

A. General: Comply with requirements in NCMA's "Segmental Retaining Wall Installation Guide" and segmental retaining wall unit manufacturer's written instructions.

B. Fill voids between and within units with drainage fill. Place fill as each course of units is laid.

C. Place, spread, and compact drainage fill and soil fill in uniform lifts for full width and length of embankment as wall is laid. Place and compact fills without disturbing alignment of units. Where both sides of wall are indicated to be filled, place fills on both sides at same time. Begin at wall, and place and spread fills toward embankment.

1. Use only hand-operated compaction equipment within 48 inches (1200 mm) of wall or one-half of height above bottom of wall, whichever is greater.
2. Compact reinforced-soil fill to not less than 95 percent maximum dry unit weight in accordance with ASTM D698.

a. In areas where only hand-operated compaction equipment is allowed, compact fills to not less than 90 percent maximum dry unit weight in accordance with ASTM D698.

3. Compact nonreinforced-soil fill to comply with Section 312000 "Earth Moving."

D. Place a layer of drainage fill at least [**12 inches (300 mm)**] [**6 inches (150 mm)**] wide behind wall to within 12 inches (300 mm) of finished grade. Place a layer of drainage geotextile between drainage fill and soil fill.

E. Wrap subdrainage pipe with filter fabric and place in drainage fill as indicated**,** sloped not less than 0.5 percent to drain.

F. Place impervious fill over top edge of drainage fill layer.

G. Slope grade at top of wall as indicated. Slope grade at wall base away from wall. Provide uniform slopes that prevent ponding.

3.3 FIELD QUALITY CONTROL

A. Comply with requirements in Section 312000 "Earth Moving" for field quality control.

B. Tests and Inspections:

1. In each compacted backfill layer, perform at least two field in-place compaction tests.
2. Segmental retaining wall system will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

4.00 QUANTITY AND PAYMENT

A. No separate payment will be made for work performed under this section. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION 323223

SECTION 329200 – TURF AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Topsoiling.
2. Seeding.
3. Sodding.

1.2 DEFINITIONS

A. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

B. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

C. Topsoil: Natural, fertile soil capable of sustaining vigorous plant growth.

1.3 INFORMATIONAL SUBMITTALS

A. Certification of grass seed.

1. Certification of each seed mixture.

B. Product certificates.

1. Testing data for topsoil.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf establishment.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
2. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:

   a. Landscape Industry Certified Technician - Exterior.
   b. Landscape Industry Certified Lawncare Manager.
   c. Landscape Industry Certified Lawncare Technician.

3. Pesticide Applicator: State licensed, commercial.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

B. Grass-Seed Mix:

1. Products: Seed Mix shall be in accordance with PENNDOT Pub. 408 and Erosion and Sediment Control Requirements

2.2 TURFGRASS SOD

2.3 FERTILIZERS

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: [1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

2.4 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Sphagnum Peat Mulch: Partially decomposed sphagnum peat moss, finely divided or of granular texture, and with a pH range of 3.4 to 4.8.

C. Muck Peat Mulch: Partially decomposed moss peat, native peat, or reed-sedge peat, finely divided or of granular texture, with a pH range of 6 to 7.5, and having a water-absorbing capacity of 1100 to 2000 percent, and containing no sand.

D. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch (25-mm) sieve; soluble salt content of 2 to 5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

2.5 PESTICIDES

A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

2.5 TOPSOIL

A. General: Topsoil shall be loamy sand, sandy loam, clay-loam, loam, silt loam, or other soil approved by the Engineer. It shall be natural, fertile soil capable of sustaining vigorous plant growth and shall be of a uniform quality, free from subsoil, slag, cinders, stones 1 inch or larger in any dimension, lumps of soil, sticks, roots, trash, or other extraneous, undesirable materials. Topsoil shall also be free of viable plants or plant parts of Bermuda grass, quackgrass, Johnson grass, nut sedge, poison ivy, Canada thistle, or similar material. The contractor shall have all topsoil tested by a reputable laboratory with resulting documentation submitted to the Engineer.

B. If testing reveals that the topsoil does not conform to the requirements of this section, the contractor shall be responsible for adjusting the ph range and/or percent of organic matter by means of approved additives.

C. Topsoil shall meet the following requirements:

1. ph range - 5.0 to 7.0.
2. Organic matter - four (4) percent (loss on ignition).
3. Soluble salts no higher than 500 parts per million.
4. Sieve Analysis:

Sieve Size	Percent Passing
1"	100%
½"	97%
#10	60-80%
#40	40-60%
#60	40-60%
#100	10-30%
#200	10-20%

D. When topsoil, stockpiled on site, is to be reused, soil debris to include roots, sods, stones, clay lumps, and other extraneous materials harmful to plant growth shall be removed prior to reuse.

E. Materials stripped from the following sources shall not be considered suitable for use as topsoil:

1. Soils having less than 4.1 ph value.
2. Chemically contaminated soils.
3. Areas from which the original surface has been stripped and/or covered over such as borrow pits, open mines, demolition sites, dumps, and sanitary landfills.
4. Wet excavation.

PART 3 - EXECUTION

3.1 TURF AREA PREPARATION

A. General: Prepare graded area for topsoil placement

B. Scarify the area to be topsoiled to improve the bond between slope and topsoil. Remove from the scarified area stones 2 inches or larger in any dimension and other debris such as wires, cables, tree roots, pieces of concrete, clods and lumps.

C. After the Engineer has approved the prepared surface elevations, spread topsoil and smooth to grade to produce the required thickness.

D. Ensure that ground areas are not damaged by the delivery, handling or storage of materials; by washouts due to drainage diversion; by workers; or by equipment. Repair such damage by grading, fertilizing, seeding and mulching as specified herein.

3.2 SEEDING

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h).

1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
2. Do not use wet seed or seed that is moldy or otherwise damaged.
3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

B. Sow seed at a total rate of 3 to 4 lb/1000 sq. ft.

C. Rake seed lightly into top 1/8 inch (3 mm) of soil, roll lightly, and water with fine spray.

D. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket in loose thickness over seeded areas.

1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.

3.3 SODDING

A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across slopes exceeding 1:3.
2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.

C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.4 TURF MAINTENANCE

A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

B. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings.

3.5 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Engineer:

1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

4.0 QUANTITY AND PAYMENT

A. No separate payment will be made for work performed under this section. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

ND OF SECTION 329200

SECTION 329201 – TEMPORARY SOIL EROSION & SEDIMENT CONTROL MEASURES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Refer to Divisions 0 and 1 as they form a part of this Section.

B. This work shall consist of temporary control measures ordered by the Engineer during the life of the contract and as shown on plans, to control erosion and sediment through use of berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses and other erosion control devices or methods.

C. The primary objective of this specification is to control soil erosion to the maximum extent practicable commensurate with reasonable and economical construction practices.

D. The temporary control provisions contained herein shall be coordinated with the permanent erosion control features (grass, pavement and other restorations) specified elsewhere in the contract to the extent practical to assure economical, effective and continuous erosion control throughout the construction and post-construction period.

E. The erosion control measures described herein shall be continued until the construction is complete and final restorations installed.

F. Wherever construction exposes work which is subject to erosion, the extent of such exposure in advance of the subsequent construction shall be subject to the approval of the Engineer. Erosion control features or other work to be completed within such areas shall follow as soon after exposure as practicable.

G. All materials and methods of construction shall be in accordance with the New Jersey State Standards for Soil Erosion and Sediment Control, and as depicted on the Soil Erosion and Sediment Control Plans.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials shall conform to that depicted on the Soil Erosion and Sediment Control Plan.

PART 3 - EXECUTION

3.1 METHODS OF CONSTRUCTION

A. Preconstruction Conference

1. At the preconstruction conference or prior to the start of the applicable construction, the Contractor shall submit for acceptance his schedules for accomplishment of temporary and permanent erosion control work, as are applicable for excavation work, and any other elements of the project which may contribute to ground erosion of siltation. No work shall be started until the erosion control schedules and methods of operations have been accepted by the Engineer.

B. Construction Requirements

1. The Engineer has the authority to limit the surface area of erodible earth material exposed by excavation and grading operations, and to direct the Contractor to provide immediate permanent or temporary pollution control measures to prevent contamination of adjacent streams, water courses, or bodies of water. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, slope drains, and use of temporary mulches, mats, seeding or other control devices or methods as necessary to control erosion. Cut slopes shall be temporarily seeded and mulched as the excavation proceeds to the extent considered desirable and practicable.
2. The Contractor will be required to incorporate all permanent erosion control features to include the required pavement and grass restorations into the project at the earliest practicable times as outlined in his accepted schedule. Temporary control measures will be used to correct conditions that develop during construction that were not foreseen during the design stages that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.
3. Where erosion is likely to be a problem, excavation and grading operations shall be so scheduled and performed that permanent erosion control features can follow immediately; otherwise temporary erosion control measures may be required between successive construction stages.
4. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal or state or location agencies, the more restrictive, laws, rules or regulations shall apply.
5. The Contractor will be responsible for maintaining all soil erosion and sediment control measures in an acceptable manner. All temporary measures shall be removed by the Contractor as directed by the Engineer.

4.00 QUANTITY AND PAYMENT

A. No separate payment will be made for work performed under this section. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION 329201

SECTION 329300 - PLANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plants.

1.2 DEFINITIONS

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.

C. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

D. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples of each type of mulch.

1.4 INFORMATIONAL SUBMITTALS

A. Product certificates.

B. Sample warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of plants during a calendar year.

1.6 QUALITY ASSURANCE

A. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

1. Pesticide Applicator: State licensed, commercial.

B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver bare-root stock plants within 24 hours of digging. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting. Transport in covered, temperature-controlled vehicles, and keep plants cool and protected from sun and wind at all times.

B. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.

C. Handle planting stock by root ball.

D. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F (16 to 18 deg C) until planting.

E. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1.8 WARRANTY

A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
b. Structural failures including plantings falling or blowing over.

2. Warranty Periods: From date of Substantial Completion.

a. Trees, Shrubs, Vines, and Ornamental Grasses: 24 months.
b. Ground Covers, Biennials, Perennials, and Other Plants: 24 months.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

B. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

2.2 FERTILIZERS

A. Planting Tablets: Tightly compressed chip-type, long-lasting, slow-release, commercial-grade planting fertilizer in tablet form. Tablets shall break down with soil bacteria, converting nutrients into a form that can be absorbed by plant roots.

1. Size: 5-gram tablets.
2. Nutrient Composition: 20 percent nitrogen, 10 percent phosphorous, and 5 percent potassium, by weight plus micronutrients.

2.3 MULCHES

A. Organic Mulch: Shredded hardwood.

2.4 WEED-CONTROL BARRIERS

A. Nonwoven Geotextile Filter Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. (101g/sq. m) minimum, composed of fibers formed into a stable network so that fibers retain their relative position. Fabric shall be inert to biological degradation and resist naturally encountered chemicals, alkalis, and acids.

B. Composite Fabric: Woven, needle-punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8 oz./sq. yd. (162 g/sq. m).

2.5 PESTICIDES

A. General: Pesticide registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PLANTING AREA ESTABLISHMENT

A. General: Prepare planting area for soil placement and mix planting soil.

B. Placing Planting Soil: Blend planting soil in place.

C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.2 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits.

1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
2. Excavate approximately three times as wide as ball diameter.
3. Excavate at least 12 inches (300 mm) wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
4. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.

B. Backfill Soil: Subsoil and topsoil removed from excavations [may] [may not] be used as backfill soil unless otherwise indicated.

3.3 TREE, SHRUB, AND VINE PLANTING

A. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

B. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

C. Set each plant plumb and in center of planting pit or trench with root flare 1 inch (25 mm) above adjacent finish grades.

1. Backfill: Planting soil.
2. Balled and Burlapped Stock: After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
3. Balled and Potted and Container-Grown Stock: Carefully remove root ball from container without damaging root ball or plant.
4. Fabric Bag-Grown Stock: Carefully remove root ball from fabric bag without damaging root ball or plant. Do not use planting stock if root ball is cracked or broken before or during planting operation.
5. Bare-Root Stock: Support stem of each plant and spread roots without tangling or turning toward surface. Plumb before backfilling, and maintain plumb while working. Carefully work backfill around roots by hand. Bring roots into close contact with the soil.
6. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
7. Place planting tablets equally distributed around each planting pit when pit is approximately one-half filled. Place tablets beside the root ball about 1 inch (25 mm) from root tips; do not place tablets in bottom of the hole.

    a. Bare-Root Stock: Place tablets beside soil-covered roots; do not place tablets touching the roots.
    b. Quantity: Two per plant.

8. Continue backfilling process. Water again after placing and tamping final layer of soil.

D. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.4 TREE, SHRUB, AND VINE PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees, shrubs, and vines as directed by Architect.

C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

D. Do not apply pruning paint to wounds.

3.5 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings in even rows with triangular spacing.

B. Use planting soil for backfill.

C. Dig holes large enough to allow spreading of roots.

D. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

E. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

F. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.6 PLANTING AREA MULCHING

A. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6 inches (150 mm) and secure seams with galvanized pins.

B. Mulch backfilled surfaces of planting areas and other areas indicated on the landscaping drawings.

3.7 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.

B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

D. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

E. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

F. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

3.8 MAINTENANCE SERVICE

A. Maintenance Service: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:

1. Maintenance Period for Trees and Shrubs: Until final project closeout/acceptance by Owner.
2. Maintenance Period for Ground Cover and Other Plants: Until final closeout/acceptance by Owner.

4.00 QUANTITY AND PAYMENT

A. No separate payment will be made for work performed under this section. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION 329300

SECTION 330500 - COMMON WORK RESULTS FOR UTILITIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Piping joining materials.
2. Dielectric fittings.
3. Sleeves.
4. Identification devices.
5. Grout.
6. Piping system common requirements.
7. Equipment installation common requirements.
8. Concrete bases.
9. Metal supports and anchorages.

1.2 DEFINITIONS

A. Exposed Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions.

B. Concealed Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.3 SUBMITTALS

A. Product Data: For the following:

1. Dielectric fittings.
2. Identification devices.

B. Welding certificates.

1.4 QUALITY ASSURANCE

A. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Steel Piping Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."

1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Comply with ASME A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

PART 2 - PRODUCTS

2.1 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.

1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch (3.2-mm) maximum thickness, unless otherwise indicated.

a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.

2. AWWA C110, rubber, flat face, 1/8 inch (3.2 mm) thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

C. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

E. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.

F. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

G. Solvent Cements for Joining Plastic Piping:

1. ABS Piping: ASTM D 2235.
2. CPVC Piping: ASTM F 493.
3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
4. PVC to ABS Piping Transition: ASTM D 3138.

H. Fiberglass Pipe Adhesive: As furnished or recommended by pipe manufacturer.

2.2 DIELECTRIC FITTINGS

A. Dielectric Fittings, General: Assembly of copper alloy and ferrous materials or ferrous material body with separating nonconductive insulating material suitable for system fluid, pressure, and temperature.

B. Dielectric Unions:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Capitol Manufacturing Co.

b. Central Plastics Company.
c. Epco Sales, Inc.
d. Hart Industries, International, Inc.
e. Watts Water Technologies, Inc.
f. Zurn Plumbing Products Group; Wilkins Div., or
g. Approved equal.

2. Description: Factory fabricated, union, NPS 2 (DN 50) and smaller.

a. Pressure Rating: 150 psig (1035 kPa) minimum at 180 deg F (82 deg C).
b. End Connections: Solder-joint copper alloy and threaded ferrous; threaded ferrous.

C. Dielectric Flanges:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Capitol Manufacturing Co.
b. Central Plastics Company.
c. Epco Sales, Inc.
d. Watts Water Technologies, Inc., or
e. Approved equal.

2. Description: Factory-fabricated, bolted, companion-flange assembly, NPS 2-1/2 to NPS 4 (DN 65 to DN 100) and larger.

a. Pressure Rating: 150 psig (1035 kPa) minimum.
b. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric Couplings:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Calpico, Inc.
b. Lochinvar Corporation., or
c. Approved equal.

2. Description: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining, NPS 3 (DN 80) and smaller.

a. Pressure Rating: 300 psig (2070 kPa) at 225 deg F (107 deg C).
b. End Connections: Threaded.

E. Dielectric Nipples:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Perfection Corporation.
b. Precision Plumbing Products, Inc.
c. Victaulic Company; or
d. Approved equal.

2. Description: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining.

a. Pressure Rating: 300 psig (2070 kPa) at 225 deg F (107 deg C).

b. End Connections: Threaded or grooved.

2.3 SLEEVES

A. Mechanical sleeve seals for pipe penetrations are specified in Division 22 Section "Common Work Results for Plumbing."

B. Galvanized-Steel Sheet Sleeves: 0.0239-inch (0.6-mm) minimum thickness; round tube closed with welded longitudinal joint.

C. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized, plain ends.

D. Cast-Iron Sleeves: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

E. Molded PVC Sleeves: Permanent, with nailing flange for attaching to wooden forms.

F. PVC Pipe Sleeves: ASTM D 1785, Schedule 40.

G. Molded PE Sleeves: Reusable, PE, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

2.4 IDENTIFICATION DEVICES

A. Equipment Nameplates: Metal permanently fastened to equipment with data engraved or stamped.

1. Data: Manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and essential data.
2. Location: Accessible and visible.

B. Snap-on Plastic Pipe Markers: Manufacturer's standard preprinted, semirigid, snap-on type. Include color-coding according to ASME A13.1, unless otherwise indicated.

C. Pressure-Sensitive Pipe Markers: Manufacturer's standard preprinted, color-coded, pressure-sensitive-vinyl type with permanent adhesive.

D. Pipes with OD, Including Insulation, Less Than 6 Inches (150 mm): Full-band pipe markers, extending 360 degrees around pipe at each location.

E. Pipes with OD, Including Insulation, 6 Inches (150 mm) and Larger: Either full-band or strip-type pipe markers, at least three times letter height and of length required for label.

F. Lettering: Use piping system terms indicated and abbreviate only as necessary for each application length.

1. Arrows: Either integrally with piping system service lettering to accommodate both directions of flow, or as separate unit on each pipe marker to indicate direction of flow.

G. Plastic Tape: Manufacturer's standard color-coded, pressure-sensitive, self-adhesive vinyl tape, at least 3 mils (0.08 mm) thick.

1. Width: 1-1/2 inches (40 mm) on pipes with OD, including insulation, less than 6 inches (150 mm); 2-1/2 inches (65 mm) for larger pipes.

2. Color: Comply with ASME A13.1, unless otherwise indicated.

H. Valve Tags: Stamped or engraved with 1/4-inch (6.4-mm) letters for piping system abbreviation and 1/2-inch (13-mm) sequenced numbers. Include 5/32-inch (4-mm) hole for fastener.
1. Material: Valve manufacturer's standard solid plastic.
2. Size: 1-1/2 inches (40 mm) in diameter, unless otherwise indicated.
3. Shape: As indicated for each piping system.

I. Valve Tag Fasteners: Brass, wire-link or beaded chain; or brass S-hooks.

J. Engraved Plastic-Laminate Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.

1. Engraving: Engraver's standard letter style, of sizes and with terms to match equipment identification.
2. Thickness: 1/16 inch (1.6 mm), unless otherwise indicated.
3. Fasteners: Self-tapping, stainless-steel screws or contact-type permanent adhesive.

K. Plastic Equipment Markers: Manufacturer's standard laminated plastic, in the following color codes:

1. Green: Cooling equipment and components.
2. Yellow: Heating equipment and components.
3. Brown: Energy reclamation equipment and components.
4. Blue: Equipment and components that do not meet criteria above.
5. Hazardous Equipment: Use colors and designs recommended by ASME A13.1.
6. Terminology: Match schedules as closely as possible. Include the following:

a. Name and plan number.
b. Equipment service.
c. Design capacity.
d. Other design parameters such as pressure drop, entering and leaving conditions, and speed.

7. Size: 2-1/2 by 4 inches (65 by 100 mm) for control devices, dampers, and valves; 4-1/2 by 6 inches (115 by 150 mm) for equipment.

2.5 GROUT

A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.

1. Characteristics: Post hardening, volume adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.
3. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 DIELECTRIC FITTING APPLICATIONS

A. Dry Piping Systems: Connect piping of dissimilar metals with the following:

1. NPS 2 (DN 50) and Smaller: Dielectric unions.

2. NPS 2-1/2 (DN 65) and Larger: Dielectric flanges.

B. Wet Piping Systems: Connect piping of dissimilar metals with the following:

1. NPS 2 (DN 50) and Smaller: Dielectric couplings or dielectric nipples.
2. NPS 2-1/2 (DN 65) and Larger: Dielectric nipples.

3.2 PIPING INSTALLATION

A. Install piping according to the following requirements and Division 33 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on the Coordination Drawings.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping to permit valve servicing.

E. Install piping at indicated slopes.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. Select system components with pressure rating equal to or greater than system operating pressure.

I. Sleeves are not required for core-drilled holes.

J. Permanent sleeves are not required for holes formed by removable PE sleeves.

K. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.

1. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of equipment areas or other wet areas 2 inches (50 mm) above finished floor level.

2. Install sleeves in new walls and slabs as new walls and slabs are constructed.

a. PVC Pipe Sleeves: For pipes smaller than NPS 6 (DN 150).
b. Steel Sheet Sleeves: For pipes NPS 6 (DN 150) and larger, penetrating gypsum-board partitions.

L. Verify final equipment locations for roughing-in.

M. Refer to equipment specifications in other Sections for roughing-in requirements.

3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 33 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

E. Welded Joints: Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

F. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

G. Grooved Joints: Assemble joints with grooved-end pipe coupling with coupling housing, gasket, lubricant, and bolts according to coupling and fitting manufacturer's written instructions.

H. Soldered Joints: Apply ASTM B 813 water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy (0.20 percent maximum lead content) complying with ASTM B 32.

I. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

J. Pressure-Sealed Joints: Assemble joints for plain-end copper tube and mechanical pressure seal fitting with proprietary crimping tool to according to fitting manufacturer's written instructions.

K. Plastic Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 appendixes.
3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
5. PVC Nonpressure Piping: Join according to ASTM D 2855.
6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.

L. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.

M. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.

N. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.

1. Plain-End PE Pipe and Fittings: Use butt fusion.
2. Plain-End PE Pipe and Socket Fittings: Use socket fusion.

O. Bonded Joints: Prepare pipe ends and fittings, apply adhesive, and join according to pipe manufacturer's written instructions.

3.4 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.
3. Install dielectric fittings at connections of dissimilar metal pipes.

3.5 EQUIPMENT INSTALLATION

A. Install equipment level and plumb, unless otherwise indicated.

B. Install equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference with other installations. Extend grease fittings to an accessible location.

C. Install equipment to allow right of way to piping systems installed at required slope.

3.6 IDENTIFICATION

A. Piping Systems: Install pipe markers on each system. Include arrows showing normal direction of flow.

1. Plastic markers, with application systems. Install on insulation segment if required for hot noninsulated piping.
2. Locate pipe markers on exposed piping according to the following:

a. Near each valve and control device.
b. Near each branch, excluding short takeoffs for equipment and terminal units. Mark each pipe at branch if flow pattern is not obvious.
c. Near locations where pipes pass through walls or floors or enter inaccessible enclosures.
d. At manholes and similar access points that permit view of concealed piping.
e. Near major equipment items and other points of origination and termination.

B. Equipment: Install engraved plastic-laminate sign or equipment marker on or near each major item of equipment.

1. Lettering Size: Minimum 1/4 inch (6.4 mm) high for name of unit if viewing distance is less than 24 inches (610 mm), 1/2 inch (13 mm) high for distances up to 72 inches (1800 mm), and proportionately larger lettering for greater distances. Provide secondary lettering two-thirds to three-fourths of size of principal lettering.
2. Text of Signs: Provide name of identified unit. Include text to distinguish among multiple units, inform user of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.

C. Adjusting: Relocate identifying devices that become visually blocked by work of this or other Divisions.

3.7 CONCRETE BASES

A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

1. Construct concrete bases of dimensions indicated, but not less than 4 inches (100 mm) larger in both directions than supported unit.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of base.
3. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to supported equipment.
6. Install anchor bolts according to anchor-bolt manufacturer's written instructions.
7. Use 3000-psi (20.7-MPa, 28-day compressive-strength concrete and reinforcement as specified in Division 03 Section "Cast-in-Place Concrete."

3.8 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Division 05 Section "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor piped utility materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

3.9 GROUTING

A. Mix and install grout for equipment base bearing surfaces, pump and other equipment base plates, and anchors.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placement of grout.

E. Place grout, completely filling equipment bases.

F. Place grout on concrete bases and provide smooth bearing surface for equipment.

G. Place grout around anchors.

H. Cure placed grout.

4.00 QUANTITY AND PAYMENT

A. No separate payment will be made for work performed under this section. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION 330500

SECTION 334100 - STORM UTILITY DRAINAGE PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe and fittings.
2. Manholes.
3. Cleanouts.
4. Nonpressure transition couplings.
5. Stormwater inlets.
6. Pipe outlets.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:

1. Manholes: Include plans, elevations, sections, details, frames, and covers.
2. Stormwater inlets. Include plans, elevations, sections, details, frames, covers, and grates.
3. Pipe outlets: Include plans, elevations, sections and details for concrete headwalls.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.

B. Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet (1:500) and vertical scale of not less than 1 inch equals 5 feet (1:50). Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.

C. Product Certificates: For each type of pipe and fitting, from manufacturer.

D. Field quality-control reports.

1.4 PROJECT CONDITIONS

A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:

1. Notify Architect no fewer than two days in advance of proposed interruption of service.
2. Do not proceed with interruption of service without [Architect's written permission.

PART 2 - PRODUCTS

2.1 CONCRETE PIPE AND FITTINGS

A. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76 (ASTM C 76M).

1. Bell-and-spigot ends and gasketed joints with ASTM C 443 (ASTM C 443M), rubber gaskets
2. Class III.

2.2 NONPRESSURE TRANSITION COUPLINGS

A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.

B. Sleeve Materials:

1. For Concrete Pipes: ASTM C 443 (ASTM C 443M), rubber.
2. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
3. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

C. Unshielded, Flexible Couplings:

1. Description: Elastomeric sleeve with stainless-steel shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.

D. Shielded, Flexible Couplings:

1. Description: ASTM C 1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

E. Ring-Type, Flexible Couplings:

1. Description: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

2.3 CLEANOUTS

A. Plastic Cleanouts:

1. Description: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

2.4 MANHOLES

A. Standard Precast Concrete Manholes in conformance with Pennsylvania Department of Transportation (PENNDOT) Pub. 408.

B. Manhole Frames and Covers shall be in conformance with Pennsylvania Department of Transportation (PENNDOT) Pub. 408..

2.5 CONCRETE

A. General: Cast-in-place concrete according to ACI 318, ACI 350/350R (ACI 350M/350RM), and the following:

1. Cement: ASTM C 150, Type II.
2. Fine Aggregate: ASTM C 33, sand.
3. Coarse Aggregate: ASTM C 33, crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi (27.6 MPa) minimum, with 0.45 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

C. Ballast and Pipe Supports: Portland cement design mix, 3000 psi (20.7 MPa) minimum, with 0.58 maximum water/cementitious materials ratio.

1. Reinforcing Fabric: ASTM A 185/A 185M, steel, welded wire fabric, plain.
2. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (420 MPa) deformed steel.

2.6 STORMWATER INLETS

A. All inlets shall be in conformance with Pennsylvania Department of Transportation (PENNDOT) Pub. 408.

B. Frames and Grates shall be in conformance with Pennsylvania Department of Transportation (PENNDOT) Pub. 408.

2.7 PIPE OUTLETS

A. Head Walls: Cast-in-place reinforced concrete, with apron and tapered sides.

B. Riprap Basins: Broken, irregularly sized and shaped, graded stone according to NSSGA's "Quarried Stone for Erosion and Sediment Control."

1. Average Stone Size as shown on Construction Plans.

2.8 EARTHWORK

A. Excavation, trenching, and backfilling are specified in Section 312000 "Earth Moving."

2.9 PIPING INSTALLATION

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take into account design considerations. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

C. Install manholes for changes in direction unless fittings are indicated. Use fittings for branch connections unless direct tap into existing sewer is indicated.

D. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

E. When installing pipe under streets or other obstructions that cannot be disturbed, use pipe-jacking process of microtunneling.

F. Install gravity-flow, nonpressure drainage piping according to the following:

1. Install piping pitched down in direction of flow.
2. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.
3. Install reinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."

2.10 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure drainage piping according to the following:

1. Join reinforced-concrete sewer piping according to ACPA's "Concrete Pipe Installation Manual" for rubber-gasketed joints.
2. Join dissimilar pipe materials with nonpressure-type flexible couplings.

2.11 CLEANOUT INSTALLATION

A. Install cleanouts and riser extensions from sewer pipes to cleanouts at grade. Use cast-iron soil pipe fittings in sewer pipes at branches for cleanouts and cast-iron soil pipe for riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.

1. Use Light-Duty, top-loading classification cleanouts in earth or unpaved foot-traffic areas.
2. Use Medium-Duty, top-loading classification cleanouts in paved foot-traffic areas.
3. Use Heavy-Duty, top-loading classification cleanouts in vehicle-traffic service areas.
4. Use Extra-Heavy-Duty, top-loading classification cleanouts in roads.

B. Set cleanout frames and covers in earth in cast-in-place concrete block, 18 by 18 by 12 inches deep. Set with tops 1 inch above surrounding earth grade.

C. Set cleanout frames and covers in concrete pavement and roads with tops flush with pavement surface.

2.12 MANHOLE INSTALLATION

A. General: Install manholes, complete with appurtenances and accessories indicated.

B. Install precast concrete manhole sections with sealants according to ASTM C 891.

C. Where specific manhole construction is not indicated, follow manhole manufacturer's written instructions.

D. Set tops of frames and covers flush with finished surface of manholes that occur in pavements. Set tops 3 inches above finished surface elsewhere unless otherwise indicated.

2.13 STORMWATER INLET AND OUTLET INSTALLATION

A. Construct inlet head walls, aprons, and sides of reinforced concrete, as indicated.

B. Construct riprap of broken stone, as indicated.

2.14 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318.

2.15 FIELD QUALITY CONTROL

A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches (610 mm) of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.
2. Defects requiring correction include the following:

    a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    c. Damage: Crushed, broken, cracked, or otherwise damaged piping.
    d. Infiltration: Water leakage into piping.
    e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
4. Reinspect and repeat procedure until results are satisfactory.

B. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.
2. Test completed piping systems according to requirements of authorities having jurisdiction.
3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
4. Submit separate report for each test.
5. Gravity-Flow Storm Drainage Piping: Test according to requirements of authorities having jurisdiction, UNI-B-6, and the following:

    a. Exception: Piping with soiltight joints unless required by authorities having jurisdiction.
    b. Option: Test plastic piping according to ASTM F 1417.
    c. Option: Test concrete piping according to ASTM C 924 (ASTM C 924M).

C. Leaks and loss in test pressure constitute defects that must be repaired.

D. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

4.00 QUANTITY AND PAYMENT

A. No separate payment will be made for work performed under this section. All costs shall be included in the lump sum price bid to construct the project as shown on the plans and as indicated in these specifications.

END OF SECTION 334100