

**SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY
(SECCRA)**

**SECCRA COMMUNITY LANDFILL
LONDON GROVE TOWNSHIP
CHESTER COUNTY, PENNSYLVANIA**

BID SPECIFICATION

[SR 41 PIPE 2021](#)

PLEASE SUBMIT ENTIRE PACKAGE TO:

**SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY
C/O SECCRA COMMUNITY LANDFILL
219 STREET ROAD
WEST GROVE, PA 19390**

BID SUBMITTED BY:

Firm Name	_____
Contact Person	_____
Address	_____ _____ _____
Telephone	_____ _____
Email	_____

TABLE OF CONTENTS

<u>Name</u>	<u>Section</u>
Public Notice	1.1
Instructions to Bidders.....	2.1
Project Directory	3.1
Standard General Conditions of the Construction Contract	4.1
Supplemental Conditions.....	5.1
General Requirements.....	5.2
Technical Specifications.....	6.1
Prevailing Wage Rates	7.1
Bidders' Check List.....	8.1
Contract Forms.....	9.
Form of Bid Bond - Section 9.1	
Form of Agreement – Section 9.2	
Construction Performance Bond – Section 9.3	
Construction Payment Bond – Section 9.4	
Stipulation Against Liens – Section 9.5	
Insured Claim Waiver – Section 9.6	
Notice to Proceed – Section 9.7	
Certificate of Insurance – Section 9.8	
Bid Form – Section 9.9	
Work Directive Change Form – 9.10	
Consent of Surety to Reduction in or Partial Release of Retainage – 9.11	
Contract Drawings and Miscellaneous Information	10.

Drawings:

See Technical Specification

Miscellaneous Information:

See Technical Specification

BID NOTICE

The Southeastern Chester County Refuse Authority (SECCRA), is seeking bids for [SR 41 PIPE 2021](#) at the SECCRA Community Landfill.

Two original copies of the bid must be submitted to the SECCRA Office on or before 2:00 o'clock PM prevailing time August 10 2021. The bids must be sealed and the envelope must be labeled with the words "SEALED BID: [SR 41 PIPE 2021](#)".

Bid will be publicly opened at 2:15 o'clock PM prevailing time August 10. 2021, at the SECCRA Offices.

Bids will be awarded at a meeting of the Board of Directors' meeting, expected to be on or about, August 11, 2020 @ 7 PM prevailing time.

Copies of the bid documents (in Adobe Acrobat PDF format) can be obtained by downloading from the SECCRA.ORG web site. The bid documents can be obtained on or after Tuesday, July 23, 2021. **All addendums, if required, will be listed on the SECCRA.org web site as they become available. It is the sole responsibility of the Bidder to check for addendums.**

SECCRA reserves the right to accept or reject any or all Bids. A pre-bid meeting will be held on July 29, 2021 at the SECCRA Office, 219 Street Rd, West Gove, PA, at 1:30 PM.

The Bid must be accompanied by a Bid Security in the form of a certified check or bid bond in the amount of ten percent (10%) of the total amount of the Bid, or \$10,000.00, whichever is greater. All Bids shall be effective for sixty (60) days from the date of the Bid opening. Each Bid must be sealed and the envelope must be labeled with the words "SEALED BID: [SR 41 PIPE 2021](#)".

The work consists of excavation and placement of soils. Supplying and installing erosion and sedimentation control devices and structures. Bore/Jack 36" steel pipe. Grout of existing pipe. As indicated in the Bid Specification, for the SECCRA Community Landfill.

All inquiries concerning this bid are to be directed to Alan Roman at the email address of bids@seccra.org.

Notice placed by:

Scott Mengle
General Manager, SECCRA
219 Street Road (Route 926)
West Grove, PA 19390

INSTRUCTIONS TO BIDDERS

I-1. DEFINED TERMS

Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions. The term "Bidder" means one who submits a Bid directly to OWNER, as distinct from a sub-bidder, who submits a bid to a Bidder. The term "Successful Bidder" means a qualified, responsible and responsive Bidder to whom OWNER, on the basis of OWNER'S evaluation, as hereinafter provided, makes an award. The term "Bidding Documents" includes the Invitation to Bid, Instructions to Bidders, the Bid Form, the Plans and Specifications and the Contract Documents, including any Addenda issued prior to receipt of Bids.

I-2. COPIES OF BIDDING DOCUMENTS

I-2.1 Complete sets of the Bidding Documents in the number and for the sum, if any, stated in the Invitation to Bid may be obtained from OWNER. That sum will not be refunded to Bidders.

I-2.2 Complete sets of Bidding Documents must be used in preparing Bids; neither OWNER, CONSTRUCTION MANAGER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

I-2.3 OWNER, CONSTRUCTION MANAGER or ENGINEER in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use of said documents.

I-3. QUALIFICATIONS OF BIDDERS.

I-3.1 In determining the successful Bidder, the following factors, among others will be considered. Whether the Bidder:

- (a) Maintains a permanent place of business;
- (b) Has adequate equipment to do the Work properly and expeditiously;
- (c) Has suitable financial ability to meet obligations incident to the Work;
- (d) Has had experience on projects of similar character and magnitude, by meeting the requirements listed on the Bid Form;
- (e) References from prior projects;
- (f) Is qualified to do business in Pennsylvania.

I-3.2 The OWNER may require the Bidder to furnish proof of the foregoing.

I-3.3 No Bid will be accepted from anyone who is in arrears to the OWNER upon any debt or contract; who is a defaulter upon any surety or otherwise upon any obligations; or whose work heretofore has been unsatisfactory or dilatory.

I-4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE.

I-4.1 It is the responsibility of each Bidder before submitting a Bid to:

- (a) examine the Contract Documents thoroughly;
- (b) visit the site to become familiar with local conditions that may affect cost, progress, or the performance or furnishing of the Work;
- (c) consider federal, state and local laws and regulations that may affect cost, progress, or the performance or furnishing of the Work;
- (d) study and carefully correlate Bidder's observations with the Contract Documents; and
- (e) notify CONSTRUCTION MANAGER of all conflicts, errors or discrepancies in the Contract Documents.

I-4.2 On request in advance, OWNER will afford each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, and clean up and restore the site to its former condition upon completion of such explorations.

I-4.3 The land, upon which the Work is to be performed, and the rights-of-way and easements for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Contract Documents. Any additional lands and access thereto required for temporary construction facilities or storage of material and equipment are to be provided by CONTRACTOR. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by OWNER unless otherwise provided in the Contract Documents.

I-4.4 The submission of a Bid shall constitute a representation by Bidder that Bidder has complied with every requirement of this Article 4; that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents by such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents; and that the Contract Documents are sufficient in scope and detail to indicate and convey an understanding in the Bidder of all terms and conditions for the performance and furnishing of the Work.

I-5. INTERPRETATIONS AND ADDENDA

I-5.1 All questions about the meaning or intent of the Contract Documents are to be directed to the CONSTRUCTION MANAGER. Interpretations or clarifications in response to such questions will be issued by Addenda which will be delivered to all parties recorded as having obtained Bid documents. Only questions answered by formal written Addenda shall be binding. Thus, oral and other interpretations or clarifications will be without legal effect.

I-5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by OWNER.

I-6. BID SECURITY

I-6.1 Each Bid must be accompanied by Bid security made payable to OWNER in the amount of ten percent (10%) of the Bidder's maximum Bid price and in the form of a certified or bank check or a Bid Bond issued by a surety meeting the requirements of Paragraph 5.1 of the Standard General Conditions of the Construction Contract.

I-6.2 The Bid security of the Successful Bidder will not be returned until such Bidder has executed the Agreement and furnished the required contract security. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required contract security within five (5) days after the Notice of Award, OWNER may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom OWNER believes to have a reasonable chance of receiving the award may be retained by OWNER until the earlier of the seventh day after the Effective Date of the Agreement or the sixtieth day after the Bid opening. Bid security with Bids which are not competitive will be returned within fifteen (15) days after the Bid opening. Bid securities that are forfeited will be paid to the OWNER as liquidated damages.

I-7. SUBSTITUTE OR "OR-EQUAL" ITEMS

This Contract is based upon the materials and equipment described in the Drawings or Specifications without consideration of possible substitute or "or-equal" items. Whenever the Drawings or Specifications indicate that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor, if acceptable to CONSTRUCTION MANAGER, no application for such acceptance will be considered by CONSTRUCTION MANAGER until after the Effective Date of the Agreement. The procedure for submission of any such application by Contractor and consideration by CONSTRUCTION MANAGER is set forth in Paragraphs 6.7.1, 6.7.2 and 6.7.3 of the General Conditions and may be supplemented in the General Requirements.

I-8. BID FORM

I-8.1 The Bid Form is included with the Bidding Documents; additional copies may be obtained from OWNER.

I-8.2 All blanks on the Bid Form must be completed in ink or by typewriter.

I-8.3 Bids by corporations must be executed in the corporate name by the president, a vice president, or other corporate officer if accompanied by evidence of authority to sign, and the corporate seal must be affixed and be attested to by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.

I-8.4 Bids by partnerships must be executed in the partnership name.

I-8.5 All names must be typed or printed below all signatures.

I-8.6 The Bid shall contain an acknowledgement of receipt of all Addenda.

I-8.7 The address and telephone number for communications regarding the Bid must be shown.

I-8.8 Page 2 of 4 of the Bid Form (Section 9.9) should be tabbed or the entire page should be a color other than white, to facilitate in finding the page when are being open.

I-9 SUBMISSION OF BIDS

Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the project title and name and address of the bidder and be accompanied by the Bid security and other required documents. If the Bid is sent through the mail or another delivery system is employed, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it. SECCRA is in no way responsible for any issue if the bidder uses the U.S. Postal Service or a commercial overnight delivery service to deliver the bid package.

I-10. MODIFICATION AND WITHDRAWAL OF BIDS

I-10.1 Bids may be modified or withdrawn by an appropriate document duly executed and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

I-10.2 OWNER will not consider, for any reason, any claim by the Bidder of any mistake or omission in the Bid. Negligence of the Bidder in preparing the Bid shall not confer any right upon the Bidder to withdraw such Bid after the time has passed, as fixed in the Invitation to Bidders, for receiving Bids, except as permitted by law.

I-11. OPENING OF BIDS

Bids will be opened as indicated in the Invitation to Bid.

I-12. BIDS TO REMAIN SUBJECT TO ACCEPTANCE

All Bids will remain subject to acceptance for sixty (60) days after the day of the Bid opening, unless indicated otherwise in the Invitation to Bid; but OWNER may, in its sole discretion and for any reason, release any Bid and return the Bid security prior to that date.

I-13. AWARD OF CONTRACT

I-13.1 OWNER reserves the right to reject any and all Bids, to waive any and all formalities not involving price, time or changes in the Work, to negotiate contract terms with the Successful Bidder, and to disregard all nonconforming, non-responsive, unbalanced or conditional Bids. Also, OWNER reserves the right to reject the Bid of any Bidder if OWNER believes that it would not be in the best interest of the Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by OWNER.

I-13.2 In evaluating Bids, OWNER will consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested either in the Bid Form or prior to the Notice of Award.

I-13.3 OWNER may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. OWNER also may consider the operating costs, maintenance requirements, performance data and guarantee of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

I-13.4 OWNER may conduct such investigations as OWNER deems necessary to evaluate Bids and to establish the responsibility, qualifications and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents.

I-13.5 If the contract is to be awarded, OWNER will give the Successful Bidder a Notice of Award within thirty (30) days or as otherwise stipulated in the Invitation to Bidders after the day of the Bid opening.

I-13.6 In the event that a Change Order entails Work or Materials not specified elsewhere, such work shall be completed as described in Section 4.1 (Standard General Conditions) Section 11.6.

I-14. CONTRACT SECURITY

Paragraph 5.1 of the Standard General Conditions of the Construction Contract and the Supplementary Conditions set forth OWNER'S requirements as to Performance and Payment Bonds. When the Successful Bidder delivers the executed Agreement to OWNER, it must be accompanied by the required Performance and Payment Bonds.

I-15. SIGNING OF AGREEMENT

When OWNER gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Examination of the written Contract Documents will disclose that occasional deletions of words and brief phrases have been made by physically marking the printed Standard General Conditions; in many cases words have been substituted therefore by physically writing upon such printed copy. As a result of this editorial system, complete execution of the Contract Documents will require that the CONTRACTOR and OWNER initial each page of such printed Standard General Conditions upon which such deletions and/or substitutions have been made. Therefore, within five (5) days of the receipt of the Notice of Award CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement, Standard General Conditions and attached documents to OWNER with the required Bonds. Thereafter, OWNER shall deliver one (1) fully signed counterpart to CONTRACTOR. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification.

I-16. SALES AND USE TAXES

OWNER is exempt from certain sales or use taxes. CONTRACTOR shall verify the status of OWNER. OWNER will supply CONTRACTOR with certain exemption certificates and will execute exemption certificates presented by CONTRACTOR upon request.

I-17. RETAINAGE

Provisions concerning retainage and CONTRACTOR'S right to deposit securities in lieu of retainage are set forth in the Agreement and in the Supplementary Conditions.

I-18 PREBID CONFERENCE

A pre-bid conference will be held at the time and place indicated in the Invitation to Bidders, if any.

PROJECT DIRECTORY

***All question regarding this bid document are to be directed to the Construction Manager listed below.**

PROJECT LOCATION (office of SECCRA)

SECCRA Community Landfill
219 Street Road
West Grove, PA 19390

- *Send all communications for this project to the address listed above, as the project location.*

OWNER

Southeastern Chester County Refuse Authority (SECCRA)
219 Street Rd
West Grove, PA 19390

Mr. Scott Mengle, General Manager; scott@seccra.org

(610) 869-2452 Phone
(610) 869-8064 Fax

CONSTRUCTION MANAGER

Roman Consulting, Inc.
P.O. Box 106
Oley, PA 19547

Mr. Alan A. Roman, President; romanconsultinginc@gmail.com
(610) 587-9240 Phone

ENGINEER

Spotts, Stevens and McCoy
1047 North Park Road
P.O. Box 6307
Reading, PA 19610

Nicholas Szeredai, PE: nick.szeredai@ssmgroup.com
Cell: 610-468-4742

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Law.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By

AMERICAN CONSULTING ENGINEERS COUNCIL,
PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS,
AMERICAN SOCIETY OF CIVIL ENGINEERS

And

CONSTRUCTION SPECIFICATIONS INSTITUTE

This document has been approved and endorsed by The Associated General Contractors of America

These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-8-A-1 or 1910-8-A-2) (1983 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Commentary on Agreements for Engineering Services and Contract Documents, No. 1910-9, 1981 edition. For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17, 1983 edition). When bidding is involved, the Standard Form of Instructions to Bidders (No. 1910-12, 1983 edition) may be used. (1996 Edition).

5 SEPT. 1986

0086-34-01

TABLE OF CONTENTS OF GENERAL CONDITIONS

<i>Article Number</i>	<i>Title</i>	<i>Page</i>
1	DEFINITIONS.....	7
2	PRELIMINARY MATTERS.....	8
3	CONTRACT DOCUMENTS: INTENT, AMENDING AND REUSE.....	9
4	AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS: REFERENCE POINTS.....	10
5	BONDS AND INSURANCE.....	11
6	CONTRACTOR'S RESPONSIBILITIES.....	14
7	OTHERWORK.....	18
8	OWNER'S RESPONSIBILITIES.....	19
9	ENGINEER'S STATUS DURING CONSTRUCTION.....	19
10	CHANGES IN THE WORK.....	21
11	CHANGE OF CONTRACT PRICE.....	21
12	CHANGE OF CONTRACT TIME.....	
13	WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK.....	
14	PAYMENTS TO CONTRACTOR AND COMPLETION.....	
15	SUSPENSION OF WORK AND TERMINATION.....	
16	ARBITRATION.....	
17	MISCELLANEOUS.....	

INDEX TO GENERAL CONDITIONS

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

Addenda - Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the bidding documents or the Contract Documents.

Agreement - The written agreement between OWNER and CONTRACTOR covering the Work to be performed: other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment - The form which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Bid - The offer or propose of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bonds - Bid, performance and payment bonds and other instruments of security.

Change Order - A document which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

Contract Documents - The Agreement, Addenda (which pertain to the Contract Documents). CONTRACTOR's Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement together with all amendments, modifications and supplements issued pursuant to paragraphs 3.4 and 3.5 on or after the Effective Date of the Agreement.

Contract Price - The moneys payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

Contract Time - The number of days (computed as provided in paragraph 17.2) or the date stated in the Agreement for the completion of the Work.

CONTRACTOR - The person, firm or corporation with whom OWNER has entered into the Agreement.

Defective - An adjective which when modifying the Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to final payment unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).

Drawings - The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.

Effective Date of the Agreement - The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

ENGINEER - The person, firm or corporation named as such in the Agreement.

Field Order - A written order issued by OWNER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Time.

General Requirements - Sections of Division 1 of the Specifications.

Laws and Regulations: Laws or Regulations - Laws, rules, regulations, ordinances, codes and/or orders.

Notice of Award - The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified. OWNER will sign and deliver the Agreement.

Notice to Proceed - A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR'S obligations under the Contract Documents.

OWNER - The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

Partial Utilization - Placing a portion of the Work in service for the purpose for which it is intended (or a related purpose) before reaching Substantial Completion for all the Work.

Project - The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier as submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor - An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

Substantial Completion - Substantial Completion - The Work (or a particular part thereof) has progressed to the

point where it is sufficiently complete, in accordance with the Contract Documents, that the Work (or a specified part thereof) can be used for the purposes for which it is intended. Notwithstanding the foregoing, however, whether the Work (or a particular part thereof) is Substantially Complete will depend upon the inspection, review and comments thereon of the Pennsylvania Department of Environmental Protection.

Supplementary Conditions - The part of the Contract Documents which amends or supplements these General Conditions.

Supplier - A manufacturer, fabricator, supplier, distributor, materialman or vendor.

Underground Facilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

Unit Price Work - Work to be paid for on the basis of unit prices.

Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

Work Directive Change - A written directive to CONTRACTOR issued on or after the Effective Date of the Agreement and signed by OWNER ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.22. A Work Directive Change may not change the Contract Price or the Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Time as provided in paragraph 10.2.

Written Amendment - A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR, on or after the Effective Date of the Agreement and normally dealing with the non-engineering or non-technical rather than strictly Work - related aspects of the Contract Documents.

ARTICLE 2 - PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreement to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the

Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Time: Notice to Proceed:

2.3. The Contract Time will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the Contract Time commence to run later than the seventy-fifth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever is earlier.

Starting the Project:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

Before Starting Construction:

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to OWNER any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain written interpretation or clarification from OWNER before proceeding with any Work affected thereby;; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had knowledge thereof or should reasonably have known thereof.

2.6. Within five (5) days after the Effective Date of the Agreement, CONTRACTOR shall submit to OWNER the following:

2.6.1 an estimated progress schedule indicating the starting and completion dates of the various stages of the work;

2.6.2 a preliminary schedule of such Shop Drawing submissions as may be required; and

2.6.3 a preliminary schedule of values for all of the Work in sufficient detail to serve as the basis for progress payments during construction.

Exchange of Insurance Data:

2.7. Before any Work at the site is started, CONTRACTOR shall deliver to OWNER certificates (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and maintain in accordance with paragraphs 5.3 and 5.4. Certificates (or other sufficient evidence of insurance) requested by OWNER shall be submitted to OWNER with the required bonds; OWNER shall not execute the Agreement until such evidence of insurance has been submitted.

Preconstruction Conference:

2.8 Within ten (10) days after the Effective Date of the Agreement, but before CONTRACTOR starts the Work at the site, a conference attended by CONTRACTOR, OWNER and others as appropriate will be held to discuss the schedules referred to in paragraph 2.6 to discuss procedures for handling Shop Drawings and other submittals and for processing Applications for Payment and to establish a working understanding among the parties as to the Work.

Finalizing Schedules:

2.9 At least ten days before submission of the first Application for Payment a conference to be attended by CONTRACTOR, OWNER and such others as OWNER shall specify will be held to finalize the schedules submitted in accordance with SC-2.6. The finalized progress schedule, acceptable to OWNER, shall provide an orderly progression of the Work to completion within the Contract Time.

The finalized schedule of Shop Drawing submissions, acceptable to OWNER, shall provide a workable arrangement therefor and the finalized schedule of values shall be acceptable to OWNER as to form and substance.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1 The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary: what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2 It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to ENGINEER, or any of ENGINEER's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16. Clarifications and interpretations of the Contract Documents shall be issued by Owner as provided in paragraph 9.4

3.3 If, during the performance of the Work, CONTRACTOR finds a conflict error or discrepancy in the Contract Documents, CONTRACTOR shall so report to OWNER in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from OWNER: however,

CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

Amending and Supplementing Contract Documents:

3.4. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

- 3.4.1. a formal Written Amendment,
- 3.4.2. a Change Order (pursuant to paragraph 10.4), or
- 3.4.3. a Work Directive Change (pursuant to paragraph 10.1).

As indicated in paragraphs 11.2 and 12.1, Contract Price and Contract Time may only be changed by a Change Order or a Written Amendment.

3.5. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

- 3.5.1. a Field Order (pursuant to paragraph 9.5),
- 3.5.2. OWNER's approval of a Shop Drawing or sample (pursuant to paragraphs 6.26 and 6.27),
or
- 3.5.3. OWNER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.6. Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any of the Drawings. Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

ARTICLE 4 - AVAILABILITY OF LANDS: PHYSICAL CONDITIONS: REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If

CONTRACTOR believes that any delay in OWNER's furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

Physical Conditions:

4.2.1. *Explorations and Reports:* Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon nontechnical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2. *Existing Structures:* Reference is made to the Supplementary Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3) which are at or contiguous to the site that have been utilized by ENGINEER in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR's purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3. *Report of Differing Conditions:* If CONTRACTOR believes that:

4.2.3.1. any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1. and 4.2.2. is inaccurate, or

4.2.3.2. any physical condition uncovered or revealed at the site differs materially from that indicated, reflected or referred to in the Contract Documents.

CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work in connection therewith except in an emergency as permitted by paragraph 6.2, notify OWNER in writing about the inaccuracy or difference.

4.2.4. *Owner's Review:* OWNER will promptly review the pertinent conditions, determine the necessity of obtaining explorations or tests and advise CONTRACTOR of OWNER's findings and conclusions.

4.2.5. *Possible Document Change:* If OWNER concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change in the Contract Documents is required, a Work Directive Change or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6. *Possible Price and Time Adjustments:* In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be

allowable to the extent that they are attributable to any such inaccuracy or difference. If OWNER and CONTRACTOR are unable to agree as to the amount or length thereof, a claim may be made therefor as provided in Articles 11 and 12.

Physical Conditions - Underground Facilities:

4.3.1. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and,

4.3.1.2. CONTRACTOR shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

The CONTRACTOR shall further be bound by the provisions of the Pennsylvania Underground Utilities Act, Act 287, as amended and supplemented by Act 172.

4.3.2. *Not Shown or Indicated.* If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.22), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER. OWNER will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonable have been expected to be aware of. If the parties are unable to agree as to the amount of length thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Reference Points:

4.4. OWNER shall provide engineering surveys to establish reference points for construction which are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified in the General Requirements), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of

OWNER. CONTRACTOR shall report to OWNER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

ARTICLE 5 - BONDS AND INSURANCE

Performance and Other Bonds:

5.1. CONTRACTOR shall furnish performance and payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as otherwise provided by Law or Regulation or by the Contract Documents. CONTRACTOR shall also furnish such other bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by Law or Regulation or by the Contract Documents and be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act. Bonds shall be furnished with a Surety that is licensed to transact such business in Pennsylvania and is acceptable to the OWNER. Evidence of authority to bind the Surety, in the form of a Power of Attorney designating the agent who is authorized to sign on behalf of the Surety, shall be filed with the executed Bond forms.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within five days thereafter substitute another Bond and Surety, both of which must be acceptable to OWNER.

Contractor's Liability Insurance:

5.3. CONTRACTOR shall purchase and maintain such comprehensive general liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work or by anyone for whose acts any of them may be liable:

5.3.1. Claims under workers' compensation, disability benefits and other similar employee benefit acts;

5.3.2. Claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.3.3. Claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.3.4. Claims for damages insured by personal injury liability coverage which are sustained () by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (b) by any other person for any other reason:

5.3.5. Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom;

5.3.6. Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and

5.3.7. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

5.3.8. Comprehensive General Liability Policy shall name both the OWNER and ENGINEER as additional insured parties.

5.3.9. CONTRACTOR shall obtain Excess Umbrella Liability Coverage with limits of \$5,000,000 Each Occurrence/ \$5,000,000 Annual Aggregate.

5.3.10. All property and liability policies purchased by CONTRACTOR must be on an Occurrence basis and be with an insurance company rated A- or better by A. M. Best and Company on the date of the Contract between OWNER AND CONTRACTOR.

The insurance required by this paragraph 5.3 shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplementary Conditions, or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be cancelled, materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing *defective* Work in accordance with paragraph 13.12. In addition, CONTRACTOR shall maintain such completed operations insurance for at least two years after final payment and furnish OWNER with evidence of continuation of such insurance at final payment and one year thereafter.

The limits of liability insurance required by paragraph 5.3 through 5.3.7 of the General Conditions shall provide coverage in the following or greater amounts where required by law or regulations:

5.3.1 and 5.3.2 Worker's Compensation: Statutory.

5.3.3 (3) Employer's Liability:
\$100,000/\$500,000/\$100,000

Articles 5.3.3, 5.3.4, 5.3.5 and 5.3.6. Comprehensive General Liability:

(1) Bodily Injury or Death:
\$1,000,000

Each Occurrence

\$1,000,000 Annual Aggregate

Property Damage:
\$500,000 Each Occurrence
\$500,000 Annual Aggregate
and combined single limit of \$1,000,000

The coverages required by Articles 5.3.3 through 5.3.6 shall include:

- (2) Premises - Operations, Explosion and Collapse Hazard; Underground Hazard; Products/Completed Operations Hazard; Contractual Insurance; Broad Form Property Damage; and Independent Contractors and Personal Injury, including employees.

Article 5.3.7 Comprehensive Automobile Liability, including OWNER, Hired and Non-Owned Vehicles, shall have limits as follows:

Bodily Injury:
\$ 500,000 Each Person
\$1,000,000 Each Occurrence

Property Damage:
\$ 250,000 Each Occurrence
and combined single limit of \$1,000,000

Contractual Liability Insurance:

5.4. The comprehensive general liability insurance required by paragraph 5.3 will include contractual liability insurance applicable to CONTRACTOR's obligations under paragraphs 6.30 and 6.31. The Contractual Liability Insurance required by paragraph 5.4 of the General Conditions shall contain limits of not less than the following amounts:

5.4.1 Bodily Injury
\$1,000,000 Each Occurrence

5.4.2 Property Damage:
\$ 500,000 Each Occurrence
\$ 500,000 Annual Aggregate

Owner's Liability Insurance:

5.5. OWNER shall be responsible for purchasing and maintaining OWNER's own liability insurance and, at OWNER's option, may purchase and maintain such insurance as will protect OWNER against claims which may arise from operations under the Contract Documents. Such coverage, if elected by the OWNER, shall be in addition to the OWNER'S coverage provided under the CONTRACTOR'S liability insurance policy as required by paragraph 5.3 as supplemented.

Property Insurance:

5.6. CONTRACTOR shall purchase and maintain until its final payment hereunder property insurance upon the Work at site to the full insurable value thereof. This insurance shall insure the interests of OWNER, CONTRACTOR, Subcontractors, and ENGINEER in the Work (all of whom shall be listed as insureds or additional insured parties), shall insure against the perils of fire; shall contain an extended coverage provision, shall include "all-risk" insurance for physical loss and damage, including by theft, vandalism or malicious mischief, collapse and water damage, and such other perils as may be required by these Supplementary Conditions, and shall cover damages, losses and expenses arising out of or resulting from the occurrence of any insured loss or that may be incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, attorneys and other professionals). If not covered by the "all-risk" insurance or by other policies required in these Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such Work will be included in An Application For Payment. The policies of insurance required to be purchased and maintained by CONTRACTOR in accordance with this paragraph 5.6 shall comply with the requirements of paragraph 5.8 of the General Conditions.

5.7. Intentionally Deleted.

5.8. All the policies of insurance (or the certificates or other evidence thereof) required to be purchased and maintained in accordance with paragraphs 5.6 will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER by certified mail and will contain waiver provisions in accordance with paragraph 5.11.2.

Deductibles:

5.9. The maximum deductible amount for all property insurance required to be provided by CONTRACTOR shall be either \$10,000 or such limit as may be acceptable to OWNER. A deductible limit of higher than \$10,000 shall be requested in writing; shall be accompanied by a copy of the insurance policy; and shall be accepted or rejected by OWNER within ten (10) days of its receipt.

OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others in the Work.

Special Insurance:

5.10. CONTRACTOR may, at its discretion, purchase any special property insurance in which case such additional coverage shall be a part of the required property insurance policy.

Waiver of Rights;

5.11.1. OWNER and CONTRACTOR waive all rights against each other for all losses and damages caused by any of the perils covered by the policies of insurance provided in response to paragraphs 5.6 and any other property insurance applicable to the Work, and also waive all such rights against the Subcontractors, ENGINEER, ENGINEER's consultants and all other parties named as insureds in such policies for losses and damages so caused. As required by paragraph 6.11, each

subcontract between CONTRACTOR and a Subcontractor will contain similar waiver provisions by the Subcontractor in favor of OWNER, CONTRACTOR, ENGINEER, ENGINEER's consultants and all other parties named as insureds. None of the above waivers shall extend to the rights that any of the insured parties may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued. To effect such waiver CONTRACTOR and CONTRACTOR'S property insurer or insurers shall sign an Insured Claim Waiver before the CONTRACTOR starts Work at the site. CONTRACTOR shall also secure similar signatures on such forms from all subcontractors and their property insurers before any such subcontractor starts Work at the site.

5.11.2. OWNER and CONTRACTOR intend that any policies provided in response to paragraphs 5.6 shall protect all of the parties insured and provide primary coverage for all losses and damages caused by the perils covered thereby. Accordingly, all such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recover against any of the parties named as insureds or additional insureds, and if the insurers require separate waiver forms to be signed by ENGINEER or ENGINEER's consultant OWNER will obtain the same, and if such waiver forms are required of any Subcontractor, CONTRACTOR will obtain the same.

Receipt and Application of Proceeds:

5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 will be adjusted with OWNER and CONTRACTOR and made payable to OWNER and CONTRACTOR as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER and CONTRACTOR shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys to received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

5.13. OWNER as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, OWNER as trustee shall, upon the occurrence of an insured loss, give bond for the proper performance of such duties.

Acceptance of Insurance:

5.14. If OWNER has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by CONTRACTOR on the basis of its not complying with the Contract Documents, OWNER shall notify CONTRACTOR in writing thereof within ten days of the date of delivery of such certificates to OWNER in accordance with paragraph 2.7.

At the request of OWNER, CONTRACTOR shall provide OWNER with a copy of any insurance policy under which coverage in accordance with the Contract is provided.

OWNER may review such insurance coverage itself or assign, at its discretion, a qualified person to review such insurance coverage.

ENGINEER shall have no responsibilities regarding the advising, requiring, or obtaining of any form of insurance.

Partial Utilization:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection or a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent.

6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. CONTRACTOR shall furnish satisfactory evidence I (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to ENGINEER, or any of ENGINEER's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 and 9.16.

The CONTRACTOR shall submit manufacturer's safety data sheets for all products to be used in the Project and shall not use therein any asbestos containing materials of any kind.

Adjusting Progress Schedule:

6.6. CONTRACTOR shall submit to OWNER acceptance (to the extend indicated in paragraph 2.9) adjustments in the progress schedule to reflect the impact thereon of new developments: these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

Substitutes or "or-Equal" Items:

6.7.1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by OWNER if sufficient information is submitted by CONTRACTOR to allow OWNER to determine that the material or equipment proposed is equivalent or equal to that named. The procedure for review by OWNER will include the following as supplemented in the General Requirements. Requests for review of substitute items of material and equipment will not be accepted by OWNER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to OWNER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the result called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contact with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by OWNER in evaluating the proposed substitute. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense additional data about the proposed substitute.

6.7.2. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to OWNER, if CONTRACTOR submits sufficient information to allow OWNER to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by OWNER will be similar to that provided in paragraph 6.7.1. as applied by OWNER and as may be supplemented in the General Requirements.

6.7.3. OWNER will be allowed a reasonable time within which to evaluate each proposed substitute. OWNER will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without OWNER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute. OWNER will record time required by OWNER and OWNER's consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not OWNER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of OWNER and OWNER's consultants for evaluating each proposed substitute.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection. CONTRACTOR shall furnish OWNER with a list of all Subcontractors, Suppliers and others involved with the Work prior to the Effective Date of the Agreement.

6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be increased by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER of any such Subcontractor, supplier or other person or organization shall constitute a waiver of any right of OWNER to reject *defective* Work.

6.9. CONTRACTOR shall be fully responsible to OWNER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER

and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11. All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and contains waiver provisions as required by paragraph 5.11. CONTRACTOR shall pay each Subcontractor a just share of any insurance moneys received by CONTRACTOR on account of losses under policies issued pursuant to paragraphs 5.6 and 5.7.

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees and court and arbitration costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Permits:

6.13. The OWNER shall obtain and pay for all required construction permits. The OWNER will obtain a Pennsylvania Department of Environmental Protection permit for the Municipal Waste Landfill. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

6.14.2. If CONTRACTOR observes that the Specifications or Drawings are at variance with any

Laws or Regulations or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give OWNER prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it contrary to such Laws or Regulations, and without such notice to OWNER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Taxes:

6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER or ENGINEER by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and ENGINEER harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or ENGINEER to the extend based on a claim arising out of CONTRACTOR's performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressured that will endanger it.

Record Documents:

6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes

made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to OWNER for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to OWNER.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all employees on the Work and other persons and organizations who may be affected thereby;

6.20.2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and all shall erect and maintain all necessary safeguards of such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR). CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed.

6.21. CONTRACTOR shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR's superintendent unless otherwise designated in writing by CONTRACTOR or OWNER.

Emergencies:

6.22. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from OWNER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give OWNER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If OWNER determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Directive Change or Change Order will be issued to document

the consequences of the changes or variations.

Shop Drawings and Samples:

6.23. after checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, CONTRACTOR shall submit to OWNER for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9), or for other appropriate action if so indicated in the Supplementary Conditions, five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as OWNER may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable OWNER to review the information as required.

6.24. CONTRACTOR shall also submit to OWNER for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

6.25.1. Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimension, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

6.25.2. At the time of each submission, CONTRACTOR shall give OWNER specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Show Drawing submitted OWNER for review and approval of each such variation.

6.26. OWNER will review and approve with reasonable promptness Shop Drawings and samples, but OWNER's review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by OWNER, and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by OWNER on previous submittals.

6.27. OWNER's review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called OWNER's attention to each such variation at the time of submission as required by paragraph 6.25.2. and OWNER has given written approval of each such variation by a specific written notation thereof

incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by OWNER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.25.1.

6.28. Where a shop Drawing or sample is required by Specifications, any related Work performed prior to OWNER's review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

6.29. CONTRACTOR shall carry on the work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

Indemnification:

6.30. To the fullest extent permitted by Laws and Regulations CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and their consultants, agents and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by Law and Regulations regardless of the negligence of any such party.

6.31. In any and all claims against OWNER or ENGINEER or any of their consultants, agents or employees by any employee of CONTRACTOR, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.30 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.

6.32. The obligations of CONTRACTOR under paragraph 6.30 shall not extend to the liability of ENGINEER, ENGINEER's consultants, agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications.

ARTICLE 7 - OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, have other work performed by utility owners or let other direct contracts therefore which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to CONTRACTOR prior to starting any such other work; and, if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

7.2. CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of OWNER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If any part of CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to OWNER in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR's failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or non-apparent defects and deficiencies in the other work.

Coordination:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Supplementary Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions. Unless otherwise provided in the Supplementary Conditions, neither OWNER nor ENGINEER shall have any authority or responsibility in respect of such coordination.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.1. OWNER shall issue all communications directly to CONTRACTOR.

8.2. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in paragraphs 14.4. and 14.13.

8.3. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's

identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by ENGINEER in preparing the Drawings and Specifications.

8.4. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.8.

8.5. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.6. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.7. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

Owner's Representative:

9.1. The duties and responsibilities and the limitations of authority of ENGINEER during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER. The ENGINEER will report to the OWNER's representative on-site.

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations as an experienced and qualified design professional, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

Project Representation:

9.3. The OWNER will provide its own Resident Representative whose duties, responsibilities and authority will be as OWNER shall provide in accordance with this Contract.

Clarifications and Interpretations:

9.4. OWNER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, CONTRACTOR may make a claim therefore as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. OWNER may authorize minor variations in the Work from the requirements of the contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER, and also on CONTRACTOR who shall perform the Work involved promptly. If CONTRACTOR believes that a Field Order justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12.

Rejecting Defective Work:

9.6. OWNER will have authority to disapprove or reject Work and will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with OWNER's responsibility for Shop Drawings and samples, see paragraphs 6.23 through 6.29 inclusive.

9.8. In connection with OWNER's responsibilities as to Change Orders, see Articles 10, 11 and 12.

9.9. In connection with OWNER's responsibilities in respect Applications for Payment, etc., see Article 14.

Determination for Unit Prices:

9.10. OWNER will determine the actual quantities and classifications of Unit Price Work performed by Contractor in connection with Change Order Work. OWNER will review with CONTRACTOR OWNER'S preliminary determinations on such matters before rendering a written decision in connection with an Application for Payment or otherwise. OWNER'S written decisions thereon will be final and binding upon CONTRACTOR, unless within ten (10) days thereof, CONTRACTOR delivers to ENGINEER and to OWNER a written notice of intention to appeal therefrom.

Decisions on Disputes:

9.11. OWNER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 11 and 12 in respect of changes in the contract Price or Contract Time will be referred initially to OWNER in writing with a request for a formal decision in accordance with this paragraph, which OWNER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered by the claimant to OWNER promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to

OWNER and within sixty days after such occurrence unless OWNER allows an additional period of time to ascertain more accurate data in support of the claim.

9.12. When functioning under paragraphs 9.10 and 9.11, OWNER will not show partiality and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by OWNER pursuant to paragraphs 9.10 and 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.16) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

Limitations on ENGINEER's Responsibilities:

9.13. Neither OWNER's authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by OWNER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of OWNER to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

9.14. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved", or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of OWNER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to OWNER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.15 or 9.16.

9.15. OWNER will not be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and OWNER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.16. OWNER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any supplier, or of any other person or organization performing or furnishing any of the Work.

ARTICLE 10 - CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work;; these will be authorized by a Written Amendment, a Change Order, or a Work Directive Change. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an increase or decrease in the Contract Price or an extension or shortening of the Contract Time that should be allowed as a result

of a Work Directive Change, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.4 and 3.5, except in the case of an emergency as provided in paragraph 6.22 and except in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders (or Written Amendments) covering:

10.4.1. changes in the Work which are ordered by OWNER pursuant to paragraph 10.1, are required because of acceptance of *defective* Work under paragraph 13.13 or correcting *defective* Work under paragraph 1.14, or are agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Time which are agreed to by the parties; and

10.4.3. changes in the Contract Price or Contract Time which embody the substance of any written decision rendered pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provision of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the Work or the provision of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by a claimant's statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Price shall be determined by ENGINEER if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will be valid if not

submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1. through 11.9.3. inclusive).

11.3.2. By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2.1).

11.3.3. On the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's Fee for overhead and profit (determined as provided in paragraph 7.1 of OWNER's and CONTRACTOR's Agreement.

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the in the above to the extent authorized by OWNER.

11.4.2. Cost of all material and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR's Cost of the Work. All subcontracts shall be subject to the other provisions of

the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accounts) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office And temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used by not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER and the costs of transportation, loading, unloading, installation, dismantling and removal thereof - all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

11.4.5.5. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.4.5.6. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's Fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER in accordance with paragraph 5.9.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1. or specifically covered by paragraph 11.4. - all of which are to be considered administrative costs covered by the CONTRACTOR's Fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but no limited to, the correction of *defective* Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

11.5.6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

CONTRACTOR's Fees:

11.6. The CONTRACTOR's Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. a mutually acceptable fixed fee; or if none can be agreed upon,

11.6.2. a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1. for costs incurred under paragraphs 11.4.1. and 11.4.2, the CONTRACTOR's Fee shall be fifteen percent;

11.6.2.2. for costs incurred under paragraph 11.4.3, the CONTRACTOR's Fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable

to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen percent;

11.6.2.3. no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;

11.6.2.4. the amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR's Fee by an amount equal to ten percent of the net decrease; and

11.6.2.5. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's Fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1. through 11.6.2.4, inclusive.

11.7. Whenever the cost of any Work is to be determined pursuant to paragraph 11.4 or 11.5, CONTRACTOR will submit in form acceptable to OWNER an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to CONTRACTOR agrees that:

11.8.1. The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2. CONTRACTOR's costs for unloading and handling on the sit, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

Unit Price Work:

11.9.1. Where a Change Order involves any Unit Price Work, initially that portion of the Change Order Price for such Work shall be deemed to include for all such Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each such item of work. Such estimated quantities of items of Unit Price Work in all Change Order Work are not guaranteed and are solely for the purpose of determining an initial Change Order Contract Price. Determination of the actual quantity and classifications of Unit Price Work performed by CONTRACTOR will be made by OWNER in accordance with SC-9.10.

11.9.2. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.9.3. Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there

is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the amount of any such increase.

ARTICLE 12 - CHANGE OF CONTRACT TIME

12.1. The Contract time may only be changed by a Change Order or a Written Amendment. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by ENGINEER if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2. The Contract Time will be extended in an amount equal to time lost due to delay beyond the control of CONTRACTOR if a claim is made therefor as provided in paragraph 12.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 7, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

12.3. All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 123 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) for delay by either party.

ARTICLE 13 - WARRANTY AND GUARANTEE: TESTS AND INSPECTIONS: CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee:

13.1. CONTRACTOR warrants and guarantees to OWNER that all Work will be in accordance with the Contract Documents and will not be *defective*. Prompt notice of all defects shall be given to CONTRACTOR. All *defective* Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. ENGINEER and ENGINEER's representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

13.3. CONTRACTOR shall give OWNER timely notice of readiness of the Work for all required inspections, tests or approvals.

13.4. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved. CONTRACTOR shall assume full responsibility therefor, pay all costs in connection therewith and furnish OWNER the required certificates of inspection, testing or approval. CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with OWNER's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by OWNER (unless otherwise specified). OWNER, however, shall assume responsibility for managing, authorizing and/or refusing all inspections, tests or approvals which may be sought by either the Pennsylvania Department of Environmental Protection or London Grove Township.

13.5. All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to OWNER and CONTRACTOR (or by ENGINEER if so specified).

13.6. If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of OWNER, it must, if requested by OWNER, be uncovered for observation. Such uncovering shall be at CONTRACTOR's expense unless CONTRACTOR has given OWNER timely notice of CONTRACTOR's intention to cover the same and OWNER has not acted with reasonable promptness in response to such notice.

13.7. Neither observations by ENGINEER or by OWNER , nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR's obligations to perform the Work in accordance with the Contract Documents.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of OWNER, it must, if requested by OWNER, be uncovered for OWNER's observation and replaced at CONTRACTOR's expense.

13.9. If OWNER considers it necessary or advisable that covered Work be observed by OWNER or inspected or tested by others, CONTRACTOR, at OWNER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as OWNER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is *defective*, CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction (including but not limited to fees and charges of engineers, architects, attorneys and other professionals), and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be *defective*, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction;

and, if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

Owner May Stop the Work:

13.10. If the Work is *defective*, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents. OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

Correction or Removal of Defective Work:

13.11. If required by OWNER, CONTRACTOR shall promptly, as directed, either correct all *defective* Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by OWNER, remove it from the site and replace it with *nondefective* Work. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

One Year Correction Period:

13.12. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be *defective*, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions, either correct such *defective* Work, or, if it has been rejected by OWNER, remove it from the site and replace it with *nondefective* Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the *defective* Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of *defective* Work, OWNER prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential costs attributable to OWNER's evaluation of and determination to accept such *defective* Work (such costs to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such payment, an appropriate amount will be

paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. If CONTRACTOR fails within a reasonable time after written notice of OWNER to proceed to correct and to correct *defective* Work or to remove and replace rejected Work as required by OWNER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days, written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR and a Change Order will be issued incorporating the necessary revision in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's *defective* Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14 - PAYMENT TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

14.2. At least twenty days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to OWNER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitable stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred

to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in Articles 9.1.1 and 9.1.2 of the Agreement.

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment:

14.4. OWNER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation or payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing OWNER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment with OWNER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. OWNER'S recommendation for any payment requested in the Application for Payment will constitute an acknowledgement by OWNER, based on on-site observations of the Work in progress and on OWNER'S review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of OWNER'S knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion; to the results of any subsequent tests called for in the Contract Documents; to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10; and to any other qualifications stated in the recommendation); and that CONTRACTOR is entitled to payment of the amount recommended. However, by such acknowledgement, OWNER will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work or that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or OWNER to withhold payment to CONTRACTOR.

14.6. OWNER's recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR's being entitled to final payment set forth in paragraph 14.13 have been fulfilled.

14.7. OWNER may refuse to recommend the whole or any part of any payment if it would be incorrect to make such a payment. OWNER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary to protect OWNER from loss because:

14.7.1. the Work is defective, or completed Work has been damaged requiring correction or replacement;

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order;

14.7.3. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.14; or

14.7.4. of OWNER'S actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.9 inclusive.

OWNER may refuse to make payment of the full amount because claims have been made against OWNER on account of CONTRACTOR'S performance or furnishing of the Work or Liens have been filed in connection with the Work or there are other items entitling OWNER to a set-off against the amount recommended, but OWNER must give CONTRACTOR immediate written notice stating the reasons for such action.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use, CONTRACTOR shall notify OWNER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that OWNER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER and CONTRACTOR shall make an inspection of the Work to determine the status of completion. If OWNER does not consider the Work substantially complete, OWNER will notify CONTRACTOR in writing giving the reasons therefor. If OWNER considers the Work substantially complete, OWNER will prepare a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. CONTRACTOR shall have seven days after receipt of the tentative certificate during which to make written objection as to any provisions of the certificate or attached list. If, after considering such objections, OWNER concludes that the Work is not substantially complete, OWNER will within fourteen days after submission of the tentative certificate to CONTRACTOR notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER'S objections, CONTRACTOR considers the Work substantially complete, CONTRACTOR will within said fourteen days execute and deliver to OWNER and ENGINEER a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected as CONTRACTOR believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion, OWNER will deliver to CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties. Unless OWNER and CONTRACTOR agree otherwise in writing prior to CONTRACTOR'S issuing the definitive certificate of Substantial Completion, OWNER'S aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER of any finished part of the Work, which has specifically been identified in the Contract Documents, or which OWNER and CONTRACTOR agree constitutes a separately functioning and useable

part of the Work that can be used by OWNER without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER that said part of the Work is substantially complete and request a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER and CONTRACTOR shall make an inspection of that part of the Work to determine its status of completion. If OWNER does not consider that part of the Work to be substantially complete, OWNER will notify CONTRACTOR in writing giving the reasons therefor. If OWNER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. OWNER may at anytime request CONTRACTOR in writing to permit OWNER to take over operation of any such part of the Work although it is not substantially complete, within a reasonable time thereafter OWNER and CONTRACTOR shall make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If CONTRACTOR does not object in writing to OWNER that such part of the Work is not ready for separate operation by OWNER, OWNER will finalize the list of items to be completed or corrected and will deliver such list to OWNER and CONTRACTOR together with a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the Work which will become binding upon OWNER and CONTRACTOR at the time when OWNER takes over such operation (unless they shall have otherwise agreed in writing). During such operation and prior to Substantial Completion of such part of the Work, OWNER shall allow CONTRACTOR reasonable access to complete or correct items on said list and to complete other related Work.

14.10.3. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the entire work or an agreed portion thereof is complete, OWNER will make a final inspection with CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or *defective*. CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies.

Final Application for Payment:

14.12. After CONTRACTOR has completed all such corrections to the satisfaction of OWNER and

delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents - all as required by the Contract Documents (subject to the provisions of paragraph 14.16), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) OF ALL Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full;; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of OWNER'S observation of the Work during construction and final inspection, and OWNER'S review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, OWNER is satisfied that the Work has been completed and CONTRACTOR'S other obligations under the Contract Documents have been fulfilled, OWNER will, within ten days after receipt of the final Application for Payment, subject to the provisions of paragraph 14.16, declare its agreement to final acceptability and payment. Otherwise, OWNER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance, the amount will become due and will be paid by OWNER to CONTRACTOR, subject to OWNER'S acceptance thereof in accordance with the Contract Documents.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Contractor's Continuing Obligation:

14.15. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither any progress or final payment nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents (except as provided in paragraph 14.16).

Waiver of Claims:

14.16. The making and acceptance of final payment will constitute:

14.16.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from *defective* Work appearing after final inspection pursuant to paragraph 14.11 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of CONTRACTOR's continuing obligations under the Contract Documents; and

14.16.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.1. OWNER may at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

Owner May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

15.2.2. if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect At the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

15.2.3. if CONTRACTOR makes a general assignment for the benefit of creditors;

15.2.4. if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR's creditors;

15.2.5. if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

15.2.6. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or

equipment or failure to adhere to the progress schedule established under paragraph 2.9 as revised from time to time);

15.2.7. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;
or

15.2.8. if CONTRACTOR otherwise violates in any substantial way any provision of the Contract Documents:

OWNER may, after giving CONTRACTOR (and the surety, if there be one) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is Finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects attorneys and other professionals and court and arbitration costs)) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be incorporated in a Change Order, but when exercising any rights or remedies under this paragraph, OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights of remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days' written notice to CONTRACTOR OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges or engineers, architects, attorneys and other professionals and court and arbitration costs).

Contractor May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of Court or other public authority, or OWNER fails to act on any Application for Payment within thirty days after it is submitted, or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if OWNER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER stop the Work until payment of all amounts ten due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 6.29 to

carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

ARTICLE 16 - ARBITRATION

16.1. All claims, disputes, and other matters in question between OWNER and CONTRACTOR arising out of, or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.16) will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

16.2. No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER for decision will be made until the earlier of (a) the date on which ENGINEER has rendered a decision or (b) the tenth day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof; and the failure to demand arbitration within said thirty days' period shall result in ENGINEER's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned. No demand for arbitration of any written decision of ENGINEER rendered in accordance with paragraph 9.10 will be made later than ten days after the party making such demand has delivered written notice of intention to appeal as provided in paragraph 9.10.

16.3. Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty-day or ten-day period specified in paragraph 16.2 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

16.4. No arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder or in any other manner any other person or entity (including ENGINEER, ENGINEER's agents, employees or consultants) who is not a party to this contract unless:

16.4.1. the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration.

16.4.2. such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

16.4.3. the written consent of the other person or entity sought to be included and of OWNER and

CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

16.5. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and will not be subject to modification or appeal except to the extent permitted by Sections 10 and 11 of the Federal Arbitration Act (9 U.S.C. §§10, 11).

ARTICLE 17 - MISCELLANEOUS

Giving Notice:

17.1. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Time:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

General:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.30, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available to Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination of completion of the Agreement.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed in triplicate these Standard General conditions of the Construction Contract as modified by marking thereon and the attached Supplementary Conditions. One counterpart each has been delivered to OWNER and CONTRACTOR. Each page of such Standard General Conditions has been signed by OWNER and by CONTRACTOR.

These Standard General Conditions as modified will be effective on _____, 1998.

OWNER: SOUTHEASTERN CHESTER COUNTY
REFUSE AUTHORITY

CONTRACTOR: _____

BY: _____

BY: _____

(CORPORATE SEAL)

(CORPORATE SEAL)

ATTEST _____

ATTEST _____

Address for giving notices:

Address for giving notices:

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

Contract Times, issued on or after the Effective Date of the Agreement.

1.01 *Defined Terms*

A. Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the Contract Documents.
2. *Agreement*--The written instrument which is evidence of the agreement between OWNER and CONTRACTOR covering the Work.
3. *Application for Payment*--The form acceptable to ENGINEER which is to be used by CONTRACTOR during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
5. *Bid*--The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
6. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).
7. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.
8. *Bonds*--Performance and payment bonds and other instruments of security.
9. *Change Order*--A document recommended by ENGINEER which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the

10. *Claim*--A demand or assertion by OWNER or CONTRACTOR seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the OWNER and CONTRACTOR concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*--The Contract Documents establish the rights and obligations of the parties and include the Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and ENGINEER's written interpretations and clarifications issued on or after the Effective Date of the Agreement. Approved Shop Drawings and the reports and drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this paragraph are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by OWNER to CONTRACTOR are not Contract Documents.

13. *Contract Price*--The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Substantial Completion; and (ii) complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment.

15. *CONTRACTOR*--The individual or entity with whom OWNER has entered into the Agreement.

16. *Cost of the Work*--See paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by ENGINEER which graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR. Shop Drawings and other CONTRACTOR submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *ENGINEER*--The individual or entity named as such in the Agreement.

20. *ENGINEER's Consultant*--An individual or entity having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

21. *Field Order*--A written order issued by ENGINEER which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

22. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

23. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

24. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

25. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

27. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

28. *Notice of Award*--The written notice by OWNER to the apparent successful bidder stating that upon timely compliance by the apparent successful bidder with the conditions precedent listed therein, OWNER will sign and deliver the Agreement.

29. *Notice to Proceed*--A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work under the Contract Documents.

30. *OWNER*--The individual, entity, public body, or authority with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be performed.

31. *Partial Utilization*--Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

32. *PCBs*--Polychlorinated bi33. *Petroleum*--*Petroleum*, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

34. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part as may be indicated elsewhere in the Contract Documents.

35. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

36. *Radioactive Material*--*Source*, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

37. *Resident Project Representative*--The authorized representative of ENGINEER who may be assigned to the Site or any part thereof.

SUPPLEMENTARY CONDITIONS

The limits of liability insurance required by paragraph 5.3 through 5.3.7 of the General Conditions shall provide coverage in the following or greater amounts where required by law or regulations:

5.3.1 and 5.3.2 Worker's Compensation: Statutory.

5.3.3 (3) Employer's Liability:
\$100,000/\$500,000/\$100,000

Articles 5.3.3, 5.3.4, 5.3.5 and 5.3.6. Comprehensive General Liability:

(1) Bodily Injury or Death:
\$1,000,000 Each Occurrence
\$1,000,000 Annual Aggregate

Property Damage:
\$500,000 Each Occurrence
\$500,000 Annual Aggregate
and combined single limit of \$1,000,000

The coverages required by Articles 5.3.3 through 5.3.6 shall include:

(2) Premises – Operations, Explosion and Collapse Hazard; Underground Hazard; Products/Completed Operations Hazard; Contractual Insurance; Broad Form Property Damage; and Independent Contractors and Personal Injury, including employees.

The coverage required by Article 5.3.7 Comprehensive Automobile Liability, including OWNER, Hired and Non-Owned Vehicles, shall have limits as follows:

(3) Bodily Injury:
\$ 500,000 Each Person
\$1,000,000 Each Occurrence

Property Damage:
\$ 250,000 Each Occurrence
And combined single limit of \$1,000,000

5.3.9. CONTRACTOR shall obtain Excess Umbrella Liability Coverage with limits of \$5,000,000 Each Occurrence/ \$5,000,000 Annual Aggregate.

***Each entity named in the "Project Directory" shall be named as additional insured.**

SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY

5.2 GENERAL REQUIREMENTS

No verbal instructions or information to bidders will be binding. The specifications will be considered clear and complete unless written attention is called to any apparent discrepancies or incompleteness thereof before the opening of bids. Should any such written notices be received by SECCRA, these notices will be answered in the form of addenda and issued to all bidders. These addenda shall then be a part of these specifications. All questions regarding the bid should be directed to bids@seccra.org.

Submitted and signed bids will be deemed as conclusive evidence of complete examination of specifications. The making of a bid is an acceptance of the terms and conditions contained in the specifications and the attachments thereto.

Bid Forms are provided in these specifications. These forms must be used in submitting the bid. All pages of the form must be completely filled out and the whole signed by the bidder.

Each bid must be enclosed in a sealed envelope, clearly marked on the outside "SEALED BID: SR 41 PIPE 2021 " No Bid may be withdrawn for a period of 60 days after the Bid opening.

As these "Bid Notice", "Instructions to Bidders", "General Conditions", "Technical Specifications", "Check List", and "Bid Form" all refer to each other and together constitute a whole, they must all be returned bound together as when delivered to the Bidder. NO BIDS WILL BE ACCEPTED UNLESS SUBMITTED ON THESE FORMS FURNISHED HEREIN. All bids must be sealed, marked, and delivered in accordance with instructions of these specifications.

Any bidder or bidders finding any discrepancy in or omission from the specifications, or left in doubt as to their meaning, shall notify SECCRA for clarification. Such notification will not obligate SECCRA to change the specifications. SECCRA will notify all bidders, in writing, by addendum, duly issued, of any interpretations made of these specifications or instructions.

Bidders must comply with all the conditions, provisions, and specifications herein and which are hereby made part of the contract.

PAYMENT

Payment will be made within thirty (30) days of receipt of invoice in duplicate and inspection and acceptance by SECCRA.

OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as provided below. Progress payments will be based on the percent of supplied onsite components. A retainage of each payment will be held by OWNER, as described in the Agreement.

SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY

Within five (5) days after the Effective Date of the Agreement, the Contractor shall submit to the Owner: an estimated progress schedule indicating the starting and completion dates of the various stages of work; a preliminary schedule of such Shop Drawings submissions as may be required; and a preliminary schedule of values for all of the Work in sufficient detail to serve as the basis of progress payments during construction.

All progress payments shall be on the basis of the progress of the Work measured by the schedule of values. At least ten days before submission of the first Application for Payment, a conference to be attended by Contractor, Owner and such others as the Owner shall specify, will be held to finalize the preliminary schedule of values submitted by the Contractor. The finalized schedule of values shall be acceptable to Owner as to form and substance. Final payment will be made after inspection and approval of the completed project by OWNER and ENGINEER.

OPENING OF BIDS

At the time and place fixed for the opening of bids, the Authority will cause to be opened publicly and read aloud every bid received within the time set for receiving bids, irrespective of any irregularities therein. Bidders and other persons properly interested may be present in person or by representative.

EVALUATION OF BIDS

The Owner, at its sole discretion, will award the bid, to the lowest responsible Bidder.

SAFETY

Contractor is required to provide all O.S.H.A. safety related-devices for the safety of all contractor and non-contractor related personnel. These include signs, barricades, ventilation, etc., as necessary. Including but not limited to PaDOT requirements and regulations.

RESTROOM

A portable restroom is available beside the access road to the landfill. Contractor must provide additional portable restroom(s) at the job site if applicable.

PERSONNEL

A foreman or supervisor must be on site when contractor or subcontractor personnel are performing work.

WORKING HOURS

The Contractor may work Monday to Saturday from 7 a.m. to 5 p.m.
Other hours *may* be approved by the owner, with 24 hour notice.

TECHNICAL SPECIFICATIONS

SECCRA – SR 0041 PIPE REPLACEMENT

SPECIFICATION NO.: 108872.0004

2021

TABLE OF CONTENTS

DIVISION NO.

DIV 01 – GENERAL REQUIREMENTS

- 011000 – Summary of Work
- 012000 – Price and Payment Procedures
- 012500 – Substitution Procedures
- 013000 – Administrative Requirements
- 013300 – Submittal Procedures
- 014000 – Quantity Requirements
- 015000 – Temporary Facilities and Controls
- 016000 – Product Requirements
- 017000 – Execution and Closeout Requirements
- 012501 – Substitution of Major Equipment

DIV 02 – MISCELLANEOUS

- 025900 – Traffic Signs
- 026020 – Stormwater Inlets and Endwalls

DIV 03 – CONCRETE

- 033003 – Concrete for Utility Construction
- 036000 – Grouting
- 036030 – Non-shrink Grout
- 037320 – Concrete Repair

DIV 31 – EARTHWORK

- 312300 – Excavation & Fill
- 312316.13 – Trenching
- 312323.33 – Flowable Fill

DIV 32 – EXTERIOR IMPROVEMENTS

- 321200 – Flexible Paving
- 329200 – Turf and Grasses
- 321216 – Asphalt Paving
- 321723 – Pavement Markings

DIV 33 – UTILITIES

- 330507A – Trenchless Installation of Utility Piping via Boring & Jacking
- 330509 – Thrust Restraint for Utility Piping

PERMITS

PennDOT Highway Occupancy Permit No. 06105485, issued February 22, 2021, expires February 22, 2022.

ADDITIONAL FORMS

- Non-Collusion Affidavit
- Public Works Verification Form
- Bidders Sworn Qualification Statement

DRAWINGS

Reference Only Plans: Southeastern Chester County Refuse Authority (SECCRA) – Speakman Property – Project Site Plans - 6 Sheets, prepared by BAI Group, dated September 18, 2020.

Bidding Plans: Southeastern Chester County Refuse Authority (SECCRA) – PennDOT Stormwater HOP Submission Plans - 5 Sheets (EPS No. 230534), prepared by Spotts, Stevens and McCoy on December 23, 2020, last revised January 14, 2021.

SECTION 011000 - SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Statement of Work
- B. Description of Work
- C. Special Conditions

1.2 STATEMENT OF WORK

The Work included in this Contract consists of furnishing all plant, new materials, equipment, supplies, labor, transportation, fuel and power and performing all Work as required by the Contract, in strict accordance with the Specifications, Schedules and Drawings, and Pennsylvania Department of Transportation Publication 408 specifications, latest edition, all of which are made a part hereof; and including such detail Drawings as may be furnished by the ENGINEER from time to time during the construction in interpretation of said Drawings. PennDOT Publication 408 shall be adhered to regarding construction methods and materials. Contract administration and measurement and payment basis shall be as specified in these Contract Documents. The Work shall be complete and all Work, materials, and services not expressly called for in the Specifications, or specially indicated on the Drawings, which may be necessary for complete and proper construction to carry out the Contract in good faith, shall be performed, furnished and installed by the CONTRACTOR at no additional cost to the OWNER. The Work shall be executed in the best and most workmanlike manner by qualified, careful and experienced workers.

1.3 DESCRIPTION OF WORK

The Work shall include, but not necessarily be limited to, furnishing all materials, performing all labor and constructing the following, complete in place:

A. SR 0041 Pipe Replacement

1. Erosion and Sediment Pollution Control. Furnish, install, and maintain all temporary erosion and sedimentation control measures for the duration of the project. Temporary stockpiles shall contain silt fencing as necessary. Includes rock construction entrances. All erosion control measures shall be completely removed upon completion of work. Also includes final stabilization of all disturbed areas. (LS)
2. Clearing and Grubbing. Remove trees, shrubs, and vegetation as necessary for construction purposes. Roots shall be removed to at least 1 foot below grade and backfilled with structural soil material, compacted. Trim and remove tree and vegetative branches extending into the clearing area. All removed vegetation may be disposed of on site by the contractor. (Lump Sum)
3. Launch Pit and Exit Pit / Unclassified Excavation. Excavate launch pit, exit pit, and areas per the plan specifications. All excavation is unclassified. (CY 250)

4. Bore and Jack Pipe, 36-in Diameter / 0.625-in thick steel pipe. Furnish and install a 0.625-in thick 36-in diameter casing pipe through the method of bore and jacking. Includes furnishing all needed equipment materials, welding, and associated materials and work. Pipe shall be bituminous sealed on the inside and outside of the pipe to prevent corrosion with bituminous seal. (90 LF). Retain geotechnical professional to obtain core samples (a minimum of 1 bore per launch and exit pit), and assess site conditions to determine suitability for the horizontal boring process prior to initiation of the Work. Upon completion of pipe installation, includes backfilling and compacting the launch and exit pits. Includes compaction testing along pipe run, verified by a third party consultant via a nuclear density gauge method, which costs and expenses are included within this line item.
5. Flowable Fill – Existing Pipe. Furnish and install PennDOT approved flowable fill in the existing pipe culvert to be abandoned. (30 CY)
6. Pre-Cast Concrete D-W Endwalls. Furnish and install pre-cast concrete PennDOT approved D-W endwall. Includes installation of water tight connection to the 36-in diameter steel pipe. Includes any necessary excavation or grading for installation of the endwall. Includes installation of 12-in depth on compacted 2b stone leveling pad. (2 EA)
7. Rip-Rap Outlet Apron – R-5 Stone. Furnish and install rip-rap outlet apron in accordance with the plans. Includes necessary excavation, grading, and geotextile. (30 TON)
8. Borings / Geotechnical Investigation. Perform two geotechnical investigative borings on either side of SR 0041 and provide a written report to the Owner for review. Report shall be prepared by a Professional Soil Scientist and or Professional Geologist. The report shall identify any concerns associated with the proposed boring and jacking operation and make a recommendation in regard to the viability of the proposed work. (LS)
9. Traffic Control. Provide and maintain traffic control in accordance with the MUTCD, PennDOT Publication 212, and PennDOT Publication 213. Both lanes of SR 0041 should remain open at all times. Periodic complete road closure will not be permitted. Deliveries to the site shall not be along the state road or within the state road shoulder area, but rather on site through the access of the rock construction entrances. No road closures shall be permitted unless specifically approved by PennDOT and the OWNER. Traffic Control shall be in accordance with the approved PennDOT HOP Plans and PennDOT HOP Permit No. 06105485. The Contractor agrees to all permit conditions of PennDOT HOP Permit No. 06105485.

If at any time the required traffic control devices, personnel, etc. are missing and the regulations are not being followed, the work may be immediately suspended until the traffic control problem is rectified. (LS)

10. Contingency Allowance of fifteen-thousand dollars (\$15,000). See Section 012000.

1.4 SPECIAL CONDITIONS

- A. Measurement and payment will be made only for Work that has been acceptably performed within the limits indicated, or authorized by the ENGINEER.
- B. **All excavation is unclassified** and includes excavation and removal of all soil, shale, rock, boulders, fill, concrete, and all other materials encountered, of whatever nature.

- C. The bid quantities in these Contract Documents shall not be exceeded. It shall be the responsibility of the CONTRACTOR to maintain records of quantities used. If the CONTRACTOR determines that the bid quantities might be exceeded, the CONTRACTOR shall immediately notify the OWNER and ENGINEER. The CONTRACTOR shall not proceed with any additional Work unless and until being so authorized by the OWNER in writing. All quantities shall be subject to final checking and approval by the ENGINEER.
- If the CONTRACTOR chooses to continue the work or exceed anticipated quantities without OWNER approval, it shall be at his own expense and risk relative to payment for any material placed in excess of the plan quantity. The CONTRACTOR shall only be entitled to payment for additional quantities if, as part of the resolution, the OWNER approves, in writing, said additional quantity.
- D. Final grading adjacent to the edge of road, where needed, will be done by the CONTRACTOR.
- E. Staging for materials and overnight storage of vehicles and/or materials will not be permitted within the PennDOT roadway right-of-way. Staging and storage shall occur only on the OWNER's property.
- F. If the CONTRACTOR damages any existing landscaping features, any private property features, existing aprons, curbing, gutters, steps, walls, railings, mailboxes, and/or fences that were not previously damaged, the CONTRACTOR shall replace same to the satisfaction of the OWNER and the property owners at no additional cost to the OWNER or the property owners.
- G. CONTRACTOR shall provide a competent resident superintendent who will be present on the project site during all times of active work, and shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent shall be CONTRACTOR'S representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications to the superintendent shall be as binding as if given to CONTRACTOR. If at any time the resident superintendent is not on the project site, the Work may be immediately suspended until the resident superintendent is present on the project site.
- H. The CONTRACTOR shall notify PennDOT seven days prior to the start of work within the PennDOT right-of-way.
- I. The CONTRACTOR shall notify the OWNER seven days prior to the start of work.
- K. The CONTRACTOR is responsible for contacting the Emergency Response agencies. Emergency Response agencies shall be notified a minimum of 72 hours prior to construction.
- L. The CONTRACTOR shall work only between the hours of 7:00 a.m. to 4:00 p.m. Monday through Friday (excluding holidays) unless the OWNER permits other work hours. The CONTRACTOR must request different work hours in writing and receive approval prior to the use of different hours.
- M. The CONTRACTOR shall have a clear schedule available for review and approval at the Pre-Construction Conference. During construction, if there are any deviations from the approved schedule, the CONTRACTOR must notify the OWNER and affected property owners immediately.
- N. Contractor shall supply and maintain all required shoring and other trench/excavation safety equipment for implementation of the work.
- O. Contractor is responsible for the payment of any fine issued from a regulatory agency for violation of permit conditions for the work associated with this project.

PART 2 PRODUCTS

Not used.

PART 3

EXECUTION

Not used.

END OF SECTION

SECTION 012000 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Cash allowances.
- B. Contingency allowances.
- C. Testing and inspection allowances.
- D. Schedule of Values.
- E. Application for Payment.
- F. Change procedures.
- G. Defect assessment.
- H. Unit prices.
- I. Lump Sum
- J. Alternates.

1.2 CASH ALLOWANCES

- A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts; delivery to Site and applicable taxes unless stated otherwise in Allowance Schedule.
- B. Costs Not Included in Cash Allowances but Included in Contract Sum/Price: Product handling at Site including unloading, uncrating, and storage; protection of products from elements and from damage; and labor for installation and finishing unless stated otherwise in Allowance Schedule.
- C. Engineer Responsibilities:
 - 1. Consult with Contractor for consideration and selection of products.
 - 2. Select products in consultation with Owner and transmit decision to Contractor.
 - 3. Prepare Change Order.
- D. Contractor Responsibilities:
 - 1. Assist /Engineer in selection of products, suppliers.
 - 2. Obtain proposals from suppliers and installers and offer recommendations.

3. Upon notification of selection by Owner, execute purchase agreement with designated supplier and installer.
4. Arrange for and process Shop Drawings, Product Data, and Samples. Arrange for delivery.
5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

E. Differences in costs will be adjusted by Change Order.

F. Allowance Schedule:

1. See Bid Form.

1.3 CONTINGENCY ALLOWANCES

- A. Include in Contract a stipulated sum/price of \$15,000 for use upon Engineer/Owner's instruction as a contingency allowance.
- B. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead, and profit will be included in Change Orders authorizing expenditure of funds from this contingency allowance.
- C. Funds will be drawn from contingency allowance only by Change Order.
- D. At closeout of Contract, funds remaining in contingency allowance will be credited to Owner by Change Order.

1.4 TESTING AND INSPECTION ALLOWANCES

- A. There is no Testing and Inspecting Allowance.
- B. Required PennDOT material certifications are required, as applicable, prior to payment, in accordance with the PennDOT 408, latest edition.

1.5 SCHEDULE OF VALUES

- A. Submit printed schedule on Progress Estimate schedule on EJCDC C-620. Contractor's standard form or electronic media printout will be considered for this use.
- B. Submit Schedule of Values in duplicate within 10 days after date of Owner-Contractor Agreement.
- C. Format: Use Table of Contents of this Project Manual. Identify each line item with number and title of major Specification Section. Also identify site mobilization, bonds and insurance, and insurance separately.
- D. Include in each line item amount of Allowances as specified in this Section. For unit cost allowances, identify quantities taken from Contract Documents multiplied by unit cost to achieve total for each item.

- E. Include within each line item, direct proportional amount of Contractor's overhead and profit.
- F. Revise schedule to list approved Change Orders with each Application for Payment.

1.6 APPLICATION FOR PAYMENT

- A. Review quantities of completed work with Resident Project Representative prior to submission of application to Engineer.
- B. Submit three copies (3) of each Application for Payment on EJCDC C-620 - Contractor's Application for Payment, or if approved Contractor's electronic media driven form.
- C. Content and Format: Use Schedule of Values for listing items in Application for Payment.
- D. Payment Period: Monthly.
- E. Include wage rate certification form required by Owner.
- F. Substantiating Data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
 - 1. Current construction photographs specified in Section 013300 - Submittal Procedures.
 - 2. Partial release of liens from major Subcontractors and vendors.
 - 3. Record Documents as specified in Section 017000 - Execution and Closeout Requirements, for review by Owner, which will be returned to Contractor.
 - 4. Affidavits attesting to off-Site stored products.
 - 5. Construction Progress Schedule, revised and current as specified in Section 013300 - Submittal Procedure.

1.7 CHANGE PROCEDURES

- A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Engineer of any error, inconsistency, omission, or apparent discrepancy.
- C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for liaison with Engineer; establish procedures for handling queries and clarifications.
- D. Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions.
- E. Engineer may issue Notice of Change including a detailed description of proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change. Contractor will prepare and submit estimate within five (5) days.

- F. Contractor may propose changes by submitting a request for change to Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change and the effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on the Work by separate or other Contractors.
- G. Stipulated Sum/Price Change Order: Based on Notice of Change and Contractor's price quotation [or Contractor's request for Change Order as approved by Engineer.
- H. Unit Price Change Order: For Contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units which are not predetermined, execute Work under Work Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified in the Change Order.
- I. Work Directive Change: Engineer may issue directive, signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change. See Section 9.10.
- J. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of the Contract. Engineer will determine change allowable in Contract Sum/Price and Contract Time as provided in Contract Documents.
- K. Maintain detailed records of Work done on time and material basis. Provide full information required for evaluation of proposed changes and to substantiate costs for changes in the Work.
- L. Document each quotation for change in Project Cost or Time with sufficient data to allow evaluation of quotation. All quotes for proposed changes shall include a complete itemization of costs including, without limitation, labor, materials, equipment and Subcontracts. Where major items are subcontracts, subcontracts shall be itemized. In no case will Owner approve a change involving an amount greater than Seven Hundred Fifty Dollars (\$750) without such itemization.
- M. Change Order Forms: See Section 9.10.
- N. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
- O. Correlation of Contractor Submittals:
 - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Sum/Price.
 - 2. Promptly revise Progress Schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of Work affected by the change, and resubmit.
 - 3. Promptly enter changes in Record Documents.

1.8 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.

- B. If, in the opinion of Engineer, it is not practical to remove and replace the Work, Engineer will direct appropriate remedy or adjust payment.
- C. If decision is made to let the defective Work remain, unit sum/price will be adjusted to new sum/price at discretion of Engineer and Owner.
- D. Defective Work may be partially repaired according to instructions of Engineer, and unit sum/price will be adjusted to new sum/price at discretion of Engineer and Owner.
- E. Individual Specification Sections may modify these options or may identify specific formula or percentage sum/price reduction.
- F. Authority of Engineer to assess defects and identify payment adjustments is final.
- G. Nonpayment for Rejected Products: Payment will not be made for rejected products for any of the following reasons:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of the required Work.
 - 5. Products remaining on hand after completion of the Work.
 - 6. Loading, hauling, and disposing of rejected products.

1.9 UNIT PRICES

- A. Authority: Measurement methods are delineated in individual Specification Sections.
- B. Measurement methods delineated in individual Specification Sections complement criteria of this Section. In event of conflict, requirements of individual Specification Section govern.
- C. Engineer will take measurements and compute quantities. Provide access to work and assist in the taking of measurements.
- D. Unit Quantities: Quantities and measurements indicated on Bid Form are for Contract purposes only. Quantities and measurements supplied or placed in the Work shall determine payment.
 - 1. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at contracted unit sum/prices.
 - 2. When actual Work requires 25 percent or greater change in quantity than those quantities indicated, Owner or Contractor may claim a Contract Price adjustment.
- E. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application, or installation of item of the Work; overhead and profit.
- F. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.
- G. Measurement of Quantities:

1. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel, or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
2. Measurement by Volume: Measured by cubic dimension using mean length, width, and height or thickness.
3. Measurement by Area: Measured by square dimension using mean length and width or radius.
4. Linear Measurement: Measured by linear dimension, at item centerline or mean chord.
5. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

H. Unit Price Schedule:

1. See Bid Form.

1.10 LUMP SUM

- A. Items designated on the bid form as Lump Sum will generally be paid in full when the specified item is complete in all respects.
 1. Partial payments on Lump Sum items may be approved on monthly Applications for Payment.
 2. The amount of the partial payment, as a percentage of the total Lump Sum item amount shall be determined solely by the Engineer.
- B. The bid items designated as "Mobilization" will be paid in accordance with the following schedule:
 1. After the required temporary facilities have been provided, a payment for mobilization not to exceed 3% of the total contract price will be allowed.
 2. Additional payments for mobilization shall not exceed 2% of the total contract price on any application for payment until the total Lump Sum amount has been paid in full.

1.11 ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement. The Owner-Contractor Agreement may identify certain Alternates to remain an Owner option for a stipulated period of time.
- B. Coordinate related Work and modify surrounding Work. Description for each Alternate is recognized to be abbreviated but requires that each change shall be complete for scope of Work affected.
 1. Coordinate related requirements among Specification Sections as required.
 2. Include as part of each Alternate: Miscellaneous devices, appurtenances, and similar items incidental to or necessary for complete installation.
 3. Coordinate Alternate with adjacent Work and modify or adjust as necessary to ensure integration.
- C. Schedule of Alternates:
 - a. See Bid Form.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

+++ END OF SECTION 012000 +++

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance.
- B. Product options.
- C. Product substitution procedures.

1.2 QUALITY ASSURANCE

- A. Contracts are based on products and standards established in Contract Documents without consideration of proposed substitutions.
- B. Products specified define standard of quality, type, function, dimension, appearance, and performance required.
- C. Substitution Proposals: Permitted for specified products except where specified otherwise. Do not substitute products unless substitution has been accepted and approved in writing by Owner.

1.3 PRODUCT OPTIONS

- A. See Section 016000 - Product Requirements.

1.4 PRODUCT SUBSTITUTION PROCEDURES

- A. Engineer will consider requests for substitutions only within 15 days after date of Owner-Contractor Agreement.
- B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.
- C. Document each request with complete data, substantiating compliance of proposed substitution with Contract Documents, including:
 - 1. Manufacturer's name and address, product, trade name, model, or catalog number, performance and test data, and reference standards.
 - 2. Itemized point-by-point comparison of proposed substitution with specified product, listing variations in quality, performance, and other pertinent characteristics.
 - 3. Reference to Article and Paragraph numbers in Specification Section.

4. Cost data comparing proposed substitution with specified product and amount of net change to Contract Sum.
5. Changes required in other Work.
6. Availability of maintenance service and source of replacement parts as applicable.
7. Certified test data to show compliance with performance characteristics specified.
8. Samples when applicable or requested.
9. Other information as necessary to assist Architect/Engineer's evaluation.

D. A request constitutes a representation that Contractor:

1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
2. Will provide same warranty for substitution as for specified product.
3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Will coordinate installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
6. Will reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities having jurisdiction.

E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals without separate written request or when acceptance will require revision to Contract Documents.

F. Substitution Submittal Procedure:

1. Submit three (3) of Request for Substitution for consideration. Limit each request to one proposed substitution.
2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
3. Indicate advantage to Owner if substitution is allowed, including cost and/or time savings.
4. Engineer will notify Contractor in writing of decision to accept or reject request.
5. Refer to Supplementary Conditions Section 7.05 for additional requirements.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION Not Used

+++ END OF SECTION 012500 +++

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Coordination and Project conditions.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Pre-installation meetings.
- E. Alteration procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practical; place runs parallel with lines of building. Use spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
 - 1. Coordination Drawings: Prepare as required to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important.
- D. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.

- G. After Owner's occupancy of premises, coordinate access to Site for correction of defective Work and Work not complying with Contract Documents, to minimize disruption of Owner's activities.

1.3 PRECONSTRUCTION MEETING

- A. Engineer will schedule and preside over meeting after Notice of Award.
- B. Attendance Required: Engineer, Owner, and Contractor.
- C. Minimum Agenda:
 - 1. Distribution of Contract Documents.
 - 2. Submission of list of Subcontractors, list of products, schedule of values, and Progress Schedule.
 - 3. Designation of personnel representing parties in Contract, and Engineer.
 - 4. Communication procedures.
 - 5. Procedures and processing of requests for interpretations, field decisions, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
 - 6. Scheduling.
 - 7. Critical Work sequencing.
 - 8. Scheduling activities.
 - 9. Use of premises by Owner and Contractor
 - 10. Owner requirements and partial occupancy.
 - 11. Construction facilities and controls provided by Owner
 - 12. Temporary utilities provided by Owner
 - 13. Survey and building layout.
 - 14. Security and housekeeping procedures
 - 15. Application for payment procedures
 - 16. Procedures for testing
 - 17. Procedures for maintaining record documents
 - 18. Requirements for start-up of equipment.
 - 19. Inspection and acceptance of equipment put into service during construction period.
- D. Engineer will prepare minutes and distribute to participants within ten (10) days after meeting, with copies to Owner, and those affected by decisions made.

1.4 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.
- C. Attendance Required: Job superintendent, major Subcontractors, Contractors and suppliers, and Engineer, Owner, as appropriate to agenda topics for each meeting.

D. Minimum Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittal schedule and status of submittals.
6. Review of off-Site fabrication and delivery schedules.
7. Maintenance of Progress Schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on Progress Schedule and coordination.
13. Review of Record Drawings.
14. Other business relating to Work.

E. Engineer will prepare minutes and distribute copies to participants within ten (10) days after meeting to participants, Owner, and those affected by decisions made.

1.5 PREINSTALLATION MEETINGS

- A. When required in individual Specification Sections, convene pre-installation meetings at Site before starting Work of specific Section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific Section.
- C. Notify Engineer four (4) days in advance of meeting date.
- D. Prepare agenda and preside over meeting:
 1. Review conditions of installation, preparation, and installation procedures.
 2. Review coordination with related Work.
- E. Record minutes and distribute copies to participants within ten (10) days after meeting, with copies to Engineer, Owner and those affected by decisions made.

PART 2 - PRODUCTS Not Used

PART 3 - EXECUTION

3.1 ALTERATION PROCEDURES

- A. Designated areas of the site will be occupied for normal operations during progress of construction. Cooperate with Owner in scheduling operations to minimize conflict and to permit continuous usage.
 1. Perform Work not to interfere with operations of occupied areas.

2. Keep utility and service outages to a minimum and perform only after written approval of Owner.
 3. Clean Owner-occupied areas daily. Clean spillage, overspray, and heavy collection of dust in Owner-occupied areas immediately.
- B. Materials: As specified in product Sections; match existing products with new and salvaged products for patching and extending Work.
- C. Employ skilled and experienced installer to perform alteration and renovation Work.
- D. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion. Comply with Section 017000 - Execution and Closeout Requirements
- E. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- F. Remove debris and abandoned items from area and from concealed spaces.
- G. Prepare surface and remove surface finishes to permit installation of new Work and finishes.
- H. Close openings in exterior surfaces to protect existing Work from weather and extremes of temperature and humidity.
- I. Remove, cut, and patch Work to minimize damage and to permit restoring products and finishes to original condition.
- J. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified renewed condition for each material, with neat transition to adjacent finishes.
- K. Where new Work abuts or aligns with existing Work, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- L. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Engineer for review.
- M. Where change of plane of $\frac{1}{4}$ inch or more occurs, submit recommendation for providing smooth transition to Engineer for review.
- N. Trim existing doors to clear new floor finish. Refinish trim to original condition.
- O. Patch or replace portions of existing surfaces that are damaged, lifted, discolored, or showing other imperfections.
- P. Finish surfaces as specified in individual product Sections.

+++ END OF SECTION 013000 +++

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Definitions.
- B. Submittal procedures.
- C. Construction progress schedules.
- D. Proposed product list.
- E. Product data.
- F. Use of electronic CAD files of Project Drawings.
- G. Shop Drawings.
- H. Samples.
- I. Other submittals.
- J. Test reports.
- K. Certificates.
- L. Manufacturer's instructions.
- M. Manufacturer's field reports.
- N. Erection Drawings.
- O. Contractor review.
- P. Engineer review.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.
- 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.

1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Engineer accepted form.
- B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- C. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.
- D. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite Project, and deliver to Engineer at business address. Coordinate submission of related items.
- F. For each submittal for review, allow fifteen (15) days excluding delivery time to and from Contractor.
- G. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
- H. Allow space on submittals for Contractor and Engineer review stamps.
- I. When revised for resubmission, identify changes made since previous submission.
- J. The Engineer's approval of the Contractor's submittal is for general conformance with the design concept only. Although the Engineer may review submittals in more or less detail, such reviewing is an effort to discover errors and omission in the Contractor's submittals and to safeguard the Owner from unnecessary costs and delays resulting from errors or omissions in the Contractor's submittals. The Engineer's review shall in no way relieve the Contractor of his obligation and responsibility to coordinate the Work and plan the details of the Work or to relieve him of his responsibility in fulfilling the purpose and intent of the Contract. Review by the Engineer shall not be construed as placing on him or on the Owner any responsibility for the accuracy, proper fit, functioning or performance of any phase of the Work included in the Contract.
- K. For all re-submittals except for the first, Engineer and Engineer's consultants will record manhours required for review of the re-submittal. At the discretion of the Owner, Contractor may be charged for review of such repeat re-submittals at Engineer's (and Engineer's consultant's) current hourly rates. Charges for repeat re-submittals will be subtracted from Contractor's next progress payment.
- L. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- M. Submittals not requested will not be recognized nor processed.
- N. Incomplete Submittals: Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of /Engineer.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within fifteen (15) days after the Owner-Contractor Agreement.
- B. Review and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a CPM construction schedule with separate task for each major portion of Work or operation identifying first work day of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stage and other logically grouped activities. Indicate the early and late start, early and late finish, float dates and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submittal.
- G. Indicate submittal dates required for shop drawings, product data, samples and product delivery dates, including those furnished by Owner and required by Allowances.

1.5 PROPOSED PRODUCT LIST

- A. Within ten (10) days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.6 PRODUCT DATA

- A. Action Submittal: Submit to Engineer for review for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- B. Submit electronic submittals via email as PDF electronic files.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.7 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

- A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.
- B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
 - 1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Architect/Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
 - 2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
 - 3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
 - 4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
 - 5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
 - 6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

1.8 SHOP DRAWINGS

- A. Shop Drawings: Action Submittal: Submit to Engineer for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
 - 1. Include signed and sealed calculations to support design.
 - 2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D. Submit electronic submittal via email as PDF.

- E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.9 SAMPLES

- A. Samples: Action Submittal: Submit to Engineer for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- B. Samples for Selection as Specified in Product Sections:
 - 1. Submit to Engineer for aesthetic, color, and finish selection.
 - 2. Submit Samples of finishes, textures, and patterns for Engineer selection.
- C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
- D. Include identification on each Sample, with full Project information.
- E. Submit number of Samples specified in individual Specification Sections; Engineer will retain one Sample.
- F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.
- G. Samples will not be used for testing purposes unless specifically stated in Specification Section.
- H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.10 OTHER SUBMITTALS

- A. Closeout Submittals: Comply with Section 017000 - Execution and Closeout Requirements.
- B. Informational Submittal: Submit data for Architect/Engineer's knowledge as Contract administrator or for Owner.
- C. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.11 TEST REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.12 CERTIFICATES

- A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

1.13 MANUFACTURER'S INSTRUCTIONS

- A. Informational Submittal: Submit manufacturer's installation instructions for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing, to Engineer in quantities specified for Product Data.
- C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.14 MANUFACTURER'S FIELD REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit report within 30 days of observation to Engineer for information. Illegible or incomplete reports will be rejected.
- C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.
- D. Manufacturer's Field Reports shall include, as a minimum, the following information:
 - 1. Name of Field Service Representative.
 - 2. Date(s) of site visit.
 - 3. Duration of site visit (actual man-hours on the site).
 - 4. Name of equipment manufacturer.
 - 5. Complete list of equipment inspected and/or started up.
 - 6. Description of any problems, unfinished work, required changes, etc. remaining at the conclusion of the site visit.
 - 7. Statement that the installation is or is not acceptable to the equipment manufacturer.
 - 8. If installation is not acceptable, provide narrative, sketches, itemized list, etc. of what is required to make installation acceptable.
 - 9. Statement that equipment is or is not operating properly according to the equipment manufacturer.
 - 10. If equipment is not operating properly, provide narrative on what is required to make equipment operate properly.

1.15 ERECTION DRAWINGS

- A. Informational Submittal: Submit Drawings for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit Drawings for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by Engineer or Owner.

1.16 CONTRACTOR REVIEW

- A. Review for compliance with Contract Documents and approve submittals before transmitting to Engineer.
- B. Contractor: Responsible for:
 - 1. Determination and verification of materials including manufacturer's catalog numbers.
 - 2. Determination and verification of field measurements and field construction criteria.
 - 3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
 - 4. Determination of accuracy and completeness of dimensions and quantities.
 - 5. Confirmation and coordination of dimensions and field conditions at Site.
 - 6. Construction means, techniques, sequences, and procedures.
 - 7. Safety precautions.
 - 8. Coordination and performance of Work of all trades.
- C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
- D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Architect/Engineer.

1.17 ENGINEER REVIEW

- A. Do not make "mass submittals" to Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 20 or more submittals or items in one week. If "mass submittals" are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review "mass submittals" based on priority determined by Engineer after consultation with Owner and Contractor.
- B. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.
- C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.
- D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order.

- E. Owner may withhold monies due to Contractor to cover additional costs beyond the second submittal review.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

+++ END OF SECTION 013300 +++

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality control.
- B. Tolerances.
- C. References.
- D. Mockup requirements.
- E. Testing and inspection services.
- F. Manufacturers' field services.

1.2 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Comply with manufacturer's installation instructions, including each step in sequence.
- D. Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. Perform Work using persons qualified to produce required and specified quality.
- F. Products, materials, and equipment may be subject to inspection by Engineer at place of manufacture or fabrication. Such inspections shall not relieve Contractor of complying with requirements of Contract Documents.
- G. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.
- H. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion and disfigurement.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current as of date of Contract Documents except where specific date is established by code.
- C. Obtain copies of standards and maintain on Site when required by product Specification Sections.
- D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.5 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this Section and identified in individual product Specification Sections.
- B. Assemble and erect specified or indicated items with specified or indicated attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mockups shall be comparison standard for remaining Work.
- D. Where mockup has been accepted by Engineer and is specified in product Specification Sections to be removed, remove mockup and clear area when directed to do so by Engineer.

1.6 TESTING AND INSPECTION SERVICES

- A. Contractor will select an independent firm to perform compaction testing and inspection, in accordance with PennDOT Publication 408, latest edition. Compaction testing, report preparation, and associated documentation shall be provided to the Owner. This work is considered incidental and shall be paid for by the contractor.

- B. Any Independent firm that performs tests, inspections, and other services specified shall provide the Owner copies of any reports, documentation, findings, etc.
- C. Testing, inspections, and source quality control may occur on or off Project Site. Perform off-Site testing as required by Engineer or Owner.
- D. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm on instructions from Engineer. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
- E. Material Certifications: PennDOT approved shop drawings and PennDOT Approved Material Certifications for all materials utilized within the PennDOT right-of-way shall be provided, prior to the issuance of any payment.

1.7 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, testing, adjusting, and balancing of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of field service representative to Engineer thirty (30) days in advance of required observations. Field service representative subject to approval of Engineer.
- C. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
- D. Refer to Section 013300 - Submittal Procedures, "Manufacturer's Field Reports" Article.

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 SECTION INCLUDES

- A. References
- B. Responsibility for Temporary Facilities and Controls
- C. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting for construction purposes.
 - 3. Temporary heating.
 - 4. Temporary ventilation.
 - 5. Communication services.
 - 6. Temporary water service.
 - 7. Temporary sanitary facilities.
- D. Construction Facilities:
 - 1. Field offices and sheds.
 - 2. Vehicular access.
 - 3. Parking.
 - 4. Progress cleaning and waste removal.
 - 5. Project identification.
 - 6. Traffic regulation.
 - 7. Fire-prevention facilities.
- E. Temporary Controls:
 - 1. Barriers.
 - 2. Enclosures and fencing.
 - 3. Security.
 - 4. Water control.
 - 5. Dust control.
 - 6. Erosion and sediment control.
 - 7. Pollution control.
- F. Removal of utilities, facilities, and controls.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

2. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
3. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

1.3 RESPONSIBILITY FOR CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS:

- A. Unless noted otherwise in this section, the Contractor shall be responsible for providing and maintaining all construction facilities and temporary controls. Items to be provided:
 1. Temporary barriers, barricades, covered walkways, fencing, exterior closures, and interior closures.
 2. Temporary field office for Engineer/Owner's Representative.
 3. Cleaning during construction.
 4. Access roads and approaches.
 5. Temporary sanitary facilities.
 6. Temporary heating and ventilating before and after enclosure.
 7. Temporary lighting
 8. Temporary protection for designated trees and plants
- B. Contractor shall provide temporary electric for field offices and for general use on the site.
- C. Each Contractor: Provide temporary facilities and controls necessary for the execution of his Work, including:
 1. Temporary storage trailers and field offices.
 2. Temporary fire protection, construction aids, and other necessary temporary controls.
 3. Temporary barriers, barricades, and similar devices around his Work as necessary for safety and protection of construction personnel and public.
 4. Temporary provisions for protection of installed Work.
 5. Temporary water for Contractor's employees and operations.

1.4 TEMPORARY ELECTRICITY

- A. Contractor shall provide on-site power generation as needed for construction at no additional cost to the OWNER.

1.5 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations as needed.

1.6 TEMPORARY HEATING

- A. Not required.

1.7 TEMPORARY VENTILATION

- A. Not required.

1.8 COMMUNICATION SERVICES

- A. Not required.

1.9 TEMPORARY WATER SERVICE

- A. Contractor shall provide water for drilling and testing. Contractor may need to supply storage as needed for water use. Water within the sediment basin on site may be used if feasible at the contractor's expense; however, the owner is not responsible for providing any water service or supply.

1.10 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures.

1.11 FIELD OFFICES AND SHEDS

- A. Not required.

1.12 VEHICULAR ACCESS

- A. Construct temporary access roads from public thoroughfares to serve construction area, of width and load-bearing capacity to accommodate unimpeded traffic for construction purposes.
- B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
- C. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.
- D. Provide unimpeded access for emergency vehicles. Maintain 12 foot-wide driveways with turning space between and around combustible materials.
- E. Provide and maintain access to fire hydrants and control valves free of obstructions.
- F. Provide means of removing mud from vehicle wheels before entering streets.
- G. Use existing on-site roads for construction traffic.

1.13 PARKING

- A. Provide temporary gravel surface parking areas to accommodate construction personnel.

- B. Locate as approved by Engineer and Owner.
- C. If Site space is not adequate, provide additional off-Site parking.
- D. Use of existing on-Site streets and driveways used for construction traffic is permitted. Tracked vehicles are not allowed on paved areas.
- E. Use of existing parking facilities used by construction personnel is not permitted.
- F. Do not allow heavy vehicles or construction equipment in parking areas.
- G. Do not allow vehicle parking on existing pavement.
- H. Maintenance:
 - 1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, ice, and the like.
 - 2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original condition.
- I. Removal, Repair:
 - 1. Remove temporary materials and construction at Substantial Completion.
 - 2. Remove underground Work and compacted materials to depth of 2 feet; fill and grade Site as indicated.
 - 3. Repair facilities damaged by use, to original condition.
- J. Mud from Site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

1.14 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.
- C. Broom and vacuum clean interior areas before starting surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from Site periodically and dispose of off-Site.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.
- F. Burning of waste material of any kind on-site is prohibited.

1.15 PROJECT IDENTIFICATION

- A. Not required.

1.16 TRAFFIC REGULATION

- A. Signs, Signals, and Devices:

1. Post-Mounted and Wall-Mounted Traffic Control and Informational Signs: As approved by authorities having jurisdiction.
2. Traffic Cones, Drums, Flares, and Lights: As approved by authorities having jurisdiction.
3. Flag Person Equipment: As required by authorities having jurisdiction.

- B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.

- C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.

- D. Haul Routes:

1. Consult with authorities having jurisdiction and establish public thoroughfares to be used for haul routes and Site access.
2. Provide traffic control at critical areas of haul routes to regulate traffic and to minimize interference with public traffic.

- E. Traffic Signs:

1. Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
2. Relocate signs and signals as Work progresses, to maintain effective traffic control.

- F. Removal:

1. Remove equipment and devices when no longer required.
2. Repair damage caused by installation.
3. Remove post settings to depth of 2 feet.

1.17 FIRE-PREVENTION FACILITIES

- A. Prohibit smoking within buildings under construction. Designate area on Site where smoking is permitted. Provide approved ashtrays in designated smoking areas.

- B. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.

- C. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.

1. Provide one fire extinguisher at each stairway on each floor of buildings under construction and demolition.
2. Provide minimum of one fire extinguisher in every construction trailer and storage shed.
3. Provide minimum of one fire extinguisher on roof during roofing operations using heat-producing equipment.

1.18 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to allow for Owner's use of Site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing building.
- C. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.
 1. Protect areas within drip lines from traffic, parking, storage, dumping, chemically injurious materials and liquids, ponding, and continuous running water.
 2. Provide 6-foot-high barriers around drip line, with access for maintenance.
 3. Replace trees and plants in kind where damaged by construction operations.
- D. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.

1.19 ENCLOSURES AND FENCING

1. Not required.

1.20 SECURITY

- A. Security Program:
 1. Protect Work on existing premises and Owner's operations from theft, vandalism, and unauthorized entry.
 2. Initiate program in coordination with Owner's existing security system at Project mobilization.
 3. Maintain program throughout construction period until Owner's acceptance precludes need for Contractor's security.
- B. Entry Control:
 1. Restrict entrance of persons and vehicles to Project Site and existing facilities.
 2. Allow entrance only to authorized persons with proper identification.
 3. Maintain log of workers and visitors and make available to Owner on request.
 4. [Owner will control entrance of persons and vehicles related to Owner's operations.

1.21 WATER CONTROL

- A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.
- B. Protect Site from puddles or running water. Provide water barriers as required to protect Site from soil erosion.

1.22 DUST CONTROL

- A. Execute Work by methods that minimize raising dust from construction operations.
- B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into Owner-occupied areas.

1.23 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize surface area of bare soil exposed at one time.
- C. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.
- F. Comply with sediment and erosion control plan indicated on Drawings.

1.24 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.
- B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.25 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials before Substantial Completion inspection.
- B. Remove underground installations to minimum depth of 2 feet. Grade Site as indicated on Drawings.

- C. Clean and repair damage caused by installation or use of temporary Work.
- D. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

+++ END OF SECTION 015000 +++

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.
- E. Equipment electrical characteristics and components.

1.2 PRODUCTS

- A. Products means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying, and erection of the Work. Products may also include existing materials or components required for reuse.
- B. At minimum, comply with specified requirements and reference standards.
- C. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- D. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.
- E. Domestic Products: Except where specified otherwise, domestic products are required and interpreted to mean products mined, manufactured, fabricated, or produced in United States or its territories.
- F. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.
- G. Provide interchangeable components from same manufacturer for components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

- C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Deliver products to the site in an undamaged condition. Exercise care when off-loading equipment to prevent damage.
- B. Inspect products on delivery. Submit claims for transportation damage and replace damaged, defective, or deficient items.
- C. Store and protect products according to manufacturer's instructions.
- D. Store products with seals and labels intact and legible.
- E. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.
- F. For exterior storage of fabricated products, place products on sloped supports aboveground.
- G. Provide bonded off-Site storage and protection when Site does not permit on-Site storage or protection.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- J. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and complying with Specifications; no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit Request for Substitution for any manufacturer not named, according to Section 012500 - Substitution Procedures.

PART 2 - PRODUCTS

2.1 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Wiring Terminations: Furnish terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Include lugs for terminal box.
- B. Cord and Plug: Furnish minimum 6-foot long cord and plug including grounding connector for connection to electric wiring system. Cord of longer length may be specified in individual Specification Sections.

PART 3 - EXECUTION - Not Used

+++ END OF SECTION 016000 +++

SECTION 017000 – EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Field engineering.
- B. Closeout procedures.
- C. Starting of systems.
- D. Demonstration and instructions.
- E. Testing, adjusting, and balancing.
- F. Project record documents.
- G. Operation and maintenance data.
- H. Manual for materials and finishes.
- I. Manual for equipment and systems.
- J. Spare parts and maintenance products.
- K. Product warranties and product bonds.
- L. Maintenance service.
- M. Examination.
- N. Preparation.
- O. Execution.
- P. Cutting and patching.
- Q. Protecting installed construction.
- R. Final cleaning.

1.2 FIELD ENGINEERING

- A. Employ land surveyor registered in State of Pennsylvania and acceptable to Engineer.
- B. Contractor shall locate and protect survey control and reference points. Promptly notify Engineer of discrepancies discovered.
- C. Control datum for survey is shown on drawings.

- D. Prior to beginning Work, verify and establish floor elevations of existing facilities to ensure that new Work will meet existing elevations in smooth and level alignment except where specifically detailed or indicated otherwise.
- E. Verify setbacks and easements; confirm Drawing dimensions and elevations.
- F. Provide field engineering services. Establish elevations, lines, and levels using recognized engineering survey practices.
- G. Submit copy of Site drawing signed by land surveyor certifying elevations and locations of the Work are in conformance with Contract Documents.
- H. Maintain complete and accurate log of control and survey Work as Work progresses.
- I. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.
- J. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.
- K. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.

1.3 CLOSEOUT PROCEDURES

- A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
 - 1. Submit maintenance manuals, Project record documents and other similar final record data in compliance with this Section.
 - 2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
 - 3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
 - 4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
 - 5. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
 - 6. Make final change-over of locks eliminating construction master-key system and transmit keys directly to Owner. Advise Owner's personnel of change-over in security provisions.
 - 7. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
 - 8. Perform final cleaning according to this Section.
- B. Substantial Completion Inspection:
 - 1. When Contractor considers Work to be substantially complete, submit to Engineer:
 - a. Written certificate that Work, or designated portion, is substantially complete.

- b. List of items to be completed or corrected (initial punch list).
 2. Within seven (7) days after receipt of request for Substantial Completion, Engineer will make inspection to determine whether Work or designated portion is substantially complete.
 3. Should Engineer determine that Work is not substantially complete:
 - a. Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
 - b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer.
 - c. Engineer will re-inspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.
 4. When Engineer finds that Work is substantially complete, Engineer will:
 - a. Prepare Certificate of Substantial Completion on EJCDC C-625 - Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Engineer and Owner (final punch list).
 - b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
 5. After Work is substantially complete, Contractor shall:
 - a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
 - b. Complete Work listed for completion or correction within time period stipulated.
- C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
 1. When Contractor considers Work to be complete, submit written certification that:
 - a. Contract Documents have been reviewed.
 - b. Work has been examined for compliance with Contract Documents.
 - c. Work has been completed according to Contract Documents.
 - d. Work is completed and ready for final inspection.
 2. Submittals: Submit following:
 - a. Final punch list indicating all items have been completed or corrected.
 - b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 - c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
 - d. Accounting statement for final changes to Contract Sum.
 - e. Contractor's affidavit of payment of debts and claims on AIA G706 - Contractor's Affidavit of Payment of Debts and Claims.
 - f. Contractor affidavit of Release and Lien Waiver.
 - g. Consent of surety to final payment.
 3. Perform final cleaning for Contractor-soiled areas according to this Section.

D. Final Completion Inspection:

1. Within seven (7) days after receipt of request for final inspection, Engineer will make inspection to determine whether Work or designated portion is complete.
2. Should Engineer consider Work to be incomplete or defective:
 - a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
 - b. Contractor shall remedy stated deficiencies and send second written request to Engineer that Work is complete.
 - c. Engineer will re-inspect Work.
 - d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.

1.4 STARTING OF SYSTEMS

- A. Coordinate schedule for startup of various equipment and systems.
- B. Notify Engineer seven (7) days prior to startup of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify that wiring and support components for equipment are complete and tested.
- F. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.
- G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.
- H. Submit a written report according to Section 013300 - Submittal Procedures that equipment or system has been properly installed and is functioning correctly.
- I. Make all repairs/adjustments to equipment determined to be necessary based on observation of plant operation and/or directive of Engineer. All repairs/adjustments shall be in accordance with the applicable manufacturer's instructions. The Contractor's responsibility under this item shall continue until the plant has operated satisfactorily, without any significant interruption or failure for a minimum period of 30 consecutive days.

1.5 DEMONSTRATION AND INSTRUCTIONS

- A. Notify Engineer seven (7) calendar days prior to providing operation and maintenance instructions.
- B. The "Demonstration Period" shall be scheduled as a continuous block of time, up to two (2) weeks in length, during which representatives of Owner, the Engineer, and the Contractor, along with the manufacturer's field service representative (if manufacturer's field services are

required) will inspect and test each piece of equipment or mechanical system provided under the project. The purpose of the inspection shall be to determine compliance with the specifications. The purpose of testing shall be to demonstrate proper operation in accordance with the Field Testing requirements of the individual specification sections.

1. The Demonstration Period shall be scheduled concurrent with or following initial start-up of the equipment or mechanical system and concurrent with or preceding the instruction of Owner's personnel.
 2. The Demonstration Period shall be completed prior to the date of Substantial Completion.
- C. Demonstrate operation and maintenance of products to Owner's personnel including a representative of Engineer.
- D. Demonstrate Project equipment by a qualified manufacturer's representative who is knowledgeable about the Project.
- E. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- F. Video Recordings: Provide high-quality color video recordings of demonstration and instructional sessions. Engage commercial videographer to record sessions. Include classroom instructions, demonstrations, board diagrams, and other visual aids. Include menu navigation.
- G. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- H. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time at equipment location.
- I. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- J. Required instruction time for each item of equipment and system is specified in individual Specification Sections.

1.6 TESTING, ADJUSTING, AND BALANCING

- A. Not used.

1.7 PROJECT RECORD DOCUMENTS

- A. Maintain on Site one set of the following record documents; record actual revisions to the Work:
1. Drawings.
 2. Specifications.
 3. Addenda.
 4. Change Orders and other modifications to the Contract.
 5. Reviewed Shop Drawings, product data, and Samples.
 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.

- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates used.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
 - 1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
 - 2. Include locations of concealed elements of the Work.
 - 3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
 - 4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
 - 5. Identify and locate existing buried or concealed items encountered during Project.
 - 6. Measured depths of foundations in relation to finish first floor datum.
 - 7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 8. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 9. Field changes of dimension and detail.
 - 10. Details not on original Drawings.
 - 11. Owner may request verification of record information. If the record information is correct as recorded, the cost of such verification shall be the responsibility of the Owner. If the record information is incorrect or missing, the cost of such verification shall be the responsibility of the Contractor.
- G. Submit marked-up paper copy documents to Engineer with claim for final Application for Payment.
- H. Submit PDF electronic files of marked-up documents to Engineer with claim for final Application for Payment.

1.8 OPERATION AND MAINTENANCE DATA

- A. Submit in PDF composite electronic indexed file.
- B. Submit data bound in 8-1/2 x 11-inch text pages, three D side ring binders with durable plastic covers.
- C. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project, and subject matter of binder when multiple binders are required.
- D. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

- E. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- F. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
 - 2. Part 2: Summary of important product data, including project number, order number, order date, complete list of equipment furnished, including quantity, model number, serial number optional items
 - 3. Part 3: Operation and maintenance instructions, arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - g. Safety precautions to be taken when operating and maintaining or working near equipment.
 - 4. Part 4: Project documents and certificates, including the following:
 - a. Shop Drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Originals of warranties and bonds
- G. Submit one (1) draft copy of completed volumes at least two (2) weeks prior to start-up of equipment. This copy will be reviewed and returned after the Demonstration Period, with Engineer comments. Revise content of all document sets as required prior to final submission.
- H. Submit three (3) sets of revised final volumes within ten (10) days after final inspection.

1.9 MANUAL FOR MATERIALS AND FINISHES

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Engineer will review draft and return one copy with comments.
- B. For equipment or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy be reviewed and returned after final inspection, with Engineer comments. Revise content of document sets as required prior to final submission.
- D. Submit three (3) sets of revised final volumes within ten days after final inspection.

- E. Submit in PDF composite electronic indexed file of final manual within **ten** days after final inspection.
- F. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom-manufactured products.
- G. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- H. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
- I. Additional Requirements: As specified in individual product Specification Sections.
- J. Include listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

1.10 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- B. Submit one copy of completed volumes two (2) weeks prior to start-up of equipment and systems. Draft copy will be reviewed and returned after demonstration period with Engineer comments. Revise content of document sets as required prior to final submission.
- C. Submit three (3) sets of revised final volumes within ten (10) days after final inspection.
- D. Submit in PDF composite electronic indexed file of final manual within ten (10) days after final inspection.
- E. Each Item of Equipment and Each System: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- F. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications, typed.
- G. Include color-coded wiring diagrams as installed.
- H. Operating Procedures: Include startup, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.
- I. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- J. Include servicing and lubrication schedule and list of lubricants required.

- K. Include manufacturer's printed operation and maintenance instructions.
- L. Include sequence of operation by controls manufacturer.
- M. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- N. Include control diagrams by controls manufacturer as installed.
- O. Include Contractor's coordination drawings with color-coded piping diagrams as installed.
- P. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- Q. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- R. Include test and balancing reports as specified in Section 014000 - Quality Requirements.
- S. Additional Requirements: As specified in individual product Specification Sections.
- T. Include listing in table of contents for design data with tabbed dividers and space for insertion of data.

1.11 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.
- B. Provide in unopened, durable, protective packaging suitable for long-term storage with clear, complete labeling on the outside of the package, identifying contents.
- C. Deliver to Project Site, obtain receipt prior to final payment.

1.12 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers within ten (10) days after completion of applicable item of Work.
- B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.
- D. Verify documents are in proper form, contain full information, and are notarized.
- E. Co-execute submittals when required.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten (10) days after acceptance.
2. Make other submittals within ten (10) days after date of Substantial Completion, prior to final Application for Payment.
3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten (10) days after acceptance, listing date of acceptance as beginning of warranty or bond period.

1.13 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in Specification Sections for one (1) year from the date of Substantial Completion.
- B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.
- D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Owner.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available with correct characteristics and in correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.3 EXECUTION

- A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.
- B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.
- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
 - 1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
 - 2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
 - 3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Architect/Engineer for final decision.
- E. Allow for expansion of materials and building movement.
- F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
 - 1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
 - 2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.
- G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.
 - 1. Refer questionable mounting heights choices to Engineer for final decision.
 - 2. Elements Identified as Accessible to Handicapped: Comply with applicable codes and regulations.
- H. Adjust operating products and equipment to ensure smooth and unhindered operation.
- I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

3.4 CUTTING AND PATCHING

- A. Employ skilled and experienced installers to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight-exposed elements.

5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching including excavation and fill to complete Work and to:
 1. Fit the several parts together, to integrate with other Work.
 2. Uncover Work to install or correct ill-timed Work.
 3. Remove and replace defective and nonconforming Work.
 4. Remove samples of installed Work for testing.
 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
 - D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.
 - E. Cut masonry and concrete materials using masonry saw or core drill.
 - F. Restore Work with new products according to requirements of Contract Documents.
 - G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.
 - H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
 - I. At penetrations of fire-rated walls, partitions, ceiling, or floor construction, completely seal voids with fire-rated material to full thickness of penetrated element.
 - J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
 - K. Identify hazardous substances or conditions exposed during the Work to Engineer for decision or remedy.

3.5 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

3.6 FINAL CLEANING

- A. Execute final cleaning prior to final Project assessment.
 - 1. Employ experienced personnel or professional cleaning firm.
- B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains, and foreign substances; polish transparent and glossy surfaces; and vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean Site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from Site.

+++ END OF SECTION 017000 +++

SECTION 0125001 - SUBSTITUTION OF MAJOR EQUIPMENT ITEMS AND PRODUCTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This Section defines the lump sum total bid price contract format using "Basis of Bid" major equipment items, materials, and products for preparation of the Total Bid Price, and outlines the procedure for proposal of substitute items by "Alternate" manufacturers.
 - 1. For procedures applicable to substitution for named products in the specifications that are not used as basis of bid, refer to Section 0125000.
- B. The use of this bidding format is intended to:
 - 1. Provide a common basis for all Bidders on which to base their lump sum Total Bid Price.
 - 2. Protect the OWNER and Bidders so that no one Bidder gains an unfair bid price advantage by quoting a lower price for a major equipment item or product which is not "or equal".
 - 3. Assure that the OWNER receives full benefit of the savings in cost involved in any substitution of a major equipment item or product.
- C. Bidders shall provide all required information as noted in this Section.

1.2 BID PROPOSAL FORM FORMAT

- A. The Bid Proposal Form format is based on a Total Bid Price contract using "Basis of Bid" major equipment items and products which have been identified and described in the Contract Documents. Major equipment items and products identified in the Schedule of Equipment Used as Basis of Bid in the bid Proposal Form are considered "Basis of Bid" items.
- B. The Total Bid Price noted in the Bid Proposal Form shall include the prices of **only** "Basis of Bid" major equipment items or products.
- C. It is not the intent of the Contract Documents to contain proprietary, exclusionary, or discriminatory requirements other than those based on performance. Manufacturer's who believe that their equipment can meet the performance requirements and, with the exception of minor details, the technical requirements of the Contract Documents, are encouraged to submit a quotation to a Bidder for a substitute major equipment item or product. Model number designations for the major equipment items are included for information purposes. Proposed "Basis of Bid" major equipment items and "Alternate" major equipment items will be evaluated on the basis of the requirements contained in the Contract Documents.
- D. Bidders desiring to quote a price for a substitute major equipment item or product in lieu of a "Basis of Bid" item may, at their option, write in the name of a manufacturer to be identified in the Schedule of Proposed or Substitute Equipment in the Bid Proposal Form in the space provided. The manufacturer listed by the bidder in this Schedule shall be considered the proposed "Alternate" major equipment item or product. The bidder shall note the increase or decrease in the Bidder's total price to the OWNER for each proposed "Alternate" major equipment item or product in the Schedule of Proposed or Substitute Equipment in the Bid Proposal Form in the space provided.
- E. The Bidder shall **not** use the installed price for any proposed "Alternate" major equipment item or product in preparing the Total Bid Price.

1.3 QUALIFICATION PACKAGE

- A. All Bidders shall submit within five (5) working days of the bid opening a Qualification Package for each "Alternate" major equipment item or product which the Bidder proposed to furnish in lieu of a "Basis of Bid" major equipment item or product identified in the Schedule of Equipment Used as Basis of Bid. Each Qualification Package shall be bound with protective cover, identify the specification section number and title, and the product manufacturers' name on a cover sheet. The Bidder shall submit all Qualification Packages in a sealed sturdy box or suitable container with a photocopy of their Bid Proposal Form attached to or enclosed in the box or container.
- B. The Qualification Package for the "Alternate" major equipment items or products the Bidder proposes to furnish shall include, but not be limited to, the following information:
1. A complete set of drawings, specifications, catalogue cut sheets, and detailed descriptive material of proposed major equipment items or products. This information shall identify all technical and performance requirements stipulated on each drawing and in each specification section.
 2. Detailed information shall be submitted for all buy-out items such as hardware, motors, bearings, reducers, belts, sheaves, motor controllers, and instrumentation (field device, major control panel device, and anticipated control panel layout).
 3. List showing materials of construction of all components, including all buy-out items.
 4. Manufacturer's recommended spare parts, including all buy-out items.
 5. Information on equipment field erection requirements including total weight of assembled components and weight of each subassembly.
 6. A maintenance schedule showing the required maintenance, frequency of maintenance, lubricants, and other items required at each regular preventative maintenance period, including all buy-out items.
 7. Process equipment electrical requirements and schematic diagrams.
 8. Examples of reports and hard copies of CRT displays similar to those required by this project.
 9. Detailed written documentation with discussion of all deviations of equipment, including all buy-out items, from the Contract Documents.
- C. If the Bidder fails to furnish all of the preceding information which as been deemed necessary by the ENGINEER to evaluate a proposed "Alternate" major equipment item or product for equivalency with the "Basis of Bid" major equipment item or product, the proposed "Alternate" qualification package will be rejected by the ENGINEER. If the "Alternate" qualification package is rejected by the ENGINEER, the Bidder shall furnish the "Basis of Bid" major equipment item or product for the installed price noted in the Schedule of Equipment Used as Basis of Bid in the Bid Proposal Form.
- D. No proposed "Alternate" major equipment item or product will be considered unless, in the opinion of the ENGINEER it conforms to the Contract Documents in all respects, except for make and manufacturer, and minor details.
- E. The ENGINEER shall be the sole authority for determining conformance of a proposed "Alternate" major equipment item or product with the Contract Documents. Under no circumstances will the ENGINEER be required to provide documentation that an "Alternate" major equipment item or product is not equal to the "Basis of Bid" major equipment items or product.

1.4 CONTRACT AWARD

- A. Award of the Contract will be made on the basis of the Bid Form from the lowest responsive, responsible, qualified Bidder using the Total Bid Price. No adjustments to the Total Bid Price shall be considered in determining the "low bidder" to whom a contract is awarded.
- B. If a proposed "Alternate" qualification package is accepted as "or equal" by the ENGINEER the "Alternate" major equipment item or product listed in the Schedule of Proposed Alternate or Substitute Equipment in the Bid Proposal Form shall be furnished and the Total Bid Price shall be adjusted accordingly.
- C. In the event that a proposed "Alternate" major equipment item or product is not accepted as "or equal" by the ENGINEER, the "Basis of Bid" major equipment item or product as specified shall be furnished without adjustment to the Total Bid Price.

1.5 SHOP DRAWING SUBMITTALS

- A. Acceptance of a proposed "Alternate" major equipment item or product Qualification Package, or naming of "Basis of Bid" equipment, does not eliminate the need for shop drawing submittals and reviews during construction, nor does it eliminate the requirement that the equipment manufacturer satisfy the requirements of the Contract Documents.
- B. Shop drawings shall be furnished in accordance with Section 013300.
- C. Should the Bidder furnish a major equipment item or product requiring changes to the Contract Documents, he shall notify the ENGINEER in writing of all dimensional, mechanical, electrical, and structural changes and/or requirements for the major equipment item's use in this Project and shall reimburse the OWNER for any associated redesign and/or construction drawings. The Bidder shall consider all costs associated in furnishing and installing a major equipment item or product in his installed price proposal. Redesign and contract drawing revisions to accommodate equipment or products will be prepared by the ENGINEER during the shop drawing review process. Reimbursement shall be based on the ENGINEER's current hourly rates plus reimbursable expenses at cost.

END OF SECTION

SECTION 025900 - TRAFFIC SIGNS (PENNSYLVANIA)

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Installation of traffic signs

1.2 REFERENCES

- A. Pennsylvania Department of Transportation Publication 408, Specifications
 - 1. Section 930 - Post Mounted Signs, Type A
 - 2. Section 931 - Post Mounted Signs, Type B
 - 3. Section 932 - Post Mounted Signs, Type C
 - 4. Section 933 - Post Mounted Signs, Type D
 - 5. Section 934 - Post Mounted Signs, Type E
 - 6. Section 935 - Post Mounted Signs, Type F
 - 7. Section 936 - Structure Mounted Signs
 - 8. Section 1103 - Traffic Signing and Marking
- B. Pennsylvania Department of Transportation Publication 68: Regulations - Traffic Signs, Signals and Markings
- C. Pennsylvania Department of Transportation Publication 111: TC-7700 Traffic Signing Standards

1.3 SUBMITTALS

- A. Submit catalog cuts, listing PennDOT approval numbers, for all materials, as applicable, under provisions of Section 01300.

1.4 QUALITY CONTROL

- A. Field observation will be performed under provisions of Section 01400.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Signs and appurtenant materials and fabrication shall be as approved by PennDOT in accordance with Publication 408, Sections 930 through 936 and 1103, and Publication 111.

PART 3 EXECUTION

3.1 SIGN INSTALLATION

- A. Signs shall be constructed and installed as indicated, and in accordance with PennDOT Publication 408, Sections 930 through 936, and PennDOT Publication 111.

END OF SECTION

SECTION 026020 - STORM INLETS AND ENDWALLS

PART 1 GENERAL

1.1 DESCRIPTION

- A. The Work of this section includes, but is not limited to:
 - 1. Storm drainage inlets

1.2 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. Pennsylvania Department of Transportation:
 - Publication 408 Specifications
 - Publication 72 Standards for Roadway Construction

1.3 SUBMITTALS

- A. Section 01300 - Submittals: Procedure for submittals
- B. Certificates: Submit certification from material suppliers attesting that materials provided meet or exceed specification requirements, and that they meet PennDOT material certification and inspection requirements.
- C. Shop Drawings: Submit detailed shop drawings of inlet and basin units and end walls, including reinforcing steel details.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Precast Concrete Units:
 - 1. After fabrication and curing, transport the units to the job site. Protect until required for installation.
 - 2. Handle to avoid damage to surfaces, edges and corners and to avoid creation of stresses within the units.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Reinforcement bars: Publication 408, Section 709
- B. Brick: AASHTO-M91, Grade SS
- C. Masonry Mortar: ASTM C270, Type N
- D. Malleable Iron Castings: AASHTO, Division II, Section 11.3.6.1(3)
- E. Ductile Iron Castings: AASHTO, Division II, Section 11.3.6.1(2)

- F. Structural Grade Carbon Steel: ASTM A709, Grade 36
- G. Concrete: PennDOT Class A or better for cast-in-place items. PennDOT Class AA for precast items
- H. No. 2A Subbase Material: Publication 408, Section 350.2

2.2 FABRICATION

- A. Precast Cement Concrete Units:
 - 1. Comply with the requirements of Publication 408, Section 714, and Publication 72.

PART 3 EXECUTION

3.1 EXCAVATION

- A. Perform excavation in accordance with PennDOT Publication 408.
- B. Locate inlets as indicated on the Drawings.

3.2 CONSTRUCTION

- A. Construct inlets of precast sections of the type indicated on the Drawings.
 - 1. Place precast units on a 12" depth of No. 2A subbase placed in 4" layers compacted to the ENGINEER'S satisfaction.
 - 2. Shape bottom of inlet boxes with concrete to channel flow of water to the outlet pipe and to prevent water from standing in box.
 - 3. Use precast concrete rings or brick to adjust to grade. Mortar in place.
- B. Do not permit pipes to project more than 2" into inlets.

3.3 BACKFILLING

- A. Backfill structures only after examination by the ENGINEER.
- B. Perform backfilling and compaction in accordance with PennDOT Publication 408.

END OF SECTION

SECTION 033003 - CONCRETE FOR UTILITY CONSTRUCTION

PART 1 GENERAL

1.1 DESCRIPTION

A. The Work of this Section includes, but is not limited to:

1. Cast-in-place concrete construction
2. Reaction and support blocking
3. Cradles and encasements

1.2 QUALITY ASSURANCE

A. Reference Standards:

1. Pennsylvania Department of Transportation: Publication 408 Specifications
2. American Society for Testing and Materials (ASTM):
 - C31 Making and Curing Concrete Test Specimens in the Field
 - C39 Test for Compressive Strength of Cylindrical Concrete Specimens
 - C42 Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 - C172 Sampling Fresh Concrete

1.3 SUBMITTALS

A. Certificates:

1. Submit certification from the concrete producer attesting that the cement concrete conforms to Section 704, Publication 408 Specifications for the class of concrete being used.
2. Submit certified results of compressive strength tests performed by an independent testing laboratory.

B. Shop Drawings:

1. Submit detailed shop drawings of reinforcing steel.

PART 2 PRODUCTS

2.1 CONCRETE

A. Ready-mixed, conforming to Section 704, Publication 408 Specifications:

1. Requirements for State approved batch plants, design computations and plant inspection shall not apply. The acceptability of concrete will be based on conformance with the Concrete Criteria specified below and the results of the specified tests.

B. Concrete Criteria:

All concrete shall be PennDOT Class A.

2.2 REINFORCEMENT STEEL

A. Reinforcement Bars:

1. New billet-steel conforming to Section 709.1, Publication 408 Specifications.
2. Deformed, Grade 60.

B. Steel Wire Fabric:

1. Conforming to Section 709.3, Publication 408 Specifications.

PART 3 EXECUTION

3.1 CONSTRUCTION

- A. Comply with Section 1001, Publication 408 Specifications for construction requirements including formwork, curing, protection and finishing of concrete.
- B. Excavate and shape trench bottoms and sides to accommodate thrust block forms, encasement, manhole bases, inlets and vaults.
- C. Support pipe, valves and fittings at the required elevation with brick or concrete block. Do not use earth, rock, wood, or organic material as supports.
- D. Construct manhole bases, reaction and support blocking, cradles, encasements, and miscellaneous mass concrete.
- E. Construct cast-in-place vaults, inlets, endwalls, curbs, sidewalks and miscellaneous reinforced structures.
- F. Provide spacers, chairs, bolsters, ties and other devices for properly placing, spacing, supporting and fastening reinforcement in place.
- G. Place concrete utilizing all possible care to prevent displacement of pipe or fittings. Return displaced pipe or fittings to line and grade immediately.
- H. Ensure tie rods, nuts, bolts and flanges are free and clear of concrete.
- I. Do not backfill structures until concrete has achieved its initial set, forms are removed, and concrete work is inspected by the ENGINEER.

J. Perform backfilling and compaction as specified.

3.2 FIELD TESTS OF CONCRETE DURING CONSTRUCTION

The OWNER reserves the right to perform the following tests. All testing laboratory costs will be paid by the OWNER except as noted in Item B. The CONTRACTOR will provide the necessary labor and materials to make cylinders.

- A. Test each 50 cubic yards or fraction thereof of each class of concrete for compressive strength. Retain an independent testing laboratory to test cylinders.
 - 1. Sample concrete in accordance with ASTM C172.
 - 2. Prepare and cure two test cylinders in accordance with ASTM C31.
 - 3. Test cylinders in accordance with ASTM C39.
- B. If test cylinders fail to meet strength requirements, the ENGINEER may require additional core tests in accordance with ASTM C42 at the expense of the CONTRACTOR.

+++ END OF SECTION +++

SECTION 036000 - GROUTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Portland cement grout.
2. Nonshrink cementitious grout.
3. Grouting of dowels, base plates, equipment, machinery, and elsewhere as noted on the drawings.

B. Related Requirements:

1. Section 031000 - Concrete Forming and Accessories: Form materials, waterstops, and accessories as required to form cast-in-place concrete and maintain structural integrity until stripping.
2. Section 033000 - Cast-in-Place Concrete: Cast-in-place or in-situ concrete for structural building frames, slabs on fill or grade, and other concrete components.

1.2 REFERENCE STANDARDS

A. American Concrete Institute:

1. ACI 301 - Specifications for Structural Concrete for Buildings.
2. ACI 318 - Building Code Requirements for Structural Concrete.

B. ASTM International:

1. ASTM C33/C33M - Standard Specification for Concrete Aggregates.
2. ASTM C40/C40M - Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.
3. ASTM C150/C150M - Standard Specification for Portland Cement.
4. ASTM C191 - Standard Test Methods for Time of Setting of Hydraulic Cement by Vicat Needle.
5. ASTM C307 - Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing.
6. ASTM C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
7. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
8. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.

C. U. S. Army Corps of Engineers Concrete Research Division (CRD):

1. CRD C621 - Non-Shrink Grout.

1.3 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer information regarding grout.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer Instructions: Submit instructions for mixing, handling, surface preparation, and placing nonshrink grouts.
- E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- F. Qualifications Statement:
 - 1. Submit qualifications for manufacturer.

1.4 QUALITY ASSURANCE

- A. Perform Work according to applicable building code.
- B. Maintain 1 copy of each standard affecting Work of this Section on Site.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging with proper labels intact and inspect for damage.
- C. Store grout in a dry shelter, protect from moisture according to manufacturer instructions.
- D. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

1.7 AMBIENT CONDITIONS

- A. Section 015000 - Temporary Facilities and Controls: Requirements for ambient condition control facilities for product storage and installation.

- B. Consult manufacturer requirements for minimum and maximum air temperature requirements before, during, and after grouting, until grout has set.

PART 2 - PRODUCTS

2.1 PORTLAND CEMENT GROUT

- A. Portland Cement: Comply with ASTM C150, Type I and II.
- B. Water:
 - 1. Potable.
 - 2. No impurities, suspended particles, algae, or dissolved natural salts in quantities capable of causing:
 - a. Corrosion of steel.
 - b. Volume change increasing shrinkage cracking.
 - c. Efflorescence.
 - d. Excess air entraining.
- C. Fine Aggregate:
 - 1. Washed natural sand.
 - 2. Gradation:
 - a. Comply with ASTM C33/C33M.
 - b. Represented by smooth granulometric curve within required limits.
 - 3. Free from injurious amounts of organic impurities according to ASTM C40/C40M.
- D. Mix:
 - 1. Portland cement, sand, and water.
 - 2. Do not use ferrous aggregate or staining ingredients in grout mixes.

2.2 NONSHRINK CEMENTITIOUS GROUT

- A. Manufacturers:
 - 1. Sika Corporation.
 - 2. L & M Construction Chemicals, Inc.
 - 3. Substitutions: Section 01600 - Product Requirements.
- B. Description:
 - 1. Pre-mixed and ready-for-use formulation requiring only addition of water. No water reducing and plasticizing agents.
 - 2. Nonshrink, non-corrosive, nonmetallic, non-gas forming, and no chlorides.
- C. Performance and Design Criteria:

1. Certified to maintain initial placement volume or expand after set, and to meet following minimum properties when tested according to CRD-C621 for Type D nonshrink grout and the following:

Property	Test	Time	Result
Setting Time	ASTM C191	Initial	2 hours (Approx)
		Final	3 hours (Approx)
Expansion			0.10% - 0.4% Maximum
Compressive Strength	CRD-C621	1 day	4,000 psi
		7 days	7,000 psi
		28 days	10,000 psi to 10,800 psi

2.3 FORMWORK AND CURING

- A. As specified in Section 031000 - Concrete Forming and Accessories.
- B. Prevent rapid loss of water from grout during first 48 hours by use of approved membrane curing compound or with use of wet burlap method.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify areas to receive grout.

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Remove defective concrete, laitance, dirt, oil, grease, and other foreign material from concrete surfaces by brushing, hammering, chipping, or other similar means until sound and clean concrete surface is achieved.
- C. Roughen concrete lightly, but not to interfere with placement of grout.
- D. Remove foreign materials from metal surfaces in contact with grout.
- E. Align, level, and maintain final positioning of components to be grouted.
- F. Saturate concrete surfaces with clean water, and then remove excess water.

3.3 INSTALLATION

A. Formwork:

1. Construct leakproof forms anchored and shored to withstand grout pressures.
2. Install formwork with clearances to permit proper placement of grout.
3. As specified in Section 031000 - Concrete Forming and Accessories.

B. Mixing:

1. Portland Cement Grout:

- a. Use proportions of two parts sand and one part cement, measured by volume.
- b. Prepare grout with water to obtain consistency to permit placing and packing.
- c. Mix water and grout in two steps:
 - 1) Premix using approximately 2/3 of water.
 - 2) After partial mixing, add remaining water to bring mix to desired placement consistency and continue mixing two to three minutes.
- d. Mix only quantities of grout capable of being placed within 30 minutes after mixing.
- e. Do not add additional water after grout has been mixed.
- f. Minimum Compressive Strength: 4,000 psi in 28 days.

2. Nonshrink Cementitious Grout:

- a. Mix and prepare according to manufacturer instructions.
 - b. Capable of developing minimum compressive strength in Section 2.2.
3. Mix grout components in proximity to Work area and transport mixture quickly and in manner not permitting segregation of materials.

C. Placing of Grout:

1. Place grout material quickly and continuously.
2. Do not use pneumatic-pressure or dry-packing methods.
3. Apply grout from one side only to avoid entrapping air.
4. Do not vibrate placed grout mixture or permit placement if area is being vibrated by nearby equipment.
5. Thoroughly compact final installation and eliminate air pockets.
6. Do not remove leveling shims for at least 48 hours after grout has been placed.

D. Curing:

1. Prevent rapid loss of water from grout during first 48 hours by use of approved membrane curing compound or by using wet burlap method.
2. Immediately after placement, protect grout from premature drying, excessively hot or cold temperatures, and mechanical injury.
3. After grout has attained its initial set, keep damp for minimum three days.

3.4 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.
- B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Inspection and Testing:
 - 1. Comply with ACI 301, ACI 318 and as specified in Section 014000 - Quality Requirements
 - 2. Submit proposed mix design to Engineer of Record for review prior to commencement of Work.
 - 3. Tests of grout components may be performed to ensure compliance with specified requirements.

END OF SECTION

SECTION 036030 - NON-SHRINK GROUT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Non-shrink cementitious grout.
 - 2. Grouting of dowels, base plates, equipment, machinery, and elsewhere as noted on the drawings.

1.2 REFERENCES

- A. American Society of Testing and Materials:
 - 1. ASTM C191 - Test Method for Time of Setting of Hydraulic Cement by Vicat Needle.
 - 2. ASTM C307 - Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing.
 - 3. ASTM C531 - Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes.
 - 4. ASTM C579 - Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts, monolithic Surfacing and Polymer Concretes.
 - 5. ASTM C827 - Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures.
- B. U. S. Army Corps of Engineers Concrete Research Division (CRD):
 - 1. CRD C621 - Non-Shrink Grout.

1.3 SUBMITTALS

- A. Section 01330 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit product data on grout.
- C. Manufacturer's Installation Instructions: Submit manufacturer's instructions for mixing, handling, surface preparation and placing non-shrink type grouts.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Section 01600 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Deliver grout in manufacturer's unopened containers with proper labels intact.
- C. Store grout in a dry shelter, protect from moisture.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Section 01600 - Product Requirements: Environmental conditions affecting products on site.
- B. Observe manufacturer's requirements for minimum and maximum air temperatures.

PART 2 PRODUCTS

2.1 NON-SHRINK CEMENTITIOUS GROUT

- A. Manufacturers:
1. Sika Corporation.
 2. L & M Construction Chemicals, Inc.
 3. Substitutions: Section 01600 - Product Requirements.
- B. Non-shrink Cementitious Grout: Pre-mixed ready for use formulation requiring only addition of water; non-shrink, non-corrosive, non-metallic, non-gas forming, no chlorides.
- C. Properties: Certified to maintain initial placement volume or expand after set and meet the following minimum properties when tested in accordance with CRD-C621, for Type D non-shrink grout:

Property	Test	Time	Result
Setting Time	ASTM C191	Initial	2 hours (Approx)
		Final	3 hours (Approx)
Expansion			0.10% - 0.4% Maximum
Compressive Strength	CRD-C621	1 day	4,000 psi
		7 days	7,000 psi
		28 days	10,000 psi to 10,800 psi

2.2 CURING

- A. Prevent rapid loss of water from grout during first 48 hours by use of approved membrane curing compound or with use of wet burlap method.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01300 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify areas to receive grout.

3.2 PREPARATION

- A. Remove defective concrete, laitance, dirt, oil, grease and other foreign material from concrete surfaces by brushing, hammering, chipping or other similar means until sound, clean concrete surface is achieved.
- B. Rough concrete lightly, but not enough to interfere with placement of grout.
- C. Remove foreign materials from metal surfaces in contact with grout.
- D. Align, level and maintain final positioning of components to be grouted.
- E. Saturate concrete surfaces with clean water; remove excess water, leave none standing.

3.3 INSTALLATION - FORMWORK

- A. Construct leakproof forms anchored and shored to withstand grout pressures.
- B. Install formwork with clearances to permit proper placement of grout.

3.4 MIXING

- A. Mix and prepare non-shrink cementitious grout in accordance with manufacturer's instructions.
 - 1. Capable of developing minimum compressive strength of 2400 psi in 48 hours and 7000 psi in 28 days.
- B. Mix grout components in proximity to work area and transport mixture quickly and in manner not permitting segregation of materials.

3.5 PLACING GROUT

- A. Place grout material quickly and continuously.
- B. Do not use pneumatic-pressure or dry-packing methods.
- C. Apply grout from one side only to avoid entrapping air.
- D. Do not vibrate placed grout mixture, or permit placement when area is being vibrated by nearby equipment.
- E. Thoroughly compact final installation and eliminate air pockets.
- F. Do not remove leveling shims for at least 48 hours after grout has been placed.

3.6 CURING

- A. Immediately after placement, protect grout from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. After grout has attained its initial set, keep damp for minimum of 3 days.

END OF SECTION

SECTION 037320 - CONCRETE REPAIR

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Repair Types
- B. Preparation
- C. Repair Work
- D. Injection-Epoxy Resin Adhesive
- E. Field Quality Control

1.2 WORK INCLUDED

- A. Preparation of concrete and application of repair materials
- B. Rehabilitation of concrete surfaces
- C. Repair of concrete internal reinforcement

1.3 SUBMITTALS

- A. Submit product data under provisions of Section 01300.
- B. Submit product data indicating product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.
- C. Submit manufacturer's installation instructions under provisions of Section 01300.
- D. Submit manufacturer's certificate under provisions of Section 01400 that specified products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

- A. Materials Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three years experience.
- B. Applicator: Company specializing in concrete repair with minimum 5 years documented experience, and approved by materials manufacturer where applicable.
- C. Design reinforcement splices under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the place where the Project is located.
- D. Welding: ANSI/AWS D1.4.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of Section 01600.
- B. Store and protect products under provisions of Section 01600.

- C. Comply with instructions for storage, shelf life limitations, and handling.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Epoxy Adhesive Injection Materials
 - 1. Sika Corporation; Product: Sikadur Crack Weld
 - 2. Substitutions: Under provisions of Section 01600
- B. Cementitious Mortar
 - 1. Sika Corporation; Product: SikaTop 123 Plus
 - 2. Sika Corporation; Product: Sikacrete 211
 - 3. Substitutions: Under provision of Section 01600
- C. Bonding Agent and Reinforcement Protection
 - 1. Sika Corporation; Product: Sika Arimatec 110 EpoCem
 - 2. Substitutions: Under provisions of Section 01600

2.2 MATERIALS

- A. Epoxy Resin: Two-part epoxy adhesive containing 100 percent solids, meeting the following minimum characteristics:
 - 1. Bond Strength: 2700 psi in accordance with ASTM C882.
 - 2. Tensile Strength: 6,600 psi in accordance with ASTM D638.
 - 3. Elongation: Two percent at 7 days at 70 degrees F. in accordance with ASTM D638.
 - 4. Flexural Strength: 8,000 psi in accordance with ASTM D790.
 - 5. Compressive Strength: 6,500 psi in accordance with ASTM D695.
- B. Bonding Agent: Polyvinyl acetate emulsion, dispersant in water while mixing, non-coagulant in mix, water resistant when applied and cured.
- C. Portland Cement: ASTM C150, gray color.
- D. Sand: ASTM C33; uniformly graded, clean.
- E. Water: Clean and potable.
- F. Concrete: 4,000 psi @ 28 days with water cement ratio of 0.44.

2.3 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615, 60 ksi yield grade billet steel deformed bars, unfinished.

2.4 MIXING EPOXY MORTARS

- A. Mix epoxy mortars in accordance with manufacturer's instructions for purpose intended.
- B. Mix components in clean equipment or containers. Conform to pot life and workability limits.

2.5 MIXING CEMENTITIOUS MATERIALS

- A. Mix cementitious mortar in accordance with manufacturer's instructions for purpose intended.

PART 3 EXECUTION

3.1 REPAIR TYPES

- A. Concrete repairs shall be classified into the following categories:
 - 1. Type 1 – Repair to delaminated concrete on bottom of concrete beam below horizontal crack.
 - 2. Type 2 - Areas where concrete has spalled from surface or is delaminated.
 - 3. Type 3 – Wing wall with severe surface deterioration and spalling.
 - 4. Type 4 – Low pressure epoxy injection of cracks.

3.2 PREPARATION

- A. The extent of the repair areas are delineated on the Drawings. The areas outlined shall be saw cut to a minimum depth of 1/2 inch.
- B. Use mechanical means to remove deteriorated, loose and unsound concrete within the saw-cut outline. If removal extends beyond the top of the reinforcing, the concrete shall be removed to provide one inch clearance around the reinforcing.
- C. If after removal of concrete from a designated area additional adjacent areas are found, new saw cuts shall be made and the procedure repeated.
- D. Sandblast or waterblast to remove partially loosened chips of concrete and clean existing reinforcing where exposed.
- E. ENGINEER shall examine all exposed reinforcing and direct replacement as necessary. All exposed reinforcement shall be thoroughly prepared by mechanical cleaning to remove all traces of rust. Coat reinforcing steel with “Sika Armatec 110 Epocem in accordance with manufacturer’s recommendations.
- F. Use oil free compressed air to clean all removal areas.
- G. Clean concrete surfaces of dirt, laitance, corrosion, or other contamination; wire brush using water. Rinse surface and allow to dry.
- H. Flush out cracks and voids with water to remove laitance and dirt.

- I. Provide temporary entry ports spaced to accomplish movement of fluids between ports, no deeper than the depth of the crack to be filled. Limit port size diameter to be no greater than the thickness of the crack. Provide temporary seal at concrete surface to prevent leakage of adhesive.

3.3 REPAIR WORK

- A. Repair exposed structural, shrinkage, and settlement cracks of concrete by the epoxy injection method.
- B. Repair spalling. Fill voids flush with surface. Apply surface finish.
- C. Repair reinforcement by splicing new bar reinforcement to existing reinforcement with sleeve splices or lap splices. Strength of splices and reinforcement to exceed original stress values.

3.4 INJECTION - EPOXY RESIN ADHESIVE

- A. Inject adhesive into prepared ports under pressure using equipment appropriate for particular application.
- B. Begin injection at lower entry port and continue until adhesive appears in adjacent entry port. Continue from port to port until entire crack is filled.
- C. Remove temporary seal and excessive adhesive.
- D. Clean surfaces adjacent to repair and blend finish.

3.6 APPLICATION - CEMENTITIOUS MORTAR

- A. Apply spray or brush coating of bonding agent to concrete surfaces in accordance with manufacturer's instructions. Provide full surface coverage.
- B. Apply cementitious mortar grout by steel trowel to an average thickness per manufacturer's recommendation. Tamp into place filling voids at spalled areas. Work mix into honeycomb.
- C. Damp cure cementitious mortar grout for four days.

3.7 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01400.
- B. Test concrete for calcium chloride content during the execution of the Work.

END OF SECTION

SECTION 312300 – EXCAVATION AND FILL

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Excavation, backfill and compaction for structure foundations.
- B. Excavation, backfill and compaction for surfacing.
- C. Backfill for demolition excavations.
- D. Embankments and fills.

1.02 DEFINITIONS

- A. Clean Fill: Uncontaminated, non-water-soluble, non-decomposable, inert solid material. The term includes soil, rock, stone, dredged material, used asphalt, and brick, block, or concrete from construction and demolition activities that is separate from other waste and recognizable as such.
- B. Regulated Fill: Soil, rock, stone, dredged material, used asphalt, historic fill, and brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such that has been affected by a spill or release of a regulated substance.
- C. Historic Fill: Material used to bring an area to grade prior to 1988 that is a conglomeration of soil and residuals, such as ashes from the residential burning of wood and coal, incinerator ash, coal ash, slag, dredged material and construction and demolition waste.
- D. Unclassified Excavation: Removal of all materials of any kind or nature encountered in completion of the Work, including rock, to the elevations required and subsequent disposal of materials removed.
- E. Subgrade: Areas upon which the planned bottoms of foundations, footers, slabs, paving base courses or sidewalks shall rest; or where subbase is to be utilized, the surface upon which the subbase shall rest; or if structural fill is to be utilized, the surface upon which the structural fill shall rest.
- F. Subbase: Compacted aggregate material utilized under slabs, sidewalks, manholes, paving sections, or as indicated on plan.
- G. Structural Fill: Specified fill material to be utilized beneath structure foundations, where required to replace unsuitable soil or rock encountered.
- H. Structure Backfill: Select, open-graded free-draining material used to backfill against structure

walls, including tank walls, foundation walls, and retaining walls.

- I. Suitable Backfill: Non-select backfill material used where special fill is not specified.

1.03 REFERENCES

- A. Pennsylvania Department of Transportation (PennDOT) Specifications Publication 408, latest edition, as amended.
- B. Department of Environmental Protection, Bureau of Waste Management, "Clean Fill" Policy (Effective August 7, 2010).

1.04 SUBMITTALS

- A. Submit qualifications of proposed independent testing agency to Engineer for approval.
- B. Provide testing required by Specifications.
 - 1. Reports of independent testing laboratory shall be considered as sufficient evidence of noncompliance with specifications.
 - 2. Engineer reserves right to accept PennDOT certification from supplier of aggregate materials that the supplier is an approved PennDOT source and material conforms to PennDOT Specifications in lieu of actual material testing.
- C. Submit certification from independent testing agency for all soil and aggregate materials, certifying materials to meet specified standards.

1.05 JOB CONDITIONS

- A. Existing Utilities and Services
 - 1. Known underground services and utilities are indicated on the Contract Drawings. No guarantee is given to completeness or accuracy. Contractor shall be responsible for verifying the location and/or depth of all utilities and services indicated within the areas of work.
 - 2. Maintain existing utilities which must remain in service in the area of the excavation.
 - 3. Record locations of underground utilities encountered. Location should include horizontal and vertical distance from grade and existing structures.
- B. Unclassified Excavation: No consideration will be given to the nature of materials encountered in excavating operations for structures. Therefore, as unclassified excavation, no additional payment will be made for difficulties occurring in excavating and handling of materials.
- C. Borrow Excavation: If the required quantity of backfill exceeds the quantity of suitable

material excavated within the limits of the project site, obtain sufficient material to complete the backfill at no additional cost to Owner. Any tests required by Engineer to assist in determining suitability of the borrow materials shall be responsibility of Contractor and completed at no increase in Contract Price.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Subbase Material (Bedding for structures, slabs-on-grade, sidewalks, and paving): Coarse aggregate consisting of naturally or artificially graded mixture of natural or crushed gravel, crushed stone, or crushed slag meeting the requirements of PennDOT Publication 408 for No. 2A material.
- B. Structural Fill: Select fill material meeting the requirements of PennDOT Publication 408 for No. 2A material.
- C. Structure Backfill: Open-graded, free-draining coarse aggregate meeting the requirements of PennDOT Publication 408 for AASHTO No. 57.
- D. Suitable Backfill: Suitable material conforming to the requirements of PennDOT Publication 408 Section 206.2(a) reasonably free of organic matter such as leaves, grass, roots, sod, sewage, coal or coal blossom, or other unsuitable material. Frozen material shall not be utilized.
- E. Clean Fill: Fill material consisting of soil, rock, stone, dredged material, used asphalt, and brick, block or concrete from construction and demolition activities. The evaluation of fill materials shall be in accordance with DEP’s “Clean Fill” regulations and procedures for determining whether material is clean or regulated.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Install sediment and erosion control facilities in accordance with the requirements of Drawing No. ES-1.
- B. Perform excavation support and protection in accordance with the requirements of Section 31 40 00.
- C. Perform dewatering, as required, in accordance with the requirements of Section 31 23 19.

3.02 REQUIREMENTS AND RESTRICTIONS

- A. Keep excavations free from water. Build dams and all other devices necessary. If required, lower water table below excavation bottom by deep wells. Dispose of water removed from excavations in a manner that will not cause injury to the public health, to public or private property, to the work of other contractors, to any portion of the Work completed or in progress, or to produce impediment to the use of highways, roads, lanes and streets by the public. No additional payment will be made for pumping or other difficulties encountered due to water.
- B. Maintain sewers, drains and ditches free of debris to convey surface drainage. No damming or ponding of water in gutters or other waterways will be permitted. Do not direct flow of water across pavements except through approved pipes or properly constructed troughs. Provide pipes or troughs of such sizes and lengths as may be required. Control grading in the vicinity of excavations so the ground surface is properly pitched to prevent water from running into excavated areas.
- C. Control groundwater and surface water during construction in order to maintain soil stability. Maintain the water table elevation sufficiently below the levels of excavations that slopes will remain stable and bottoms of excavations will not become loosened by flow of water. If the foundation material loses its strength due to improper dewatering techniques, over excavate the material and replace it with Structural Fill at no additional cost to Owner.
- D. Do not perform excavating, backfilling or compacting when weather conditions or the condition of materials are such that the Work cannot be completed in accordance with the Specifications.
- E. Do not use as backfill frozen materials or wet materials containing moisture in excess of the amount necessary for satisfactory compaction.
- F. Prior to use, moisten dry backfill material not having sufficient moisture to obtain satisfactory placement or compaction.
- G. Prevent spread of dust during performance of work by thoroughly moistening excavation areas by sprinkling or other methods approved by Engineer.
- H. If the required quantity of backfill exceeds the quantity of suitable material excavated within the limits of the project site, easements, or rights-of-way, obtain sufficient material to complete the backfill at no additional cost to Owner. Any tests required by Engineer to assist in determining suitability of the borrow materials shall be responsibility of Contractor and completed at no increase in Contract Price.
- I. No right of ownership of excavated materials is granted to Contractor prior to backfilling. This provision does not relieve Contractor of his responsibility to remove and dispose of surplus excavated material.
- J. Assume sole responsibility for the condition and results of excavations. Slides and cave-ins

shall be removed without additional compensation at whatever time and under whatever circumstances they may occur.

- K. Protect all pipes, conduits, walls, buildings and other structures or property whether above or below ground, or that may appear in the excavation. Maintain sufficient quantity of material and equipment on the site and for use as necessary for sheeting, sustaining and supporting any pipes, conduits, walls, building, structure or property.

3.03 EXCAVATION

A. General Procedures:

1. Perform excavation using machinery, except where hand excavation may be required to protect existing structures, existing sanitary sewer or force main piping, electrical conduits, utilities or private or public properties. No additional compensation will be paid for hand excavation instead of machine excavation as may be necessary from any cause whatsoever.
2. Perform excavation of every description and of whatever substances encountered to the elevations indicated by the Contract Drawings and as specified herein.
3. Where work space is limited, remove excavated material from the limited area and replace the material after the work has been completed. No additional compensation will be made for such removal and replacement of the excavated material.
4. Extend excavation a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction and for inspection.

- B. Remove rock that has been shattered due to rock removal operations and in the opinion of Engineer is unfit for foundations to an elevation below subgrade. Fill to subgrade with Structural Fill those areas where shattered rock has been removed. Perform such backfilling to the satisfaction of Engineer. No separate or additional payment will be made for such removal and backfill.

C. Excavation Below Planned Subgrade:

1. Do not excavate below depths indicated on the Contract Drawings or such depths as required for the proper installation of the Work, unless otherwise directed by Engineer.
2. Excavation below depths indicated on the Contract Drawings or as required for the proper installation of the Work through the fault of the Contractor, shall be restored to the indicated or required depths with Structural Fill at the expense of Contractor.
3. If the foundation for any structure is required by Engineer to be carried lower than the planned subgrade elevation shown on the Contract Drawings, the voids caused by this excavation shall be backfilled with Structural Fill up to subgrade elevation. Payment for the additional work will be made in accordance with the applicable General Conditions.

D. Storage of Approved Materials:

1. Store on site all unused approved materials.
2. Do not mix unused approved materials of differing types.
3. Do not mix unused approved materials with unapproved materials.

3.04 SUBGRADE PREPARATION

A. General Procedures:

1. Where subgrade consists of an excavated soil surface, thoroughly machine-tamp or proof-roll the existing material. Compact the exposed soils until no movement is observed or as directed by the Engineer. Remove and replace soft, loose, and disturbed zones disclosed by the tamping or proof-rolling. Overexcavate to the depth directed by Engineer and replace with Structural Fill; compact as indicated in these specifications.
2. Where subgrade consists of an excavated rock surface, thoroughly inspect the bedrock bearing surfaces, and clean any exposed soil-filled seams with water jets or compressed air to a minimum depth of two (2) times the seam width. Fill the open joints with concrete during placement of the structure foundation.
3. Do not place fill materials on surfaces that are muddy, frozen, or contain frost.
4. Trim bottoms to indicated lines and grades to leave solid base to receive other work.
5. Place geotextile material on the subgrade prior to placing fill materials.

3.05 STRUCTURAL FILL

A. Placement and Compaction:

1. Spread material uniformly without segregation of coarse and fine material.
2. Place material in 8-inch maximum loose lifts if full-size compaction equipment will be used, and 6-inch maximum loose lifts if hand compaction equipment will be used.
3. Maintain the moisture content of the material within 2% plus or minus of the optimum moisture content as determined by the Standard Compaction Test, ASTM D698.
4. Compact the material to at least 100% of the maximum dry density as determined by ASTM D6938.

3.06 SUBBASE- GENERAL

A. General:

1. Do not place subbase material on soft, muddy or frozen subgrades. Satisfactorily correct irregularities or soft zones in the prepared area.

B. Placement and Compaction:

1. Place subbase material in maximum 6" lifts. When using PennDOT No. 2A material, compact to 100% of the maximum dry-weight density.

3.07 BACKFILLING

A. General Procedures:

1. Perform backfilling using machinery, except where hand backfilling is required to prevent damage to walls, foundations, utilities, electrical conduits, sanitary sewer or force main piping. No additional compensation will be paid where backfilling by hand is required.
2. Clean excavation free of trash and debris prior to backfilling.
3. Do not place backfill material prior to seven days after completion of structure walls, and then only if the concrete has achieved 80% of the specified 28-day compressive strength.
4. Do not place backfill material on wet or frozen areas.
5. Do not operate heavy equipment closer to walls than a distance equal to the height of backfill material above the top of the structure footing.
6. Do not place backfill material against exterior walls until supporting floors, other reinforcing or supporting members, or slabs at top of walls are in place.
7. Do not place backfill material against water-containing concrete structures or manholes until water testing has been satisfactorily completed.
8. Perform compaction using power driven tampers or compactors suitable for material being placed.

B. Suitable Backfill:

1. Use suitable backfill where structure backfill is not required or specified. Use of structure backfill in lieu of suitable backfill is allowed.
2. Place backfill in loose, uniform horizontal layers not exceeding eight inches in depth.
3. Maintain moisture content of backfill at compaction within 2% plus or minus of optimum moisture as determined by ASTM D698.
4. Compact backfill to at least 95% of the maximum dry density based on ASTM D698.

C. Structure Backfill:

1. Place structure backfill behind structure walls. Place structure backfill in 12-inch lifts and thoroughly compact each lift with a vibratory compactor to the satisfaction of Engineer.

3.08 EMBANKMENTS AND FILLS

A. General:

1. Construct in accordance with these Specifications to line and grades on Contract Drawings.
2. All material excavated within the limits of site, which conforms to the specified herein requirements for fill may be used for construction of embankment. Any additional materials required shall be provided by Contractor from approved offsite source(s) at no additional cost to Owner. Any test required by Engineer to assist in determining suitability of offsite materials shall be responsibility of Contractor and completed at no increase in Contract Price.

B. Preparation:

1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow strip, or breakup sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface. Scarify all lesser sloped surfaces to a depth of 8 inches.
2. When existing ground surface has a density less than that specified for particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.
3. Surface to receive embankment shall be inspected and approved by Engineer before any fill material is placed. Do not place fill material on surfaces that are muddy, frozen or contain frost or ice.

C. Placement and Compaction:

1. Embankment material (other than rock) shall be spread in horizontal layers of not more than 8 inches (loose) and compacted with pneumatic tire tamping, or other approved type rollers weighing ten tons or more. Material placement in area subject to compaction by hand-operated tampers shall not be greater than 4 inches. Compact material to a minimum density of 95% of its maximum dry-weight density as measured by the Standard Compaction Test, ASTM D 698. Adjust the moisture content of the material prior to compaction to within two (2) percentage points of the optimum moisture content as determined by ASTM D 698. When material is too coarse (more than 20% retained on the ¾" sieve) for these methods, satisfactory compaction will be based on non-movement of the material.
2. Rock embankment shall be placed in uniform loose layers of 24 inches or less and shall be thoroughly compacted. Rock which cannot be readily incorporated in a 24 inch layer shall be wasted or reduced in size until it can be so incorporated. The top 12 inches of all embankments shall be formed of granular materials or soil and in no case shall material larger than 3 inches be placed in the top 6 inches of embankments.
3. Shape the top layer of embankment to drain during construction.
4. Contractor shall be responsible for the stability of all embankments and shall replace all sections, which, in the opinion of Engineer, have been damaged or displaced due to carelessness or negligence on the part of Contractor.

D. Fill Under Floor Slabs On Grade:

1. Where fill is required to raise the subgrade for concrete floor slabs to the elevations indicated on the Contract Drawings, such fills shall be made with proper materials, equipment, and workmanship, and under control and supervision of an approved testing laboratory. Where such fills exceed 12 inches in depth, the fill shall be constructed before proceeding with foundation work. Contractor is responsible for cost of all laboratory testing.
2. Construction:
 - a. Areas to be filled shall be cleared of all loose material. The surface shall then be loosened to a depth of at least 4 inches and satisfactorily compacted. Fill material shall be free from frost and shall not be placed on frozen ground. It shall be deposited in layers of such thickness as required by the nature of the soil or as directed, but the uncompacted thickness of each layer shall not exceed 8 inches. Each layer shall be separately compacted to a uniform solid mass by machine rolling or other approved means. Fill shall be placed in horizontal layers, beginning with the lowest areas and building up until the entire area to be filled is at a uniform elevation. Contractor shall control the moisture content of the fill material, to insure maximum density by either the addition of water, or by harrowing and working the soil prior to compacting. Maintain moisture content with 2% plus or minus of the optimum moisture content as determined by ASTM D 698. Each layer shall be free of ruts and shall meet compaction requirements before a succeeding layer is placed. Compaction of each layer shall continue until no weaving or creeping takes place.
 - b. Field tests of moisture content prior to compaction and density after compaction shall be made to insure thorough and uniform compaction.
3. Required Results: All fills under concrete floor slabs shall be compacted to not less than 98% of the maximum dry-weight density at optimum moisture as specified above. Whenever in-place density, according to the test noted above, is found to be below acceptable limits, additional compaction will be required to produce the specified density, as shown by additional tests.

3.09 FIELD QUALITY CONTROL

A. Testing

1. Engineer shall inspect and approve subgrades and fill layers before further construction work is performed. Contractor shall have field density tests performed in accordance with ASTM D 6938.
2. All testing to be completed by independent testing agency and paid for by the Contractor.

3. **Structure Foundations:** For each strata of soil on which a structure foundation will be placed, conduct at least three tests to verify required design bearing capacities. Subsequent verification and approval of bearing material may be based on a visual comparison of each subsurface bearing material with related tested strata, when acceptable to Engineer.
 4. **Building Slab Subgrade:** Make at least one field density test of subgrade for every 500 sq. ft. of building slab, but in no case less than 3 tests. In each compacted fill layer, make one field density test for every 500 sq. ft. of overlaying building slab or paved area, but in no case less than 3 tests.
 5. **Suitable Backfill at Embankment:** Take at least 2 field density tests, at locations and elevations as directed.
- B. **Corrective Measures:**
1. Whenever tests indicate that the field moisture or density does not meet specified requirements, take corrective action as approved by Engineer.
 2. Corrective measures may include loosening the soil and wetting or drying it prior to recompaction, additional compaction, or removing and replacing the material.
 3. Retest material that did not meet the moisture and density requirements after corrective measures have been performed.
- C. **Retesting:** Engineer may at any time require retesting of any material, whether in stockpiles or being placed, if it appears that the material differs from that which has previously been approved for use.

END OF SECTION

SECTION 312316.13 - TRENCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating trenches for utilities.
2. Compacted fill from top of utility bedding to subgrade elevations.
3. Backfilling and compaction.

B. Related Sections:

1. Section 331413 – Public Water Utility Distribution Piping.
2. Section 331416 – Site Water Utility Distribution Piping
3. Section 333100 - Sanitary Utility Sewerage Piping:
4. Section 334100 - Storm Utility Drainage Piping:

1.2 CLASSIFICATION OF EXCAVATION

- ##### A.
- All excavation Work performed under this Contract is UNCLASSIFIED, and includes excavation and removal of all soil, shale, rock, boulders, fill and all other materials encountered of whatever nature.

1.3 MEASUREMENT AND PAYMENT

- ##### A.
- Unless noted otherwise on the Drawings or Extra Work is ordered by the Engineer, payment for all trenching, bedding, direct cover, backfill and compaction is included in the unit price per linear foot of pipe shown on the proposal for installation of particular pipeline size and type, or payment is included in the unit price shown on the proposal for the fitting, valve or appurtenances identified thereon.

1.4 EXTRA WORK – UNIT PRICE MEASUREMENT AND PAYMENT

- ##### A.
- Where unsuitable or unstable subgrade conditions are encountered, Engineer may order Extra Excavation and Extra Backfill. Payment by Unit Prices on Bid Form per following categories:

B. Trenching below subgrade:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes excavating to required elevations, protecting excavation, and removing excess excavated materials from site. Over Excavating: Payment is not made for over excavated work nor for replacement materials.

C. Subsoil Fill:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes furnishing fill material, stockpiling, scarifying substrate surface, placing where required, and compacting.

D. Structural Fill:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes furnishing fill material, stockpiling, shaping substrate surface, placing where required, and compacting.

E. Granular Fill:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes furnishing fill material, stockpiling, scarifying substrate surface, placing where required, and compacting.

F. Concrete Fill:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes furnishing materials, forming, mixing and placing where required, and curing.

1.5 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³).
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

C. Pennsylvania Department of Transportation (PennDOT)

1. PennDOT Specifications, Publication 408.
2. PennDOT Publication 213, Temporary Traffic Control Guidelines
3. PennDOT Publication 72, Standards for Roadway Construction.
4. Regulations Governing Occupancy of Highways by Utilities (67 PA Code, Chapter 459)
5. Pennsylvania Test Method, PTM 106 (Soil Moisture Density).

6. Pennsylvania Test Method, PTM 112 (Soil-Cement Moisture Density).
7. Pennsylvania Test Method, PTM 402 (Nuclear Density)

1.6 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, cable and related appurtenances.
- B. Suitable Retained Fill Material: Material excavated from trench if free of stones larger than eight (8) inches in size, and free of wet, frozen or organic materials. Includes foreign (off-site) material meeting the same requirements.
- C. Select Fill Material: Material consisting of durable bank or crushed gravel, stone, or slag mixed or blended with suitable filler to provide uniform mixture. Requires approved source as listed in PennDOT Bulletin 14.

1.7 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.
- C. Product Data: Submit data for geotextile fabric indicating fabric and construction.
- D. Samples: Submit, in air-tight containers, 10 lb sample of each type of fill to testing laboratory.
- E. Materials Source: Submit name of imported fill materials suppliers.
- F. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.
- G. Submit list of all equipment planned to be used for compacting. Include equipment manufacturer's lift thickness limitations.

1.8 QUALITY ASSURANCE

- A. Perform Work in accordance with State, Municipal, and Highways standards governing location of Work.
- B. Conduct testing of backfill at locations as authorized by Engineer.
- C. Testing will be performed by an Independent Testing Laboratory as indicated in Section 0014000

1.9 QUALIFICATIONS

- A. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in State where Work is being performed.

1.10 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

1.11 COORDINATION

- A. Section 013000 - Administrative Requirements: Coordination and project conditions.
- B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

- A. Subsoil Fill: Suitable Retained Material
- B. Structural Fill: None.
- C. Granular Fill: Coarse aggregate stone, Table C, Section 703.2 PennDOT Publication 408 Specifications. Slag or cinders prohibited.
- D. Concrete: Lean concrete

2.2 ACCESSORIES

- A. Filter Fabric Fencing, Compost Filter Sock, Erosion Control Blankets.
- B. Separation Fabric – PennDOT Class 4.

PART 3 - EXECUTION

3.1 CUTTING PAVEMENT, CURB, APRONS, SIDEWALKS

- A. Make cuts in neat uniform fashion forming straight lines parallel to centerline of trench. Cut offsets at right angles to the centerline of trench.
- B. Protect edges of cut pavement during excavation to prevent raveling or breaking. Square edges prior to pavement replacement.

3.2 LINES AND GRADES

- A. Lay pipes to lines and grades indicated on Drawings.

1. Engineer reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.
- B. Use laser-beam instrument with qualified operator to establish lines and grades.

3.3 PREPARATION

- A. Call Pennsylvania One Cal System at 1-800-242-1776 not less than three (3) working days before performing Work.
1. Request underground utilities to be located and marked within and surrounding construction areas. Request cooperative steps of the utility and suggestions for procedures to avoid damage to existing utilities.
 2. Take all precautions and use all facilities required to protect existing utilities and structures.
 3. Advise each person in physical control of powered equipment or explosives use in excavation or demolition work of the type and location of utility lines at the job site, the utility assistance to expect, and the procedures to follow to prevent damage.
 4. Immediately report to the utility and to the Engineer any break, leak or other damage to the lines or protective coatings made or discovered during the Work and immediately alert the occupants of premises of any emergency created or discovered.
 5. Allow free access to utility personnel at all times for purposes of maintenance, repair and inspection.
- B. Control of Traffic
1. Employ traffic control measures in accordance with Pennsylvania Department of Transportation Publication 213, "Temporary Traffic Control Guidelines". Comply with requirements of PennDOT Publication 213.
 2. Establish temporary traffic control and detours when trenching is performed in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.
 3. Coordinate the Work to ensure the least inconvenience to traffic and maintain traffic in one or more unobstructed lanes unless closing the roadway is authorized.
 4. Maintain access for local residents to all streets and private drives.
 5. Provide and maintain signs, flashing warning lights, barricades, markers, and other protective devices as required to conform with construction operations and to keep traffic flowing with minimum restrictions.
- C. Identify required lines, levels, contours, and datum locations.
- D. Protect plant life, lawns, rock outcropping and other features remaining as portion of final landscaping.

- E. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Maintain and protect above and below grade utilities indicated to remain.

3.4 CONTROLLED BLASTING

- A. Controlled blasting is prohibited. Controlled blasting is prohibited in areas where the proximity of structures, underground facilities or public safety preclude the use of explosives.

3.5 TRENCHING

- A. Excavate subsoil to depth required for utilities.
- B. Remove lumped subsoil, boulders, and rock up of 1/6 cubic yard measured by volume.
- C. Do not advance open trench more than 100 feet ahead of installed pipe.
- D. Cut trenches to width necessary for placement and jointing of pipe, and for placing and compacting pipe bedding and trench backfill around pipe, but not less than sixteen (16) inches plus the outside diameter of pipe. Remove water or materials that interfere with Work.
- E. Excavate bottom of trenches maximum two (2) feet wider than outside diameter of pipe.
- F. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.
- G. Do not interfere with 45 degree bearing splay of foundations.
- H. When Project conditions permit, slope side walls of excavation starting two (2) feet above top of pipe. When side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this section.
- I. When subsurface materials at bottom of trench are loose or soft, notify Engineer, and request instructions.
- J. Cut out soft areas of subgrade not capable of compaction in place. Backfill and compact to density equal to or greater than requirements for subsequent backfill material.
- K. Trim excavation. Remove loose matter.
- L. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Engineer.
- M. Where Contractor, by error or intent, excavates beyond the minimum required depth, backfill the trench to the required pipeline grade with specified pipe bedding material, at no additional cost to the Owner.
- N. Remove excess subsoil not intended for reuse, from site.

3.6 DEWATERING

- A. Maintain excavations dry and free from groundwater and surface runoff. Utilize approved devices on pump discharge hoses to control sediment. Discharge trench water away from work area.
- B. Maintain pipe trenches dry until pipe has been jointed, inspected and backfilled, and any concrete work has been completed. Prevent trench water from entering pipelines under construction.
- C. Intercept and divert surface drainage away from excavations. Design surface drainage systems so that they do not cause erosion on- or off-site, or cause unwanted flow of water.
- D. Comply with Federal and State requirements for dewatering to any watercourse, prevention of stream degradation, and erosion and sediment control.

3.7 CONTROL OF EXCAVATED MATERIAL

- A. Stockpile excavated material minimum two (2) feet away from side of trench.
- B. Provide temporary barricades to prevent excavated material from encroaching on private property, sidewalks, gutters, and storm drains.
- C. At all times, maintain accessibility to all fire hydrants, valve pit covers, valve boxes, curb boxes, fire and police call boxes, and any other utility controls. Keep gutters clear or provide other satisfactory facilities for street drainage. Do not obstruct natural water courses. Where unavoidable, provide temporary channels to allow the flow of water either along or across the site of the Work
- D. In areas where pipelines parallel or cross streams, ensure that no material slides, is washed or dumped into the stream course. Remove cofferdams immediately upon completion of the trench backfill.

3.8 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support trenches more than five (5) feet deep, or excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Design sheeting and shoring to be removed at completion of excavation work.
- D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- E. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.9 THRUST RESTRAINT

- A. Excavate beyond maximum trench width for pipeline the minimum distance required for any specified concrete thrust blocking. Ensure that concrete thrust blocking is installed against undisturbed earth.

3.10 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen fill materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place fill material in continuous layers and compact in accordance with schedule at end of this section.
- D. Employ placement method that does not disturb or damage foundation perimeter drainage and other utilities in trench.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Do not leave more than 20 feet of trench open at end of working day.
- G. Protect open trench to prevent danger to Owner and the public.
- H. Where the Engineer deems backfill material to be unsuitable and rejects all or part thereof due to conditions prevailing at the time of construction, remove the unsuitable materials and replace with Select Fill material, or with suitable foreign (off-site) material.

3.11 TOLERANCES

- A. Section 014000 - Quality Requirements: Tolerances.
- B. Top Surface of Backfilling under paved areas: Plus or minus one (1) inch from required elevations.
- C. Top Surface of General Backfilling: Plus or minus one (1) inch from required elevations.

3.12 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements, 017000 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Perform laboratory material tests in accordance with ASTM D1557.
- C. When specified perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
 - 2. Moisture Tests: ASTM D3017.

- D. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest until compliance achieved at no cost to Owner.
- E. Frequency of Tests: As directed by Engineer.

3.13 DISPOSAL OF EXCAVATED MATERIAL

- A. Section 011000 – Summary identifies Owner’s interest in any excess stockpiled material.
- B. Contractor shall legally dispose of any unused excavated material.

3.14 PROTECTION OF FINISHED WORK

- A. Section 017000 - Execution and Closeout Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.

3.15 BACKFILL AND COMPACTATION REQUIREMENTS

- A. Six (6) inch pipe bedding and direct cover to one (1) foot above pipe: AASHTO 57 (1B)
- B. Roadways, driveways, shoulders, parking areas:
 - 1. Top of direct cover to street subgrade: Select Material PA 2A
 - 2. Compact uniformly to minimum 95 percent of maximum density.
- C. State Highways and State Highway Rights of Way:
 - 1. Follow PennDOT 408 Specification
 - 2. Compact uniformly to minimum 95 percent of maximum density.
- D. Lawn, Landscaped and Non-traffic areas:
 - 1. Top of direct cover to street subgrade: Suitable Retained Material
 - 2. Compact uniformly to minimum 85 percent of maximum density.

+++ END OF SECTION 312316.13 +++

SECTION 312323.33 - FLOWABLE FILL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Flowable fill for:
 - a. Filling abandoned utilities.
- B. Related Requirements:
 - 1. Section 033000 – Cast-in-place Concrete

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Flowable Fill:
 - 1. Basis of Measurement: By Cubic Yard (CY).
 - 2. Basis of Payment: Includes furnishing flowable fill and installing where required.

1.3 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, manhole, tank, or cable.
- B. Excavatable Flowable Fill: Lean cement concrete fill used where future excavation may be required, such as fill for utility trenches, bridge abutments, and culverts.
- C. Non-excavatable Flowable Fill: Lean cement concrete fill used where future excavation is not anticipated, such as fill below structure foundations and filling abandoned utilities.

1.4 REFERENCE STANDARDS

- A. ASTM International:
 - 1. ASTM C33 - Standard Specification for Concrete Aggregates.
 - 2. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
 - 3. ASTM C150 - Standard Specification for Portland Cement.
 - 4. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
 - 5. ASTM C403/C403M - Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance.
 - 6. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
 - 7. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.

8. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
9. ASTM C1040 - Standard Test Methods for Density of Unhardened and Hardened Concrete in Place By Nuclear Methods.
10. ASTM D4832 - Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.

1.5 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Manufacturer's Certificate: A complete list of materials including type; brand; source and amount of cement, fly ash, pozzolans, ground slag, and admixtures; and applicable reference specifications shall be included in the mix design submittal. Provide design mixes and test reports.
- C. Field Quality-Control Submittals:
 1. Mix Design:
 - a. Furnish flowable fill mix design for each specified strength.
 - b. Furnish separate mix designs when admixtures are require for the following:
 - 1) Flowable fill Work during hot and cold weather.
 - 2) Air entrained flowable fill Work.
 - c. Identify design mix ingredients, proportions, properties, admixtures, and tests.
 2. Furnish test results to certify flowable fill mix design properties meet or exceed specified requirements.
- D. Delivery Tickets:
 1. Furnish duplicate delivery tickets indicating actual materials delivered to Project Site.
- E. Qualifications Statements:
 1. Submit qualifications for supplier.

1.6 SUSTAINABLE DESIGN SUBMITTALS

- A. Section 018113 - Sustainable Design Requirements: Requirements for sustainable design submittals.
- B. Manufacturer's Certificate: Products meet or exceed specified sustainable design requirements.
 1. Materials Resources Certificates:
 - a. Recycled material content for recycled content products.
 - b. Source for regional materials and distance from Project Site.

1.7 QUALITY ASSURANCE

- A. Perform Work according to PennDOT Publication 408, latest version, Section 220 – Flowable Backfill.

1.8 QUALIFICATIONS

- A. Supplier:
 - 1. Company specializing in supplying products specified in this Section with minimum three experience.
 - 2. Product source approved by PennDOT.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Section 015000 - Temporary Facilities and Controls specifies ambient condition control facilities for product storage and installation.
- B. Minimum Conditions: Do not install flowable fill during inclement weather or when ambient temperature is less than 40 degrees F.

1.10 FIELD MEASUREMENTS

- A. Verify field measurements before installing flowable fill to establish quantities required to complete the Work.

PART 2 - PRODUCTS

2.1 FLOWABLE FILL

- A. Furnish materials according to PennDOT Publication 408, latest version, Section 220 – Flowable Backfill.

2.2 MIXES

- A. Mix and deliver flowable fill according to ASTM C94/C94M, Option C.
- B. Flowable Fill Design Mix:
 - 1. Cement Content:
 - a. Excavatable: 75 to 100 lb/cu yd (45.5 to 59.3 kg/cu m).
 - b. Non-Excavatable: 100 to 150 lb/cu yd (59.3 to 88.9 kg./cu m).

2. Fly Ash Content:
 - a. Excavatable:None.
 - b. Non-Excavatable:150-600 pcf (2 400-9 600 kg./cu m).
3. Water Content:
 - a. Excavatable:As specified.
 - b. Non-Excavatable:As specified.
4. Air Entrainment:
 - a. Excavatable:5 to 35 percent.
 - b. Non-Excavatable:5 to 15 percent.
5. 28-Day Compressive Strength:
 - a. Excavatable:Maximum 100 psi. (690 kPa).
 - b. Non-Excavatable: Minimum 125 psi (860 kPa).
6. Unit Mass (Wet):
 - a. Excavatable: 80 to 110 pcf (1 280 to 1 760 kg/cu m).
 - b. Non-Excavatable: 100 to 125 pcf (1 600 to 2 000 kg/cu m).
7. Temperature, Minimum, at Point of Delivery:
 - a. Excavatable: 50 degrees F (10 degrees C).
 - b. Non-Excavatable:50 degrees F (10 degrees C).

- C. Provide water content in design mix to produce self-leveling, flowable fill material at time of placement.
- D. Design mix air entrainment and unit mass are for laboratory design mix and source quality control only.

2.3 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Test and analyze properties of flowable fill design mix and certify results for the following:
 1. Design mix proportions by weight of each material.
 2. Aggregate: ASTM C33 for material properties and gradation.
 3. Properties of plastic flowable fill design mix including:
 - a. Temperature.
 - b. Slump.
 - c. Air entrainment.
 - d. Wet unit mass.
 - e. Yield.

- f. Cement factor.
- 4. Properties of hardened flowable fill design mix including:
 - a. Compressive strength at 1 day, 7 days, and 28 days. Report compressive strength of each specimen and average specimen compressive strength.
 - b. Unit mass for each specimen and average specimen unit mass at time of compressive strength testing.
- C. Prepare delivery tickets containing the following information:
 - 1. Project designation.
 - 2. Date.
 - 3. Time.
 - 4. Class and quantity of flowable fill.
 - 5. Actual batch proportions.
 - 6. Free moisture content of aggregate.
 - 7. Quantity of water withheld.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting Work.
- B. Verify area to be filled with flowable fill is dry.
- C. Verify if pipe or similar object to be backfilled is clear of any debris which would prevent or block installation and or placement of flowable fill.

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Support and restrain utilities to prevent movement and flotation during installation of flowable fill.
- C. Protect structures and utilities from damage caused by hydraulic pressure of flowable fill before fill hardens.
- D. Protect utilities to prevent intrusion of flowable fill, unless said utilities are to be backfilled with flowable fill.

3.3 INSTALLATION - FILL, BEDDING, AND BACKFILL

- A. Place flowable fill by chute, pumping or other methods as approved by the Owner and or Engineer.
 - 1. When required, place flowable fill under water using tremie procedure.
 - 2. Do not place flowable fill through flowing water.
- B. Place flowable fill in lifts to prevent lateral pressures from exceeding structural capacity of structures and utilities.
- C. Place flowable fill evenly on both sides of utilities to maintain alignment.
- D. Place flowable fill to elevations indicated on Drawings without vibration or other means of compaction.

3.4 INSTALLATION - FILLING ABANDONED UTILITIES

- A. Notify Owner and Engineer a minimum of 48 hours prior to placement of flowable fill.
- B. Flowable fill may be placed by direct discharge from the truck, by pumping, or by other approved methods.
- C. The flowable fill shall be placed in a uniform manner that will prevent voids or segregation of the bedding and filling material. If required, the flowable fill shall be consolidated with internal vibrators.
- D. Pipes, reinforcement, inserts, or other embedded parts shall be placed, supported, and secured in a manner that shall prevent the flowable fill from displacing, sagging, or from floating embedded items.
- E. Flowable fill shall be brought up uniformly to the fill line shown on the plans. Formed walls or other bulkheads shall be constructed to withstand the exerted hydrostatic pressure and confine the material within a dedicated space.
- F. Placement of flowable fill shall start only when weather conditions are favorable. The temperature shall be at least 40 degrees F and rising. Flowable fill shall not be placed on frozen ground or when it is raining.
- G. Verify pipes and conduits are not clogged and are sufficiently empty to permit gravity installation of flowable fill for entire length indicated to be filled.
- H. Seal lower end of pipes and conduits by method to contain flowable fill and to vent trapped air caused by filling operations.
- I. Place flowable fill using method to ensure there are no voids.
 - 1. Fill pipes and conduits from high end.
 - 2. Fill manholes, tanks, and other structures from grade level access points.
- J. After filling pipes and conduits seal both ends.

3.5 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

3.6 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Remove spilled and excess flowable fill from Project Site.
- C. Restore facilities and Site areas damaged or contaminated by flowable fill installation to existing condition before installation.

3.7 DEFECTIVE FLOWABLE FILL

- A. Do not accept or place defective flowable fill that is not in conformance with acceptance criteria. Return the fresh flowable fill to the supplier.
- B. Defective flowable fill is material having excessive honeycomb, embedded debris, higher than maximum compressive strength, or not conforming to required lines, details, dimensions, tolerances or specified requirements. Repair or replace defective flowable fill as directed by the Engineer.
- C. Replace flowable fill not in conformance with details, tolerances, and other construction requirements at Contractor's expense.

END OF SECTION 312323.33

SECTION 321200 – FLEXIBLE PAVING

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Road/Driveway Paving.

1.02 REFERENCES

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. The following Pennsylvania Department of Transportation Publication 408 Specification Sections also apply:

1. PennDOT Section 210 Subgrade.
2. PennDOT Section 309 Superpave Asphalt Mixture Design, HMA Base Course (Standard).
3. PennDOT Section 350 Subbase.
4. PennDOT Section 409 Superpave Asphalt Mixture Design, HMA Wearing Course (Standard); HMA Wearing Course, RPS; HMA Binder Course (Standard); HMA Binder Course, RPS.
5. PennDOT Section 460 Bituminous Tack Coat.
6. PennDOT Section 702 Bituminous Material
7. PennDOT Section 703 Aggregates.

1.03 DEFINITIONS

- A. Street: Unless otherwise specifically qualified herein, the term "Street" as used in this Section shall be understood to mean a street, highway, avenue, boulevard, road, alley, lane, driveway, parking lot, or any other area used as a way for vehicles.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Action Submittals

1. Product Data: For each type of product.
 - a. Job-Mix Formulas: Certification, by PennDOT, of approval of each job mix proposed for the Work.

C. Informational Submittals

1. Qualification Data: PennDOT prequalification of paving contractor and proof that paving materials are from a PennDOT approved source.
2. The suppliers' invoices shall contain a statement of certification that the materials furnished meet the above-noted requirements. The following Certification Statement shall appear on all invoices for the materials used:

We hereby certify that the material invoiced herein conforms fully with the specification requirements of the Pennsylvania Department of Transportation. Our records of supply, attesting to this statement, are open for inspection by the ENGINEER.

Date
Certified: _____ By: _____
Signature of Responsible Company
Official

This certification is to be included for plant mixed materials only.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Perform work in accordance with PennDOT Publication 408 requirements.

1.06 JOB CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
 1. Asphalt Base Course: Minimum surface temperature of 35 deg F and rising at time of placement.
 2. Asphalt Surface Course: Minimum surface temperature of 40 deg F at time of placement.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. All materials used shall meet the requirements of Pennsylvania Department of Transportation Publication 408.
- B. Where Hot Mix Asphalt is specified, Warm Mix Asphalt of the same specification may be substituted, at no change to the project cost.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to begin paving.
- B. Proceed with paving only after unsatisfactory conditions have been corrected.
- C. Verify that subgrade and/or base gradients and elevations are correct.

3.02 PREPARATION

- A. Proof-roll subgrade to meet PennDOT requirements as per Publication 408, Section 210.
 - 1. Completely proof-roll subgrade.
 - 2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Engineer, and replace with compacted backfill.

3.03 INSTALLATION

- A. Place bituminous paving course(s) in accordance with PennDOT Publication 408, Sections 309 and 409.
- B. Aggregate Subbase: Construct and place in accordance with the requirements of PennDOT Section 350.
 - 1. Install on prepared subgrade as specified in in PennDOT Section 210.
- C. Bituminous Tack Coat: Apply according to PennDOT Section 460.
- D. Asphalt Rubber Sealing Compound: Apply according to PennDOT Bulletin 25. Use to seal joints between existing and new pavements.

3.04 PROTECTION

- A. After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

- B. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.05 INSTALLATION TOLERANCES

- A. Pavement Thickness: The completed paving shall meet the tolerances stated in PennDOT Publication 408, Sections 309 and 409.
- B. Pavement Surface Smoothness: Completed wearing courses shall meet the tolerances stated in PennDOT Publication 408, Section 409.

3.06 FIELD QUALITY CONTROL

- A. Inspection of subbase and asphalt paving courses shall be based upon visual observation of placement and compaction of the materials.

END OF SECTION

SECTION 329200 – TURF AND GRASSES

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Restoration of disturbed, non-paved areas including the following:
 - 1. Placing topsoil.
 - 2. Finish grading.
 - 3. Seeding.
 - 4. Maintenance.

1.02 REFERENCES

- A. American Association of State Highways and Transportation Officials (AASHTO).
- B. Pennsylvania Department of Transportation (PennDOT) Publication 408 Specifications.
- C. Pennsylvania Seed Act of 1965, Act 187, as amended.
- D. Agricultural Liming Materials Act of 1978, P.L. 15, No. 9 (3 P.S. 132-1), as amended.
- E. Pennsylvania Soil Conditioner and Plant Growth Substance Law, Act of December 1, 1977, P.L. 258, No. 86 (3 P.S. 68.2), as amended.
- F. Rules for Testing Seeds of the Association of Official Seed Analysts.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Samples:
 - 1. When directed, furnish three strips of sod, 4½" feet long by 12" wide, laid on 3" of topsoil and tamped in place. The samples shall be representative of the sod and workmanship to be provided.
 - 2. Advise the Engineer of the location of the field, and area within the field, from which the sod is to be taken for approval.
- C. Certificates:
 - 1. Prior to use or placement of material, submit certifications of material composition of the following for approval:

- a. Topsoil analysis.
 - b. Fertilizer.
 - c. Lime.
 - d. Seed mixture(s).
2. If soil tests are performed to justify decreased liming and fertilizer rates, submit certified soil sample analyses, including laboratory's recommended soil supplement formulation.

1.04 QUALITY ASSURANCE

A. Testing Agency:

1. The Contractor has the option to use soil testing to justify decreasing lime and fertilizer rates. When the Contractor selects soil testing, the soil and soil supplement testing shall be performed by a Soils Testing Laboratory engaged and paid for by the Contractor and approved by the Engineer. Collect soil samples under the direction of the Engineer.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Seed:

1. Deliver seed fully tagged and in separate packages according to species or seed mix. Seed which has become wet, moldy, or otherwise damaged in transit or storage, will not be accepted.

1.06 PROJECT CONDITIONS

- A. Restore unpaved surfaces to a condition equal to or exceeding that prior to excavation.
- B. Refer to the Contract Documents for seeding requirements at each specific location of Work.

PART 2 – PRODUCTS

2.01 TOPSOIL

- A. Having a pH of between 6.0 and 7.0; containing not less than 2% nor more than 10% organic matter as determined by AASHTO T194.
- B. Fertile friable loam, sand loam, or clay loam which will hold a ball when squeezed with the hand, but which will crumble shortly after being released.
- C. Free of clods, grass, roots, or other debris harmful to plant growth.

D. Free of pests, pest larvae, and matter toxic to plants.

2.02 LIME

A. Raw ground limestone conforming to Section 804.2(a), Publication 408 Specifications.

2.04 SEED

A. Seed shall conform to Section 804.2(b), Publication 408 Specifications.

2.05 SEED FORMULAS

A. Seed formula and species shall conform to the Contract Drawings.

2.06 INOCULANT

A. Inoculant shall conform to Section 804.2(c), Publication 408 Specifications.

B. Protect inoculated seed from prolonged exposure to sunlight prior to sowing.

C. Reinoculate seed not sown within 24 hours following initial inoculation.

2.07 MULCHING MATERIALS

A. Mulches for seeded areas shall be one, or a combination of, the following:

1. Hay:

- a. Cured to less than 20% moisture content by weight.
- b. Contain no stems of tobacco, soybeans, or other coarse or woody material.
- c. Timothy hay or mixed clover and timothy hay.

2. Straw:

- a. Cured to less than 20% moisture content by weight.
- b. Contain no stems of tobacco, soybeans, or other coarse or woody material.
- c. Wheat or oat straw.

3. Wood Cellulose:

- a. No growth or germination inhibiting substances.
- b. Green, air dried. Packages not exceeding 100 pounds.
- c. Requirements:

Moisture content: $12\% \pm 3\%$

Organic Matter: $98.6\% \pm 0.2\%$ on the oven dry basis.

Ash content: $1.4\% \pm 0.2\%$

Minimum Water-Holding Capacity: 1000%

PART 3 – EXECUTION

3.01 TIME OF OPERATIONS

A. Seeding:

1. See Paragraph 3.10 for "Seeding Schedule".

B. Temporary Surfacing:

1. In the event the permanent surfacing cannot be placed due to the weather limitations set forth herein, provide a temporary surface in lieu thereof. The temporary surface shall be as specified in the Seeding Schedule.
2. The Contractor shall be responsible for the maintenance and protection of all temporary surfacing until such time as that the permanent pavement or surface can be placed. Permanent surfacing must be placed no later than thirty days following the placement of temporary surfacing. In the event that environmental conditions do not allow for placement of permanent surfacing within the thirty days specified, permanent surfacing must be placed as soon as conditions allow.
3. Prior to placement of final surfacing, the Contractor, Owner, and Engineer shall inspect all areas to be restored. The Contractor shall be responsible for any replacement of material, regarding, or addition of material deemed necessary by the Engineer in any areas found to be unacceptable for receipt of final surfacing.
4. Contractor shall be responsible for the removal and disposal of the temporary surfacing to the grade required for the placement of the final sub-base, base, and surface at the specified depths.
5. The Contractor shall be responsible for any necessary adjustments to grade for manholes, frame and covers, and other facilities or structures prior to final surfacing.
6. Temporary surfacing shall comply with the Erosion and Sediment Control Plan.

3.02 PREPARATION OF SUBGRADE

A. "Hard pan" or heavy shale:

1. Plow to a minimum depth of 6".
2. Loosen and grade by harrowing, discing, or dragging.
3. Hand rake subgrade. Remove stones over 2" in diameter and other debris.

B. Loose loam, sandy loam, or light clay:

1. Loosen and grade by harrowing, discing, or dragging.
2. Hand rake subgrade. Remove rocks over 2" in diameter and other debris.

3.03 PLACING TOPSOIL

- A. Replace topsoil, furnish and place additional topsoil as required to meet contract required depths, and spread over the prepared subgrade to obtain the required depth and grade elevation. Final compacted topsoil thickness of all areas with the exception of areas receiving PennDOT Formula D seeding shall be a minimum of 4", areas receiving PennDOT Formula D seeding shall be a minimum of 6".
- B. Hand rake topsoil and remove all materials unsuitable or harmful to plant growth.
- C. Do not place topsoil when the subgrade is frozen, excessively wet, or extremely dry.
- D. Do not handle topsoil when frozen or muddy.

3.04 TILLAGE

- A. After seedbed areas have been brought to proper compacted elevation, thoroughly loosen to a minimum depth of 2" by discing, harrowing, or other approved methods. Do not work topsoiled areas when frozen or excessively wet.
- B. Liming:
 - 1. Distribute limestone uniformly at the rate identified in paragraph 3.10 "Seeding Schedule".
 - 2. Thoroughly incorporate into the topsoil to a minimum depth of 2".
- C. Fertilizer:
 - 1. Distribute fertilizer uniformly at the rate identified in paragraph 3.10 "Seeding Schedule".
 - 2. Incorporate into soil to depth of 2" by approved methods.
 - 3. Incorporate as part of tillage operation.
- D. Liming and Fertilizer rates may be decreased if lesser rates are indicated by soil tests provided by the Contractor.

3.05 FINISH GRADING

- A. Remove unsuitable material larger than 2" in any dimension.
- B. Uniformly grade surface to the required contours without the formation of water pockets.
- C. Rework areas that puddle by the addition of topsoil and fertilizer. Rerake.
- D. Distribute fertilizer at the rates indicated in the Seed Schedule on the Contract Drawings.
- E. Incorporate fertilizer into the upper 1" of soil.

3.06 SEEDING

- A. Uniformly sow specified seed mix by use of approved hydraulic seeder, power-drawn drill, power-operated seeder, or hand-operated seeder or by hand. Do not seed when winds are over 15 mph.
- B. Upon completion of sowing, cover seed to an average depth of 1/4" by hand reraking or approved mechanical methods.

3.07 MULCHING

- A. Mulching within 48 hours of seeding.
- B. Place hay and straw mulch in a continuous blanket at the minimum rate identified in paragraph 3.10 "Seeding Schedule".
- C. Anchor hay or straw mulch by use of wood cellulose fiber hydraulically at the rate identified in paragraph 3.10 "Seeding Schedule".
 - 1. A light covering of topsoil may be used for anchorage when the size of the area precludes the use of mechanical equipment.
 - 2. Incorporate as an integral part of the slurry after seed and soil supplements have been thoroughly mixed.
- D. When mulch is applied to grass areas by blowing equipment, the use of cutters in the equipment will be permitted to the extent that a minimum of 95% of the mulch is 6" or more in length. For cut mulches applied by the blowing method, achieve a loose depth in place of not less than 2".

3.09 MAINTENANCE

- A. Maintenance includes watering, weeding, cleanup, edging and repair of depressions, washouts or gullies.
- B. Those areas which do not show a prompt catch or grass within 14 days of seeding shall be reseeded or resodded until complete grass catch occurs.

3.10 SEEDING SCHEDULE

- A. Seeding Schedule shall be in accordance with the Contract Drawings.

END OF SECTION

SECTION 321216 - ASPHALT PAVING and RESURFACING FOR TRENCH RESTORATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Asphalt materials.
2. Aggregate materials.
3. Shoulder Restoration.
4. Driveway Restoration.
5. Curb and Sidewalk Restoration

B. Related Requirement:

1. Section 312323 - Fill: Compacted subbase for paving.
2. Section 321123 - Aggregate Base Courses: Compacted subbase for paving.
3. Section 321723 - Pavement Markings: Painted pavement markings, lines, and legends.

1.2 PRICE AND PAYMENT PROCEDURES

A. Section 012000 - Price and Payment Procedures Contract Sum/Price

- ##### B.
- Unless noted otherwise on the Drawings or unless Extra Work is ordered by the Engineer, payment for site restoration, including paving, is included in the unit price or lump sum cost of the Work item installed, unless the respective restoration item(s) are identified on the Bid Form for separate payment.

1.3 EXTRA WORK – UNIT PRICE MEASUREMENT AND PAYMENT

- ##### A.
- Where identified separately on the Bid Form and/or where Extra Work is ordered by the Engineer, payment will be made based on the following categories:

B. Aggregate Subbase:

1. Basis of Measurement: By square yard.
2. Basis of Payment: Includes supplying and stockpiling aggregate, scarifying substrate surface, placing, and compacting subbase.

C. Asphalt Paving Base Course:

1. Basis of Measurement: By square yard.
2. Basis of Payment: Includes priming surfaces, and tack coating surfaces, furnishing, placing, compacting, and testing base course.

D. Asphalt Paving Binder Course:

1. Basis of Measurement: By square yard.
 2. Basis of Payment: Includes priming surfaces, and tack coating surfaces, furnishing, placing, compacting, and testing binder course.
- E. Asphalt Paving Wearing Course:
1. Basis of Measurement: By square yard.
 2. Basis of Payment: Includes priming surfaces, and tack coating surfaces, furnishing, placing, compacting, and testing wearing course.
- F. Tack Coat:
1. Included in cost of asphalt paving item shown above.

1.4 REFERENCE STANDARDS

- A. Pennsylvania Department of Transportation
1. Publication 408 Specifications
 2. Publication 213 – Work Zone Traffic Control
- B. American Association of State Highway and Transportation Officials:
1. AASHTO M17 - Standard Specification for Mineral Filler for Bituminous Paving Mixtures.
 2. AASHTO M29 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
 3. AASHTO M140 - Standard Specification for Emulsified Asphalt.
 4. AASHTO M208 - Standard Specification for Cationic Emulsified Asphalt.
 5. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.
 6. AASHTO M320 - Standard Specification for Performance-Graded Asphalt Binder.
 7. AASHTO M324 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
 8. AASHTO MP1a - Standard Specification for Performance-Graded Asphalt Binder.
- C. Asphalt Institute:
1. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot- Mix Types.
 2. AI MS-19 - Basic Asphalt Emulsion Manual.
 3. AI SP-2 - Superpave Mix Design.
- D. ASTM International:
1. ASTM C1371- Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
 2. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
 3. ASTM D242 - Standard Specification for Mineral Filler For Bituminous Paving Mixtures.

4. ASTM D692 - Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.
5. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
6. ASTM D977 - Standard Specification for Emulsified Asphalt.
7. ASTM D1073 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
8. ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
9. ASTM D2027 - Standard Specification for Cutback Asphalt (Medium-Curing Type).
10. ASTM D2397 - Standard Specification for Cationic Emulsified Asphalt.
11. ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.
12. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
13. ASTM D3381 - Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
14. ASTM D3515 - Standard Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
15. ASTM D3549 - Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
16. ASTM D3910 - Standard Practices for Design, Testing, and Construction of Slurry Seal.
17. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
18. ASTM E408[-1971(1996)e1] - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
19. ASTM E903[-1996] - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
20. ASTM E1918[-1997] - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
21. ASTM E1980[-2001] - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

1.5 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data:
 1. Submit product information for asphalt and aggregate materials.
 2. Submit mix design with laboratory test results supporting design.
- C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

- A. Mixing Plant: Conform to State Highways standard.
- B. Obtain materials from same source throughout.

- C. Perform Work in accordance with State Highways standard.
- D. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum three years documented experience.

1.8 AMBIENT CONDITIONS

- A. Section 015000 - Temporary Facilities and Controls: Ambient conditions control facilities for product storage and installation.
- B. Do not place asphalt mixture when ambient air or base surface temperature is less than 40 degrees F , or surface is wet or frozen.

PART 2 - PRODUCTS

2.1 ASPHALT PAVING MATERIALS AND AGGREGATES

- A. All Asphalt materials and aggregates shall conform to the applicable portions of Publication 408 Specification, latest revision.

2.2 CONCRETE

- A. Conform to Publication 408 Specifications, Section 501.

2.3 SOURCE QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Testing, inspection and analysis requirements.
- B. Submit proposed mix design of each class of mix for review prior to beginning of Work.
- C. Test samples in accordance with AI MS-2.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Control of Traffic
 - 1. Employ measures to control traffic during repaving operations. Do not allow traffic on repaved areas until authorized by Engineer.

2. Employ traffic control measures in accordance with Publication 213 – “Work Zone Traffic Control”.

B. Repaving beyond Work limits

1. Restore to previous condition, existing paving outside the limits of the Work that is damaged by the Contractor’s operations at no additional cost to the Owner.

3.2 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.
- C. Verify compacted subbase is dry and ready to support paving and imposed loads. Identify type of vehicle or compactor and minimum load required for proof rolling subbase.
 1. Proof roll subbase with minimum 300 psi-width roller in minimum two perpendicular passes to identify soft spots.
 2. Remove soft subbase and replace with compacted fill.
- D. Verify gradients and elevations of base are correct.
- E. Verify valve boxes, manhole frames, gutter drainage grilles and frames are installed in correct position and elevation.

3.3 PREPARATION

- A. Prepare subbase in accordance with Contract Documents.

3.4 DEMOLITION

- A. Saw cut and notch existing paving as indicted on Drawings. Cut straight joint lines and right angle offsets.
- B. Clean existing paving to remove foreign material, excess joint sealant and crack filler from paving surface.
- C. Repair surface defects in existing paving to provide uniform surface to receive new paving.

3.5 TEMPORARY PAVING

- A. Place temporary paving immediately upon completion of trench backfilling. Unpaved trenches shall not remain unpaved longer than five working days after backfilling.
- B. Shape and compact subgrade material, then place and compact crushed stone base course to the thickness indicated.

- C. Continuously maintain temporary paving to the satisfaction of Engineer and Owner. Temporary paving shall remain in place for a minimum of 90 days.
- D. Permanent paving may be placed in lieu of temporary paving. In this case, the Contractor shall place additional permanent material 90 days after initial placement, to fill in all areas that have settled. All new joints shall be sealed with PG 64-22 (or approved equal), minimum width 8 inches.

3.6 PERMANENT PAVING

- A. Trim existing paving to remove any damaged areas. Cut straight joint lines and right angle offsets.
- B. Remove temporary paving material. Construct permanent base and surface courses to the indicated compacted thickness, and in accordance with Publication 408 Specifications.
- C. Seal joints between new and existing pavement with PG 64-22 (or approved equal), minimum width 8 inches.
- D. Maintain permanent paving to the satisfaction of Engineer and Owner throughout the contract maintenance period.

3.7 SHOULDER RESTORATION

- A. Restore unpaved shoulders as indicated.

3.8 DRIVEWAYS

- A. Trim concrete and bituminous driveway surfaces to remove damaged areas. Saw cut straight joint lines parallel to the centerline of trench. Cut offsets at right angles to the trench centerline.
- B. Restore existing concrete driveways with concrete 6 inches thick, reinforced with 6 x 6 10/10 wire mesh.
- C. Restore existing bituminous driveways in kind or with a minimum 1 ½ inch depth, HMA wearing course, placed and compacted over 6 inches of No. 2A stone.
- D. Restore earth driveways with a compacted 6 inch depth of No. 2A stone.
- E. Restore stone or gravel driveways in kind.
- F. Restore brick driveways with like bricks placed on a 4 inch thick wet sand bed. Place bricks in like pattern and joint spacing and bedding.

3.9 CONCRETE CURB AND SIDEWALK REPAIRS

- A. Replace curbs and sidewalks damaged by construction to match existing.

- B. Reconstruct curbs and sidewalks to the first expansion joint on either side of damaged portion. Install expansion joint material.
- C. Reconstruct sidewalks to 4 inch thickness of concrete place on a 4 inch base of compacted 2A stone.

3.10 TOLERANCES

- A. Section 014000 - Quality Requirements: Tolerances.
- B. Flatness: Maximum variation of ¼ inch measured with 10 foot straight edge.
- C. Scheduled Compacted Thickness: Within ¼ inch.
- D. Variation from Indicated Elevation: Within ½ inch.

3.11 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting, testing.
- B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Where required by the Contract Documents, take samples and perform tests in accordance with AI MS-2 or AI SP-2 as appropriate for the material installed.
- D. Asphalt Paving Mix Temperature: Measure temperature at time of placement.
- E. Asphalt Paving Thickness: ASTM D3549; test one core sample from every 1000 square yards compacted paving.
- F. Asphalt Paving Density: ASTM D2950 nuclear method; test one location for every 1000 square yards compacted paving.

3.12 PROTECTION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Immediately after placement, protect paving from mechanical injury for 4 hours or until surface temperature is less than 140 degrees F.

+++ END OF SECTION 321216 +++

SECTION 321723 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Traffic lines and markings.
2. Legends.
3. Paint.
4. Glass beads.

B. Related Requirements:

1. Section 321216 - Asphalt Paving: Asphalt paving for roads, parking areas, and sidewalks.
2. Section 321313 - Concrete Paving: Concrete paving for roads, parking areas, and sidewalks.

1.2 MEASUREMENT AND PAYMENT

A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.

B. Payment for Traffic Lines, Markings and Legends is included in the cost of Paving, Repaving and Resurfacing for Trench Restoration.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO M247 - Standard Specification for Glass Beads Used in Pavement Markings.

B. ASTM International:

1. ASTM D34 - Standard Guide for Chemical Analysis of White Pigments.
2. ASTM D126 - Standard Test Methods for Analysis of Yellow, Orange, and Green Pigments Containing Lead Chromate and Chromium Oxide Green.
3. ASTM D562 - Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer.
4. ASTM D711 - Standard Test Method for No-Pick-Up Time of Traffic Paint.
5. ASTM D713 - Standard Practice for Conducting Road Service Tests on Fluid Traffic Marking Materials.
6. ASTM D1301 - Standard Test Methods for Chemical Analysis of White Lead Pigments.
7. ASTM D1394 - Standard Test Methods for Chemical Analysis of White Titanium Pigments.
8. ASTM D1475 - Standard Test Method for Density of Liquid Coatings, Inks, and Related Products.

9. ASTM D1640/D1640M - Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings.
10. ASTM D2202 - Standard Test Method for Slump of Sealants.
11. ASTM D2371 - Standard Test Method for Pigment Content of Solvent-Reducible Paints.
12. ASTM D2621 - Standard Test Method for Infrared Identification of Vehicle Solids From Solvent-Reducible Paints.
13. ASTM D2743 - Standard Practices for Uniformity of Traffic Paint Vehicle Solids by Spectroscopy and Gas Chromatography.
14. ASTM D4280 - Standard Specification for Extended Life Type, Nonplowable, Raised Retroreflective Pavement Markers.
15. ASTM D4505 - Standard Specification for Preformed Retroreflective Pavement Marking Tape for Extended Service Life.

1.4 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit paint formulation for each type of paint.
- C. Samples:
 1. Plates:
 - a. Submit four samples of each color of material.
 - b. Prepare two without glass beads and two with glass beads for each different batch of material.
 - c. After approval, Owner will retain these plates for field comparisons of applied paint.
 2. Paint:
 - a. Submit two one-gallon and four one-quart paint samples accompanied by properly executed test reports.
 3. Glass Beads: Submit samples according to AASHTO M247.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Test and Evaluation Reports: Indicate source and acceptance test results according to AASHTO M247.
- F. Manufacturer Instructions:
 1. Submit instructions for application temperatures, eradication requirements, application rate, line thickness, type of glass beads, and bead embedment and application rate.
 2. Submit detailed instructions on installation requirements, including storage and handling procedures.
- G. Source Quality-Control Submittals: Indicate results of shop and factory tests and inspections.
- H. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

I. Qualifications Statements:

1. Submit qualifications for manufacturer and applicator.
2. Submit manufacturer's approval of applicator.

1.5 QUALITY ASSURANCE

- A. Perform Work according to PennDOT Publication 408 standards.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.
- B. Applicator: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Storage:
1. According to manufacturer instructions.
 2. Paint:
 - a. Invert containers several days prior to use if paint has been stored more than two months.
 - b. Minimize exposure to air when transferring paint.
 - c. Seal drums and tanks when not in use.
- D. Protection:
1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 2. Provide additional protection according to manufacturer instructions.

1.8 AMBIENT CONDITIONS

- A. Section 015000 - Temporary Facilities and Controls: Requirements for ambient condition control facilities for product storage and installation.
- B. Do not apply materials if surface and ambient temperatures are outside temperature ranges required by paint product manufacturer.

- C. Do not apply exterior coatings during rain or snow if relative humidity is outside range required by paint manufacturer, or if moisture content of surfaces exceeds that required by paint manufacturer.
- D. Minimum Conditions: Do not apply paint if temperatures are expected to fall below **50** deg. F within 24 hours after application.
- E. Thermoplastic Compound: Do not apply unless pavement surface temperature is minimum 40 deg. F and rising.
- F. Maximum VOCs: Do not exceed limit required by State or Environmental Protection Agency.

1.9 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish three-year manufacturer's warranty for pavement markings.

PART 2 - PRODUCTS

2.1 PAINTED PAVEMENT MARKINGS

- A. Materials
 - 1. As approved by PennDOT in accordance with Publication 408, Sections 960, 961, 962, 964, and 1103.
 - 2. All materials shall be manufactured and/or supplied by an entity listed in the current version of PennDOT Bulletin 15, for the type of material proposed.
- B. Performance and Design Criteria:
 - 1. Paint Adhesion: Adhere to road surface, forming smooth continuous film one minute after application.
 - 2. Paint Drying: Tack free by touch as not to transfer by vehicle tires within two minutes after application.
- C. Paint:
 - 1. Description: Ready mixed, conventional, fast-dry, waterborne traffic paints.
 - 2. Lead-free and nontoxic.
 - 3. Minimum Retroreflectance: 100 mcd.
 - 4. Durability Rating: 6 or more, after in place for nine months.
 - 5. Properties:
 - a. Pigment Percent by Weight: 60, plus or minus 2.
 - b. Vehicle Percent by Weight: 40, plus or minus 2.
 - c. Nonvolatile Percent by Weight of Paint: 76.0 .
 - d. Minimum Density: **13.0** lb./gal.
 - e. Viscosity: 80-95 Kres Units at 77 deg. F.

6. Grind:
 - a. Method: Hegeman Gage.
 - b. Minimum Field-Tested, No-Tracking Time under Ambient Conditions: 20 to 90 seconds.
 7. Maximum Dry-Through Time:
 - a. 125 minutes.
 - b. Wet Film Thickness: **15** mils at 90 percent relative humidity and 72 deg. F.
 - c. Comply with ASTM D1640/D1640M.
 8. Maximum VOC Content: **1 lb./gal.**
- D. Glass Beads:
1. Comply with AASHTO M247, Type 1.
 2. Coating: Enhance embedment and adherence with paint.
- E. Thermoplastic Compound:
1. Binder Component: Hydrocarbon resin with pigment, beads, and filler uniformly dispersed.
 2. Asphalt Concrete Primer:
 - a. Description: Thermosetting adhesive with a solids content of pigment reinforced synthetic rubber and synthetic plastic resin dissolved or dispersed in a volatile organic solvent.
 - b. Solids Content: Not less than 10 percent by weight at 70 deg. F and 60 percent relative humidity.
 - c. Wet Film Thickness: 0.005 inch, plus or minus 0.03 inch.
 3. Portland Cement Concrete Primer: Epoxy resin primer, as recommended by manufacturer of thermoplastic compound.
- F. Preformed Tape:
1. Description: Adherent reflectorized strip.
 2. Comply with ASTM D4505, Type I or IV.
- G. Raised Pavement Markers:
1. Type:
 - a. Nonmetallic.
 - b. Prismatic.
 2. Comply with ASTM D4280.
 3. Minimum Diameter: 4 inches.
 4. Maximum Spacing: 40 feet apart on solid longitudinal lines.
 5. Maximum Projection above Pavement Level: 3/4 inch.

2.2 APPLICATION EQUIPMENT

A. Paint Gun:

1. Description: Simultaneously apply parallel lines of indicated width in solid or broken patterns or various combinations of those patterns.
2. Type: Dual nozzle.

B. Bead Gun:

1. Description: Automatically dispense glass beads onto painted surface at required application rate.
2. Type: Pressurized.

C. Measuring Device: Automatically and continuously measure to nearest foot length of each line placed.

D. Paint Heater: Capable of heating paint to 125 deg. F for fast-dry applications.

2.3 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Test and analyze traffic paints according to respective ASTM.

C. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for application preparation.

B. Do not apply paint to concrete surfaces until concrete has cured for 28 days.

C. Agitate paint for 1 to 15 minutes prior to application to ensure even distribution of pigment.

D. Maintenance and Protection of Traffic:

1. Provide short-term traffic control as specified in Section 015000 - Temporary Facilities and Controls.
2. Prevent interference with marking operations and prevent traffic on newly applied markings before dry.

3. Maintain travel lanes between 7:00 AM and 9:00 AM, and between 4:00 PM and 6:00 PM.
4. Maintain access to existing businesses, and other properties requiring access.

E. Surface Preparation.

1. Clean and dry paved surfaces prior to painting.
2. Blow or sweep surface free of dirt, debris, oil, grease, or gasoline.
3. Spot location of final pavement markings, as specified and as indicated on Drawings, by applying pavement spots 25 feet on center.
4. Request inspection by Engineer after placing pavement spots and minimum three days prior to applying traffic lines.

3.2 DEMOLITION

- A. Remove existing markings in an acceptable manner, using methods that will cause least damage to pavement structure or surface.
- B. Do not remove existing pavement markings by painting over with blank paint.
- C. Repair pavement or surface damage caused by removal methods.

3.3 APPLICATION

A. Application Rate:

1. Reflective Markings:
 - a. Paint: 100 sq. ft./gal.
 - b. Glass Spheres on Wet Paint: 0.5 lb./gal.
2. Nonreflective Markings:
 - a. Paint: 100 sq. ft./gal.
3. Thermoplastic Compound:
 - a. After surface preparation has been completed, prime pavement surface with spray equipment and allow primer materials to dry to a tack-free condition or according to thermoplastic manufacturer recommendations.
 - b. Apply thermoplastic at temperatures not less than 375 deg. F and not greater than 425 deg. F at point of deposition.
 - c. Apply reflective glass spheres mechanically at rate of 1 lb./20 sq. ft.
 - d. Application Thickness: Not less than 0.125 inch and not more than 0.190 inch.

B. Painting:

1. Apply paint pneumatically, using guidelines and templates as necessary to control application.
2. Manually paint numbers, letters, and symbols.

3. Prevent splattering and overspray when applying markings.
4. Paint Guns: Simultaneously apply paint binder at uniform specified rates.
5. Dispense at ambient temperature.

C. Reflective Media:

1. Immediately follow paint application.
2. Bead Guns:
 - a. Dispense glass beads simultaneously at specified rate.
 - b. Check guns by dispensing glass beads into gallon container for predetermined fixed period of time.
 - c. Verify weight of glass beads.

D. Thermoplastic Compound:

1. Place on dry pavement.
2. Apply centerline, skip line, edge line, and other longitudinal type markings with mobile applicator.
3. Place special markings, crosswalks, stop bars, legends, arrows, and similar patterns with portable applicator.

E. Raised Pavement Markers:

1. Align prefabricated markers and permanently fix in place by means of epoxy adhesives.
2. Prior to applying adhesive, thoroughly clean area by water blasting and by compressed air.

F. Dimensions and Locations: As indicated on Drawings.

G. Crosswalks, Intersections, Stop Lines, Legends:

1. Use walk-behind strippers, hand spray, or stencil trucks.
2. Do not use hand brushes or rollers.
3. Glass beads may be applied by hand.

3.4 TOLERANCES

- A. Section 014000 - Quality Requirements: Requirements for tolerances.
- B. Maximum Variation from Wet Film Thickness: 1 mil.
- C. Maximum Variation from Wet Paint Line Width: Plus or minus 1/8 inch.
- D. Automatic Line-Length Gages: Plus or minus 25 ft./mi.
- E. Cycle Length Timer: Plus or minus 6 in./40 ft.
- F. Paint Line-Length Timer: Plus or minus 3 in./10 ft.
- G. Paint Guns: Plus or minus 1 mil.

3.5 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.
- B. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- C. Inspect for incorrect location, insufficient thickness, line width, coverage, retention, uncured or discolored material, and insufficient bonding.
- D. Acceptance:
 - 1. Repair lines and markings which after application and curing do not meet following criteria:
 - a. Incorrect location.
 - b. Insufficient thickness, width, coverage, or retention.
 - c. Uncured or discolored material.
 - d. Insufficient bonding.

3.6 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Collect and legally dispose of residues from painting operations.

3.7 PROTECTION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect painted pavement markings from vehicular and pedestrian traffic until paint is dry and track free.
- C. Unless material is track free at end of paint application convoy, use traffic cones to protect markings from traffic until track free.
- D. If vehicle crosses a marking and tracks it, or if splattering or overspray occurs, eradicate affected marking and resultant tracking and apply new markings.
- E. Follow manufacturer instructions or use minimum of 30 minutes of dry time.
- F. Barrier cones are satisfactory protection for materials being dried.

3.8 MAINTENANCE

- A. Section 017000 - Execution and Closeout Requirements: Requirements for maintenance service.

- B. Provide service and maintenance of traffic paints for three years from date of Substantial Completion.

3.9 ATTACHMENTS

- A. Pavement Markings:

1. Edge: 4-inch; white; fast-dry.
2. Stop Line: 24-inch; white; fast-dry.
3. Center: 4-inch; yellow; fast-dry.

+++ END OF SECTION 321723 +++

SECTION 330507A

TRENCHLESS INSTALLATION OF UTILITY PIPING VIA BORING & JACKING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Casing and jacking pipe.
2. Steel tunnel liner.
3. Carrier pipe.
4. Excavation for approach trenches and pits.

B. Related Requirements (as applicable):

1. Section 036000 - Grouting: Sealing of pipe penetrations in concrete structures.
2. Section 310516 - Aggregates for Earthwork: Masonry and concrete requirements.
3. Section 312316 - Excavation: Dewatering measures and excavation supports.
4. Section 312316.13 - Trenching: Dewatering measures and excavation supports.
5. Section 312323 - Fill: Compaction requirements.
6. Section 331413 - Public Water Utility Distribution Piping: Piping and carrier pipe requirements.
7. Section 331416 - Site Water Utility Distribution Piping: Piping and carrier pipe requirements.
8. Section 333100 - Sanitary Sewerage Piping: Piping and carrier pipe requirements.
9. Section 333111 - Public Sanitary Sewerage Gravity Piping: Piping and carrier pipe requirements.
10. Section 334200 - Stormwater Conveyance: Soil backfill, piping, and carrier pipe requirements.
11. Section 335213 - Liquid Hydrocarbon Piping: Piping and carrier pipe requirements.
12. Section 335216 - Gas Hydrocarbon Piping: Piping and carrier pipe requirements.
13. Section 336100 - Hydronic Energy Distribution: Piping and carrier pipe requirements.
14. Section 336300 - Steam Energy Distribution: Piping and carrier pipe requirements.
15. Section 337119 - Electrical Underground Ducts, Ductbanks, and Manholes: Piping and carrier pipe requirements.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.

B. Jacked Pipe:

1. Basis of Measurement: Per linear foot in place measured on invert of jacked pipe from face of jacked pipe.

2. Basis of Payment: Includes excavation, jacked pipe, carrier pipe, grout, accessories, tests, and backfill.

1.3 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:

1. AASHTO HB-17 - Standard Specifications for Highway Bridges.
2. AASHTO M133 - Standard Specification for Preservatives and Pressure Treatment Processes for Timber.
3. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. American Railway Engineering and Maintenance-of-Way Association:

1. AREMA - Manual for Railway Engineering.

C. ASTM International:

1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
2. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
3. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
4. ASTM A449 - Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use.
5. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.

D. National Utility Contractors Association:

1. NUCA - Guide to Pipe Jacking and Microtunneling Design.

1.4 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with PennDOT and Leesport Borough, and utilities within construction area.

1.5 PREINSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Requirements for preinstallation meeting.

B. Convene minimum two weeks prior to commencing Work of this Section.

1.6 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

- B. Product Data: Submit manufacturer information regarding tunnel liner plate, showing sizes, shapes, methods of attachment, connection details, and details of grout holes.
- C. Shop Drawings:
 - 1. Indicate details of casing, jacking head, sheeting, and other falsework for trenches and pits, and support for water main, field sketches, and other details to complete Work.
 - 2. Indicate relationship of proposed installation to water main over installation, angle of installation, right-of-way lines, and general layout of built facilities.
 - 3. Indicate cross-section(s) from field survey, showing installation in relation to actual profile of water main.
 - 4. Submit description of proposed construction plan, dewatering plan, and plan to establish and maintain vertical and horizontal alignments.
 - 5. Copies of a report of schedules, calculations, procedures, and any supplemental subsurface soil condition investigations performed along the path of the proposed crossing. The report will summarize the subsurface conditions that are known to the Contractor and that his proposed crossing procedure is based upon factual, best available information. The Contractor shall be responsible for obtaining and including in his bid price the cost of any additional borings along the pipe alignment which may be necessary to design the proposed horizontal boring. Work under this section shall be completed by a licensed professional geotechnical engineer.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for tunnel liner.
- F. Submit emergency response procedures to handle situations when conduit is compromised and jeopardizes safety or integrity of installation.
- G. Submit written report results of visual check of entire length of casing prior to installation of carrier to verify that there are no voids or defective joints.
- H. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- I. Qualifications Statements:
 - 1. Submit qualifications for installer and licensed professional.
 - 2. Welders: Qualify procedures and personnel according to AWS D1.1/D1.1M.

1.7 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of casing or tunnel liner, carrier pipe, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.8 QUALIFICATIONS

- A. Installer: Company specializing in performing Work of this Section with minimum **three** years' **documented** experience.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Handling: Support casing and carrier pipes with nylon slings during handling.
- D. Storage:
 - 1. Store products according to manufacturer instructions.
 - 2. Use wooden shipping braces between layers of stacked pipe.
 - 3. Stack piping lengths no more than three layers high.
 - 4. Store field joint materials in original shipping containers.
- E. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide temporary end caps and closures on piping and fittings and maintain in place until installation.
 - 3. Protect piping system pieces from entry of foreign materials and water by installing temporary covers, completing sections of Work, and isolating parts of completed system.
 - 4. Provide additional protection according to manufacturer instructions.

1.10 AMBIENT CONDITIONS

- A. Section 015000 - Temporary Facilities and Controls: Requirements for ambient condition control facilities for product storage and installation.

1.11 EXISTING CONDITIONS

- A. Field Measurements:
 - 1. Verify field measurements prior to fabrication.
 - 2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 CASING AND JACKING PIPE

A. Steel Casing Pipe:

1. Comply with ASTM A53/A53M.
2. Minimum Yield Strength: 35,000 psi.
3. Minimum Wall Thickness: 0.625 inch.
4. Welded Joints:
 1. Comply with AWS D1.1/D1.1M.
 2. Full circumference.

B. Performance and Design Criteria:

1. Casing Pipe and Tunnel Liner: Leakproof.
2. Loading:
 1. Highways:
 - 1) Earth cover.
 - 2) H-20 live loading, according to AASHTO HB-17.
 - 3) Impact loading according to AASHTO HB-17
 2. Railways:
 - 1) Earth cover.
 - 2) Comply with AREMA - Manual for Railway Engineering.
 - 3) Impact loading according to AREMA guidelines plus 50 percent.
3. Bracing, Backstops, and Jacks: Of sufficient rating for continuous jacking without stopping except to add pipe sections, and to minimize tendency of ground material to freeze around casing pipe.

C. Casing Pipe Coating

1. Coal-tar epoxy polyamide
2. 3.0 mil thickness interior and exterior
3. Suitable for exposure as referenced in the following specifications: AWWA C-210 for exterior • SSPC-Paint 16 • Steel Tank Institute Corrosion Control System STI-P3
4. Prepare all surfaces per manufacturer's recommendation

2.2 STEEL TUNNEL LINER

A. Comply with AREMA guidelines.

B. Plates:

1. Material: Structural steel.
2. Comply with ASTM A1011/A1011M.
3. Minimum Grade: 40.

C. Bolts and Nuts Used with Lapped Seams:

1. Minimum Diameter: 5/8 inch.
2. Bolts for Plate Thicknesses Greater Than or Equal to 0.209 Inches: Comply with ASTM A449.
3. Bolts for Plate Thicknesses Less Than 0.209 Inches: Comply with ASTM A307, Grade A.
4. Nuts: Comply with ASTM A307, Grade A.

D. Bolts and Nuts Used with Four-Flanged Plates:

1. Comply with ASTM A307, Grade A.
2. Thread: Coarse.
3. Diameter:
 1. Plate Thicknesses up to and Including 0.179 Inch: Minimum 1/2 inch.
 2. Plate Thicknesses Greater Than 0.179 Inch: Minimum 5/8 inch.

2.3 CARRIER PIPE – NOT USED

2.4 MATERIALS

A. Soil Backfill for Trench Approaches and Pits to Finish Grade:

1. Subsoil with no rocks 6 inches in diameter or greater, frozen earth, or foreign matter.

B. Pressure-Grout Mix: One part portland cement and six parts mortar sand, mixed with water to consistency applicable for pressure grouting.

C. Mortar Sand: Comply with ASTM C33.

D. Portland Cement:

1. Comply with ASTM C150.

2.5 ACCESSORIES

A. Timber Supports and Insulators:

1. Description:
 1. Furnish notches to accommodate fastening.
 2. Treat notches at time of pipe installation.

B. Steel and Plastic Supports and Insulators:

1. Bands: 14-gage stainless steel.
2. Flange Bolts: 5/16-inch stainless steel.
3. Liner: Heavy-duty PVC.
4. Skids: Polyethylene.

C. Steel Strapping: Comply with ASTM A36/A36M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that connection to existing piping system, sizes, locations, and invert elevations are as indicated on Shop Drawings.

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Identify required lines, levels, contours, and datum locations.
- C. Existing Utilities:
 1. Locate and identify utilities indicated to remain and protect from damage.
 2. Establish minimum separation of 1.5 vertical feet from other services or sanitary sewage piping.
- D. Establish elevations of casing to comply with the depth of cover specified on the Drawings.
- E. Maintain access to existing facilities and other active installations requiring access.

3.3 INSTALLATION

- A. Dewatering:
 1. As specified in Section **312316.13 - Trenching**].
 2. Intercept and divert surface drainage precipitation and ground water away from excavation through use of dikes, curb walls, ditches, pipes, sumps, or other methods.
 3. Develop substantially dry subgrade for subsequent operations.
 4. Comply with requirements of local and state authorities for dewatering to any watercourse, prevention of stream degradation, and erosion and sediment control.
- B. Pits or Approach Trenches:

1. Excavate approach trenches or pits, as indicated on Shop Drawings, and as Site conditions require.
2. Ensure that casing entrance faces as near perpendicular in alignment as conditions permit.
3. Establish vertical entrance face at least 1 foot above top of casing.
4. Install excavation supports as specified in Section [312316.13 - Trenching.

C. Casing Pipe:

1. Boring:

1. Push pipe into ground with boring auger rotating within pipe to remove soil.
2. Do not advance cutting head ahead of casing pipe, except for distance necessary to permit cutting teeth to maintain clearance for pipe.
3. Arrange machine bore and cutting head to be removable from within pipe.
4. Arrange face of cutting head to provide barrier to free flow of soft material.
5. If unstable soil is encountered during boring, retract cutting head into casing to permit balance between pushing pressure and ratio of pipe advancement to quantity of soil.
6. Grout to fill voids if voids develop greater than OD of pipe by approximately 1 inch.
7. If boring is obstructed, relocate jack or tunnel as directed by Engineer.

2. Jacking:

1. Construct adequate thrust wall normal to proposed line of thrust.
2. Impart thrust load to pipe through suitable thrust ring sufficiently rigid to ensure uniform distribution of thrust load on full pipe circumference.

3. Drilling and Jacking:

1. Use oil-field-type rock roller bit or plate bit made up of individual roller cutter units solidly welded to pipe.
2. Turned and push pipe for its entire length by drilling machine to give bit necessary cutting action.
3. Inject high-density slurry (oil field drilling mud) to head as cutter lubricant.
4. Inject slurry at rear of cutter units to prevent jetting action ahead of pipe.

4. Mining and Jacking: Use manual hand-mining excavation from within casing pipe as casing is advanced with jacks, allowing minimum ground standup time ahead of casing pipe.

D. Tunneling:

1. Liner Plates:

1. Advance excavation for tunnel lining in increments sufficient for erection of one ring of liners.
2. Install liner plates immediately after each increment of excavation.
3. Excavate to minimize voids behind liner plates.
4. Force-grout voids immediately, using pressure as necessary to completely fill voids.

2. Excavate to lines, grades, dimensions, and tolerances as indicated on Drawings to accommodate initial support and permanent lining.
 3. Tunnel Linings:
 1. Do not damage lining or coating.
 2. Ensure that edges are clean and free of material capable of interfering with proper bearing.
 3. Install liner plates and bolts according to liner plate manufacturer instructions, and replace liner plates or bolts not meeting these requirements.
 4. Use liner plates for full length of tunnel of one type only, using either flanged or lapped-seam type of construction.
 4. Place concrete invert.
- E. Pressure Grouting: Pressure-grout annular space between casing pipe and surrounding earth.
- F. Carrier Pipe:
1. Clean, inspect, and handle pipe as specified in Section 331413 - Public Water Utility Distribution Piping Culverts.
 2. Placement:
 1. Place carrier pipe as specified in Section 331413 - Public Water Utility Distribution Piping.
 2. Prevent damage to pipe joints as carrier pipe is placed in casing.
 3. Supports:
 1. Support pipeline within casing such that no external loads are transmitted to carrier pipe.
 2. Attach supports to barrel of carrier pipe; do not rest carrier pipe on bells.
 4. Grout ends of casing to seal.

3.4 TOLERANCES

- A. Section 014000 - Quality Requirements: Requirements for tolerances.
- B. Excavation: Do not overcut excavation by more than 1 inch greater than OD of casing pipe.
- C. Casing Pipe Vertical and Horizontal Alignment: Plus or minus 3 inches prior to installation of carrier pipe.
- D. Pipe Bells: Minimum 1/2-inch clearance to casing.

3.5 FIELD QUALITY CONTROL

- A. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.

B. Compaction Testing:

1. Comply with ASTM D1557.
2. If tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

3.6 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Remove temporary facilities for casing installation and jacking operations as specified in Section 015000 - Temporary Facilities and Controls.

3.7 PROTECTION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect plant life, lawns, and other features of final landscaping.
- C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

END OF SECTION 330507

SECTION 330509.33 - THRUST RESTRAINT FOR UTILITY PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Tied joint restraint system.

B. Related Requirements:

1. Section 312316.13 - Trenching: Trenching and backfilling requirements for Site utilities.
2. Section 331413 - Public Water Utility Distribution Piping: Requirements for piping Work as required by this Section.
3. Section 331416 - Site Water Utility Distribution Piping: Requirements for piping Work as required by this Section.
4. Section 333100 - Sanitary Sewerage Piping: Requirements for piping Work as required by this Section.
5. Section 333111 - Public Sanitary Sewerage Gravity Piping: Requirements for piping Work as required by this Section.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.

B. Tied Joint Restraint System:

1. Basis of Measurement: By unit.
2. Basis of Payment: Included in the cost of pipe, fitting, valve and/or appurtenance installed. Payment includes complete tied joint restraint system and accessories.

1.3 REFERENCE STANDARDS

A. American Water Works Association:

1. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.

B. ASME International:

1. ASME B1.1 - Unified Inch Screw Threads, UN and UNR Thread Form.

C. ASTM International:

1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

3. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
4. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
5. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
6. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
7. ASTM A588/A588M - Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi (345 MPa) Minimum Yield Point, with Atmospheric Corrosion Resistance.
8. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.
9. ASTM F436 - Standard Specification for Hardened Steel Washers.

1.4 COORDINATION

- A. Section 013000 - Administrative Requirements: Requirements for coordination.
- B. Coordinate Work of this Section with installation of fittings and joints that require restraint.

1.5 PREINSTALLATION MEETINGS

- A. Section 013000 - Administrative Requirements: Requirements for pre-installation meeting.

1.6 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer catalog information for restrained joint details and installation instructions.
- C. Shop Drawings:
 1. Indicate restrained joint details and materials being used.
 2. Submit layout drawings showing piece numbers and locations.
 3. Indicate restrained joint locations.
- D. Samples: Submit two samples of joint restraint parts.
- E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- F. Delegated Design Submittals:
 1. Submit signed and sealed Shop Drawings with design calculations and assumptions for restrained lengths.
 2. Submit joint restraint details.
 3. Use joint restraint devices specifically designed for applications described in manufacturer information.

- G. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
- H. Qualifications Statement:
 - 1. Submit qualifications for manufacturer, fabricator, and licensed professional.

1.7 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of joint restraints.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store materials according to manufacturer instructions.
- D. Protection:
 - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
 - 2. Provide additional protection according to manufacturer instructions.

1.9 EXISTING CONDITIONS

- A. Field Measurements:
 - 1. Verify field measurements prior to fabrication.
 - 2. Indicate field measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

- A. Provide pressure pipeline with restrained joints at each bend, tee, and change in direction.

2.2 TIED JOINT RESTRAINT SYSTEMS

- A. Tie Bolts:

1. Mechanical Joints on 2- and 3-Inch Pipe:
 - a. Size: 5/8 inch.
 - b. Comply with ASTM A588/A588M, Grade B.
 - c. Comply with ASTM A325, Type 3, except increase tensile strength of full-body threaded section to 40,000 lb. minimum for 5/8 inch and 60,000 lb. minimum for 3/4 inch by heat-treating (quenching and tempering) to manufacturer's reheat and hardness specifications.
2. Mechanical and Flanged Joints on 4- to 12-Inch Pipe:
 - a. Size: 3/4 inch.
 - b. Comply with ASTM A588/A588M, Grade B.
 - c. Comply with ASTM A325, Type 3, except increase tensile strength of full-body threaded section to 40,000 lb. minimum for 5/8 inch and 60,000 lb. minimum for 3/4 inch by heat-treating (quenching and tempering) to manufacturer's reheat and hardness specifications.
3. Mechanical Joints on 14- to 24-Inch Pipe:
 - a. Size: 3/4 inch.
 - b. Comply with ASTM A588/A588M, Grade B and ASTM A325, Type 3.
4. Mechanical and Flanged Joints on 30-Inch and Larger Pipe:
 - a. Size: 1 inch.
 - b. Comply with ASTM A588/A588M, Grade B.
 - c. Comply with ASTM A325, Type 3, except increase tensile strength of full-body threaded section to 100,000 lb. minimum by heat-treating (quenching and tempering) to manufacturer's reheat and hardness specifications.

B. Tie Nut:

1. Description: Hex nut for each tie bolt and tie rods.
2. Comply with ASTM A563, Grade C3.
3. Finish: zin plated.

C. Tiepin:

1. Bends and Hydrants: 3/4-inch round bar stock.
2. Size and Shape: 6-inch hairpin.
3. Comply with ASME B1.1 and ASTM A588/A588M.
4. Finish: zinc plated.

D. Tie Coupling:

1. Description: Extension of continuous-threaded rods.
2. Provide with center stop to aid installation.
3. Comply with ASTM A588/A588M.
4. Finish: zinc plated.

E. Tie Clamp:

1. Description: Retainer clamp for ductile iron, asbestos-cement, and PVC push-on pipe.
2. Location: In front of bell.
3. Comply with ASTM A36/A36M, ASTM A307, Grade A, and ASTM A563, Grade A.
4. Finish: zinc plated.

F. Tie Rod:

1. Description: Continuous-threaded rod for cutting to desired lengths.
2. Comply with ASTM A588/A588M, Grade B, ASTM A325, Type 3, and ASME B1.1.
3. Finish: zinc plated.

G. Tie Bar:

1. Description: Steel bar used to restrain push-in plugs.
2. Comply with ASTM A36/A36M.
3. Finish: zinc plated.

H. Tie Washer:

1. Description: Round flat washers.
2. ASTM A588/A588M, ASTM F436, Type 1.
3. Finish: zinc plated.

2.3 MATERIALS

A. Steel:

1. High-Strength Low-Alloy Steel: Comply with ASTM A588/A588M, heat treated.
2. High-Strength Low-Alloy Steel: Comply with ASTM A588/A588M.
3. Carbon Steel: Comply with ASTM A36/A36M.

2.4 FINISHES

A. Zinc Plating:

1. Factory applied.
2. Comply with ASTM B633.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that pipe and fittings are ready to receive Work.

- C. Field measure and verify conditions for installation of Work.

3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Clean surfaces of pipe and fittings that are to receive tied joint restraint systems.

3.3 INSTALLATION

- A. According to AWWA C600.
- B. Install joint restraint system such that joints are mechanically locked together to prevent joint separation.
- C. Provide all valves, tees, bends, caps and plugs with concrete thrust blocks as indicated on the Drawings.

Pour concrete thrust blocks against undisturbed earth. Locate thrust blocks to contain the resultant force and so pipe and fitting joints will be accessible for repair.

- D. Furnish and install tie rods, clamps, set screw retainer glands, or restrained joints as indicated on the Drawings. Protec metal restrained joint components against corrosion by applying a bituminous coating, or by encasing the entire assembly with an 8-mil thick polyethylene wrap in accordance with AWWA C105, or by concrete mortar encasement of the metal area.
- E. Provide field lock gaskets a minimum of 2 joints of restrained pipe on each side of a restrained valve or fitting.

3.4 TOLERANCES

- A. Section 014000 - Quality Requirements: Requirements for tolerances.
- B. Torque 5/8-inch nuts on mating threaded fasteners from 45 to 60 ft.-lbf.
- C. Torque 3/4-inch nuts on mating threaded fasteners from 75 to 90 ft.-lbf.
- D. Torque 1-inch nuts from 100 to 120 ft.-lbf.

+++ END OF SECTION 330509.33 +++

PERMITS

Highway Occupancy Permit

Permit No.: **06105485**

Name and Address of Permittee: Southeastern Chester County Refuse Authority 219 Street Rd West Grove, PA 19390	County: Chester	Issue Date: 2/22/2021
	County Contact No.: (484) 340-3220	Expiration Date: 2/22/2022
	Issuing District Office: 6-0	Application No.: 230534
	District Contact No.: (610) 205-6790	Account No.:
	Municipalities: London Grove Township	Permit Fee: \$ 50.00

Immediately upon completion of the work Permittee shall notify the permit office where application was made. Subject to all the conditions, agreements, restrictions, and regulations prescribed by the Pennsylvania Department of Transportation, (see in particular 67 Pa. Code, Chapter 212, 441 and 459 and State Highway Law, 36 P.S. Section 670 - 411, 420 and 421) and subject to the plans, special conditions, or restrictions herein set forth or attached hereto. This permit shall be located at the work site and shall be available for inspection by any police officer or Department representative.

Location and Description of Work		Permit No.: 06105485
1 of 1	State Route #: 0041 Segment(s): From 0170 To 0170 Offset(s): From 1668 To 1795	681: Install Storm Water Facility Not Connected to Department Drainage Facility

Permit Conditions		Permit No.: 06105485
1 of 14	MUST NOTIFY THE PENNDOT PRESS OFFICE VIA E-MAIL: bradrudolph@pa.gov; robbiggs@pa.gov; claceymane@pa.gov. A MINIMUM FIVE WORKING DAYS PRIOR TO THE CLOSING OF TRAVEL LANE(S) CONTRACTOR ONLY.	
2 of 14	NOTIFY THE TRAFFIC MANAGEMENT CENTER AT 610-205-6934 PRIOR TO SETTING UP ANY LANE CLOSURES OR RESTRICTIONS, AND WHEN THE CLOSURE/RESTRICTION IS REMOVED.	
3 of 14	CONTACT COUNTY PERMIT INSPECTOR AT LEAST 3 WORK DAYS PRIOR TO START OF WORK AT 484-340-3220.	
4 of 14	AN INSPECTOR, WHEN AVAILABLE, WILL BE ASSIGNED ON MORE THAN A SPOT INSPECTION BASIS. PERMITTEE WILL BE CHARGED ALL INSPECTION COSTS INCURRED BY THE DEPARTMENT.	
5 of 14	THIS PERMIT AUTHORIZES WORK ONLY IN DEPARTMENT HIGHWAY RIGHT OF WAY.	
6 of 14	DEPARTMENT MUST BE NOTIFIED IN WRITING UPON COMPLETION OF WORK.	
7 of 14	ALL DISTURBED AREAS OUTSIDE THE PAVEMENT OR SHOULDER SHALL BE RESTORED TO A CONDITION AT LEAST EQUAL TO THAT WHICH EXISTED BEFORE THE START OF WORK.	
8 of 14	NO LANES MAY BE RESTRICTED BETWEEN THE HOURS OF 6:00 AM TO 9:00 AM OR BETWEEN THE HOURS OF 3:00 PM TO 6:00 PM.	
9 of 14	DRAINAGE INSTALLED BY THIS PERMIT IS THE RESPONSIBILITY OF THE PERMITTEE TO CONTINUALLY MAINTAIN OR REPLACE.	
10 of 14	PERMITTEE IS RESPONSIBLE FOR ENSURING THAT MUD, SILT AND OTHER DEBRIS IS REMOVED FROM VEHICLES AND TIRES (BY POWER WASH, ETC.) BEFORE ENTERING ONTO THE HIGHWAY.	

Highway Occupancy Permit

Permit No.: **06105485**

Permit Conditions		Permit No.: 06105485
11 of 14	<p>PERMITTEE MAY BE REQUIRED TO PROVIDE DAILY VIRTUAL INSPECTION VIA ELECTRONIC DOCUMENTATION. THIS DOCUMENTATION SHOULD INCLUDE, BUT IS NOT LIMITED TO, PHOTO DOCUMENTATION OF WORK PERFORMED, DAILY LOG OF WORK ACTIVITIES, MATERIAL CERTIFICATIONS, TEST RESULTS, AND OTHER PERTINENT INFORMATION THAT DOCUMENTS PROPER RESTORATION OF THE HIGHWAY. PRIOR TO THE START OF WORK, CONTACT THE DISTRICT PERMIT MANAGER OR COUNTY PERMIT SUPERVISOR FOR SPECIFIC REQUIREMENTS. FAILURE TO PROVIDE THE DOCUMENTATION MAY RESULT IN PENNDOT STOPPING THE WORK, PHYSICALLY CLOSING ACCESS TO THE STATE HIGHWAY, AND/OR REMOVAL AND REPLACEMENT OF WORK.</p>	
12 of 14	<p>ALL WORK MUST COMPLY WITH THE GUIDANCE FOR BUSINESSES IN THE CONSTRUCTION INDUSTRY PERMITTED TO OPERATE DURING THE COVID-19 DISASTER EMERGENCY.</p>	
13 of 14	<p>PRIOR TO THE START OF WORK, THE CONTRACTOR IS REQUIRED TO PROVIDE THE DEPARTMENT WITH THE NAME OF THE PANDEMIC SAFETY OFFICER.</p>	
14 of 14	<p>AT THE TIME OF THE PRE-CONSTRUCTION MEETING, THE CONTRACTOR IS REQUIRED TO CONFIRM WITH THE INSPECTOR-IN-CHARGE THAT THE PROPOSED SECCRA DETENTION BASIN SLOPES ALONG SR 0041 WILL BE CONSTRUCTED IN ACCORDANCE WITH THE HIGHWAY OCCUPANCY PERMIT PLAN. THE INSPECTOR-IN-CHARGE MUST BE NOTIFIED PRIOR TO THE START OF THE CONSTRUCTION OF THE DETENTION BASIN SLOPES AND MUST ALSO BE NOTIFIED ONCE THE GRADING HAS BEEN COMPLETED, SO THAT THE INSPECTOR-IN-CHARGE MAY COMPLETE A FINAL INSPECTION OF THE DETENTION BASIN ALONG SR 0041.</p>	

<p>Acknowledgement of Completion</p> <p>Permit work has been completed:</p> <p>Date:</p> <p>By:</p>	<p>Yassmin Gramian, P.E.</p> <p>-----</p> <p>Secretary of Transportation</p> <p>Kenneth B. McClain</p> <p>-----</p> <p>District Executive</p>
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ADDITIONAL FORMS

INSTRUCTIONS FOR NONCOLLUSION AFFIDAVIT

1. This Noncollusion Affidavit is material to any contract awarded pursuant to this bid. According to the Pennsylvania Antibi-Rigging Act, 73 P.S. §§ 1611 et seq., governmental agencies may require Noncollusion Affidavits to be submitted together with bids.
2. This Noncollusion Affidavit must be executed by the member, officer or employee of the bidder who makes the final decision on prices and the amount quoted in the bid.
3. Bid rigging and other efforts to restrain competition, and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the Affidavit should examine it carefully before signing and assure himself or herself that each statement is true and accurate, making diligent inquiry, as necessary, of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval or submission of the bid.
4. In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an Affidavit must be submitted separately on behalf of each party.
5. The term "complementary bid" as used in the Affidavit has the meaning commonly associated with that term in the bidding process, and includes the knowing submission of bids higher than the bid of another firm, any intentionally high or noncompetitive bid, and any other form of bid submitted for the purpose of giving a false appearance of competition.
6. Failure to file an Affidavit in compliance with these instructions will result in disqualification of the bid.

NONCOLLUSION AFFIDAVIT

Contract Name/
Contract/Bid No. _____

State of _____:

§

County of _____:

I state that I am _____ of
(Title)

(Name of my firm)

and that I am authorized to make this affidavit on behalf of my firm, and its owners, directors, and officers. I am the person responsible in my firm for the price(s) and the amount of this bid.

I state that:

1. The price(s) and amount of this bid have been arrived at independently and without consultation, communication or agreement with any other contractor, bidder or potential bidder.
2. Neither the price(s) nor the amount of this bid, and neither the approximate price(s) nor approximate amount of this bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before bid opening.
3. No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complementary bid.
4. The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.
5. _____, its affiliates,
(Name of my firm)

subsidiaries, officers, directors and employees are not currently under investigation by any governmental agency and have not in the last three years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion* with respect to bidding on any public contract, except as follows:

I state that _____ understands
(Name of my firm)

and acknowledges that the above representations are material and important, and will be relied on by _____, in awarding the
(Name of public entity)

contract(s) for which this bid is submitted. I understand and my firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from

(Name of public entity)

of the true facts relating to submission of bids for this contract.

(Name and Company Position)

SWORN TO AND SUBSCRIBED
BEFORE ME THIS _____
DAY OF _____,
20____

Notary Public

My Commission Expires:

*involvement in this activity does not prohibit the _____

(Name of public entity)

from accepting this Bid or awarding a contract; but this may be a ground for determining whether the

(Name of public entity)

should decide to award a contract based on a lack of responsibility.



COMMONWEALTH OF PENNSYLVANIA

PUBLIC WORKS EMPLOYMENT VERIFICATION FORM

Business or Organization Name (Employer) _____

Address _____

City _____ State _____ Zip Code _____

Check One:

- Contractor
- Subcontractor

Contracting Public Body _____

Contract/Project No _____

Project Description _____

Project Location _____

Date Enrolled in E-Verify: _____

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

Date of Signature

6. If an individual or a partnership, give the:
 - A. Date or organization:
 - B. Name and address of all partners (state whether general or limited partnership):

7. If other than a corporation or partnership, describe your organization and name all principals or owners:

8. List states and categories in which your organization is legally qualified to do business giving all registration or license numbers.

9. List states in which partnership or trade name is filed.

10. List the types of work normally performed by your own forces.

11. Have you ever failed to complete any work awarded to you? If so, note when, where, and why:

12. Within the last five years, has any owner, officer or partner of your organization ever been an owner, officer or partner of another organization when it failed to complete a construction contract? If so, attach a separate sheet of explanation.

13. On a separate sheet, list major construction projects your organization has in process, giving the name or project, owner, architect, contract amount, percent complete, and scheduled completion date.

14. On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion, and percentage of the cost of the work performed with your own forces.

15. On a separate sheet, list the construction experience of the key individuals of your organization.
16. Trade References:
17. Bank References:
18. Name of Bonding Company and name and address of agent:
19. Attach a financial statement, audited if available, including Contractor's latest balance sheet and income statement showing the following items:
 - A. Current Assets (e.g., cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses):
 - B. Net Fixed Assets:
 - C. Other Assets:
 - D. Current Liabilities (e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries, and accrued payroll taxes):
 - E. Other Liabilities (e.g., capital, capital stock, authorized and outstanding shares per values, earned surplus, and retained earnings):

Name of firm preparing financial statement and date thereof:

Is this financial statement for the identical organization named on page 00420-1?

If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsiary).

Will this organization act as guarantor of the contractor for construction?

Dated at _____ this ____ of _____, 20__.

Name of Organization: _____

BY: _____

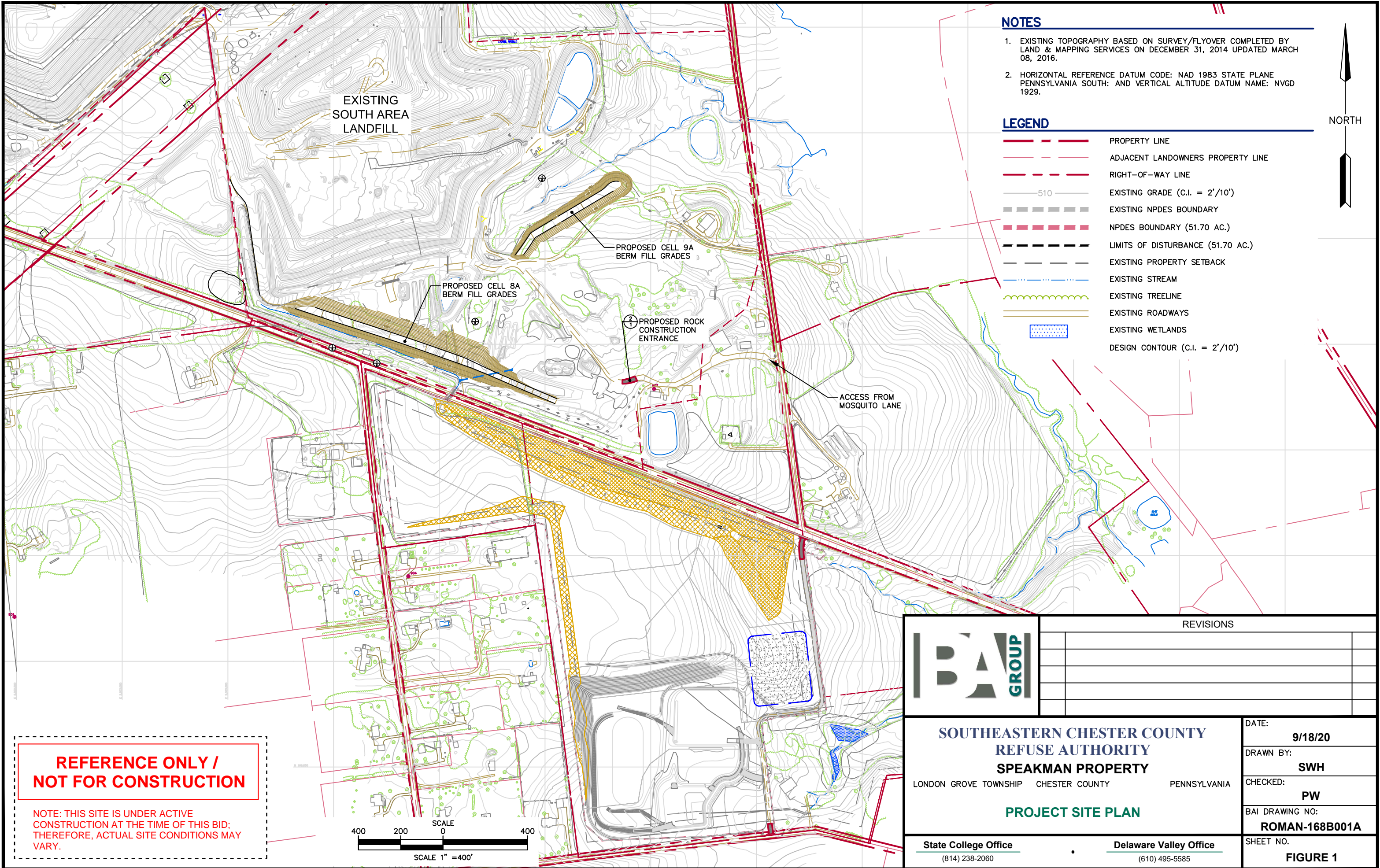
TITLE: _____

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

Notary Public:

My Commission Expires:

DRAWINGS



REFERENCE ONLY / NOT FOR CONSTRUCTION

NOTE: THIS SITE IS UNDER ACTIVE CONSTRUCTION AT THE TIME OF THIS BID; THEREFORE, ACTUAL SITE CONDITIONS MAY VARY.

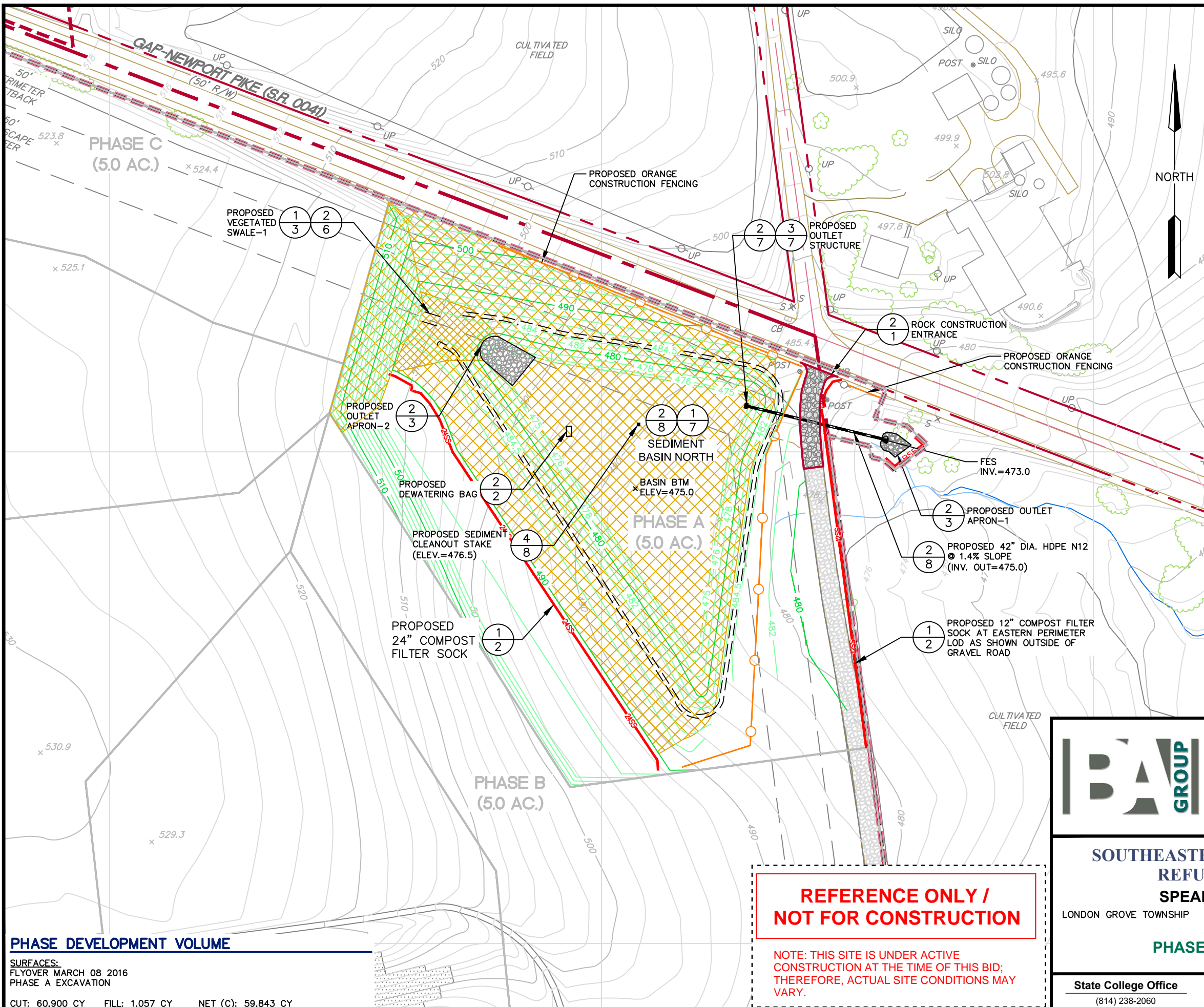


SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY
SPEAKMAN PROPERTY
 LONDON GROVE TOWNSHIP CHESTER COUNTY PENNSYLVANIA

PROJECT SITE PLAN

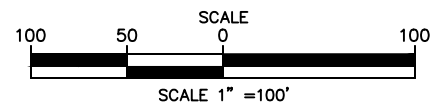
State College Office (814) 238-2060 Delaware Valley Office (610) 495-5585

DATE: 9/18/20
 DRAWN BY: SWH
 CHECKED: PW
 BAI DRAWING NO: ROMAN-168B001A
 SHEET NO. FIGURE 1



- NOTES**
- EXISTING TOPOGRAPHY BASED ON SURVEY/FLYOVER COMPLETED BY LAND & MAPPING SERVICES ON DECEMBER 31, 2014 UPDATED MARCH 08, 2016.
 - HORIZONTAL REFERENCE DATUM CODE: NAD 1983 STATE PLANE PENNSYLVANIA SOUTH; AND VERTICAL ALTITUDE DATUM NAME: NVGD 1929.
 - TOPSOIL FROM PHASE A WILL BE STOCKPILED ON THE SOUTHERN PORTION OF PHASE B OUTSIDE THE LIMIT OF EXCAVATION.

- LEGEND**
- PROPERTY LINE
 - ADJACENT LANDOWNERS PROPERTY LINE
 - RIGHT-OF-WAY LINE
 - EXISTING GRADE (C.I. = 2'/10')
 - EXISTING NPDES BOUNDARY
 - NPDES BOUNDARY (51.70 AC.)
 - LIMITS OF DISTURBANCE (51.70 AC.)
 - EXISTING PROPERTY SETBACK
 - EXISTING STREAM
 - EXISTING TREELINE
 - EXISTING ROADWAYS
 - EXISTING WETLANDS
 - DESIGN CONTOUR (C.I. = 2'/10')
 - DESIGN CONTOUR (PREVIOUS PHASE) (C.I. = 2'/10')
 - PHASE DEVELOPMENT DIVISION LINE
 - 12" COMPOST FILTER SOCK
 - 18" COMPOST FILTER SOCK
 - 12" SILTFENCE
 - 18" SILTFENCE
 - SUPER SILTFENCE
 - ORANGE SAFETY FENCE
 - PERMANENT CHANNEL LINING: TRM-1' NAG P300 OR APPROVED EQUAL
 - TEMPORARY LINING - SSM-III' NAG SC150BN OR APPROVED EQUAL - SEDIMENT BASIN BTM; S150BN



PHASE DEVELOPMENT VOLUME

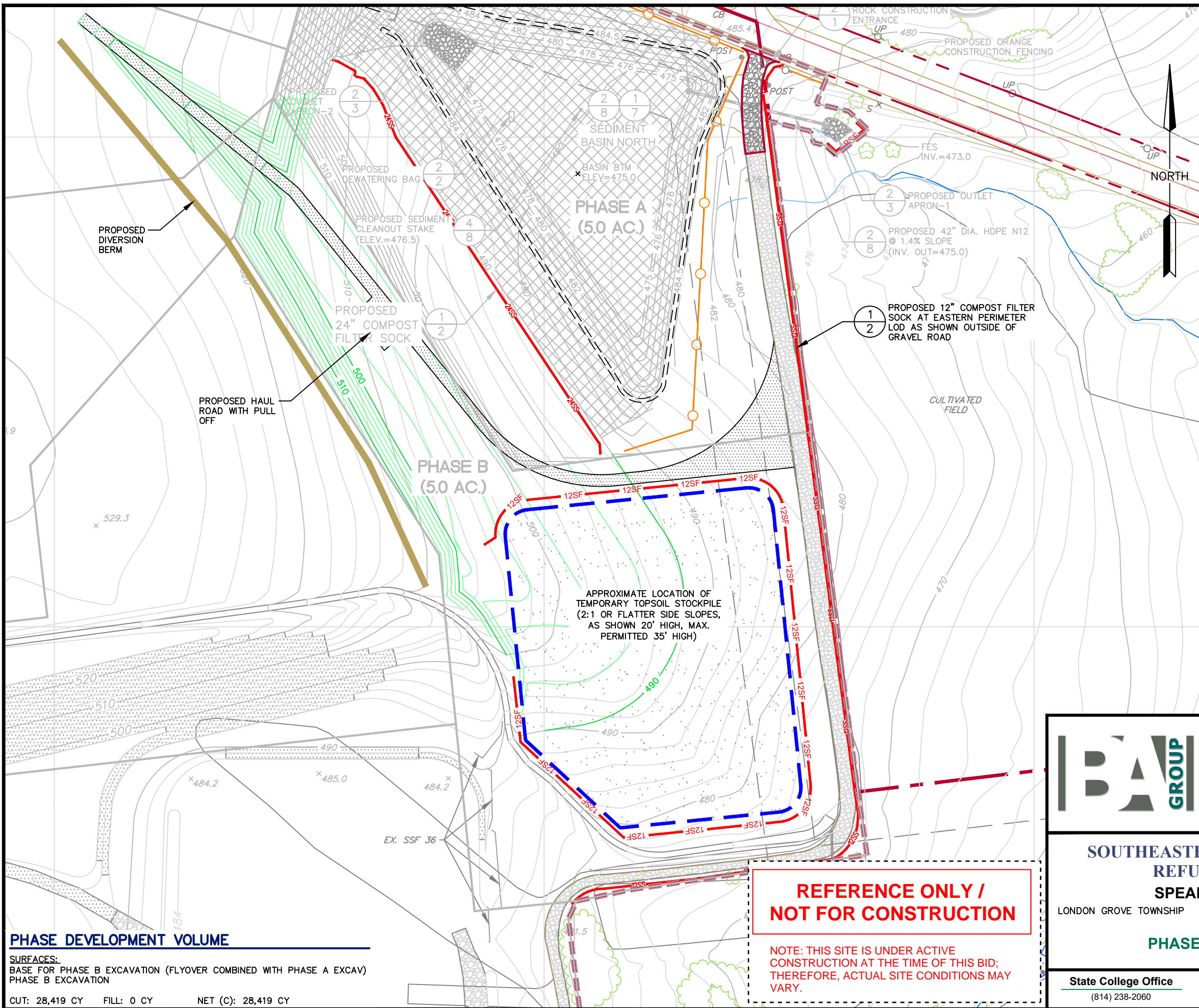
SURFACES:
FLYOVER MARCH 08 2016
PHASE A EXCAVATION

CUT: 60,900 CY FILL: 1,057 CY NET (C): 59,843 CY

**REFERENCE ONLY /
NOT FOR CONSTRUCTION**

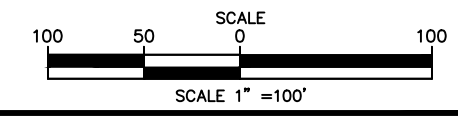
NOTE: THIS SITE IS UNDER ACTIVE
CONSTRUCTION AT THE TIME OF THIS BID;
THEREFORE, ACTUAL SITE CONDITIONS MAY
VARY.

	REVISIONS	
SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY		DATE: 9/16/20
SPEAKMAN PROPERTY		DRAWN BY: SWH
LONDON GROVE TOWNSHIP CHESTER COUNTY PENNSYLVANIA		CHECKED: PW
PHASE A DEVELOPMENT		BAI DRAWING NO: ROMAN-168B001B
State College Office (814) 238-2060	Delaware Valley Office (610) 495-5585	SHEET NO. FIGURE 2



- NOTES**
- EXISTING TOPOGRAPHY BASED ON SURVEY/FLYOVER COMPLETED BY LAND & MAPPING SERVICES ON DECEMBER 31, 2014 UPDATED MARCH 08, 2016.
 - HORIZONTAL REFERENCE DATUM CODE: NAD 1983 STATE PLANE PENNSYLVANIA SOUTH; AND VERTICAL ALTITUDE DATUM NAME: NAVD 1929.

- LEGEND**
- PROPERTY LINE
 - ADJACENT LANDOWNERS PROPERTY LINE
 - RIGHT-OF-WAY LINE
 - EXISTING GRADE (C.I. = 2'/10')
 - EXISTING NPDES BOUNDARY
 - NPDES BOUNDARY (51.70 AC.)
 - LIMITS OF DISTURBANCE (51.70 AC.)
 - EXISTING PROPERTY SETBACK
 - EXISTING STREAM
 - EXISTING TREELINE
 - EXISTING ROADWAYS
 - EXISTING WETLANDS
 - DESIGN CONTOUR (C.I. = 2'/10')
 - DESIGN CONTOUR (PREVIOUS PHASE) (C.I. = 2'/10')
 - PHASE DEVELOPMENT DIVISION LINE
 - 12" COMPOST FILTER SOCK
 - 18" COMPOST FILTER SOCK
 - 12" SILTFENCE
 - 18" SILTFENCE
 - SUPER SILTFENCE
 - ORANGE SAFETY FENCE
 - PERMANENT CHANNEL LINING: TRM-1' NAG P300 OR APPROVED EQUAL
 - TEMPORARY LINING - SSM-III' NAG SC150BN OR APPROVED EQUAL - SEDIMENT BASIN BTM; S150BN



PHASE DEVELOPMENT VOLUME

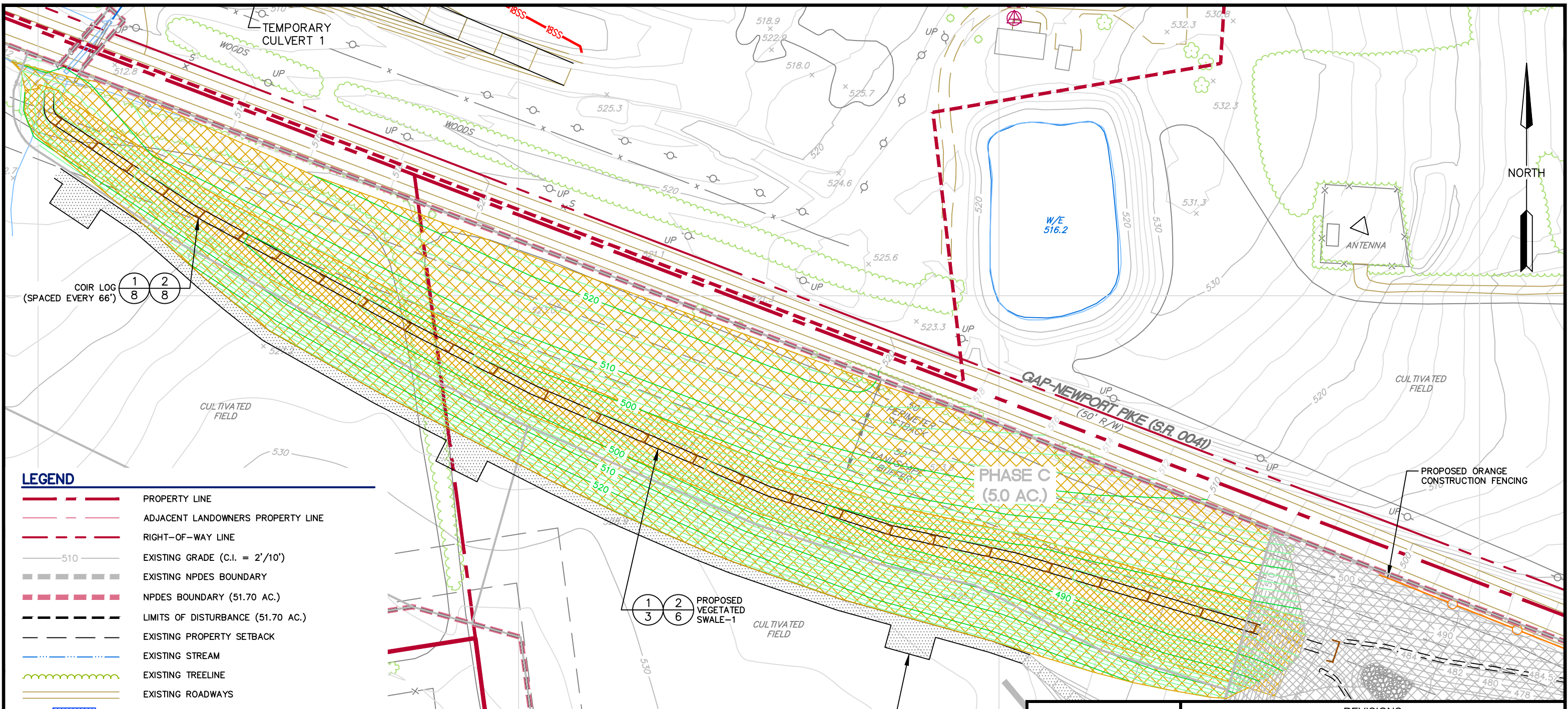
SURFACES:
 BASE FOR PHASE B EXCAVATION (FLYOVER COMBINED WITH PHASE A EXCAV)
 PHASE B EXCAVATION

CUT: 28,419 CY FILL: 0 CY NET (C): 28,419 CY

REFERENCE ONLY / NOT FOR CONSTRUCTION

NOTE: THIS SITE IS UNDER ACTIVE CONSTRUCTION AT THE TIME OF THIS BID; THEREFORE, ACTUAL SITE CONDITIONS MAY VARY.

	REVISIONS	
SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY SPEAKMAN PROPERTY LONDON GROVE TOWNSHIP CHESTER COUNTY PENNSYLVANIA		DATE: 9/16/20 DRAWN BY: SWH CHECKED: PW BAI DRAWING NO: ROMAN-168B001C
PHASE B DEVELOPMENT		SHEET NO. FIGURE 3
State College Office (814) 238-2060	Delaware Valley Office (610) 495-5585	



LEGEND

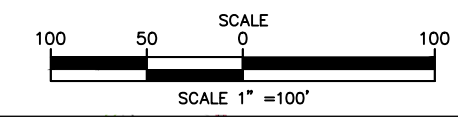
	PROPERTY LINE
	ADJACENT LANDOWNERS PROPERTY LINE
	RIGHT-OF-WAY LINE
	EXISTING GRADE (C.I. = 2'/10')
	EXISTING NPDES BOUNDARY
	NPDES BOUNDARY (51.70 AC.)
	LIMITS OF DISTURBANCE (51.70 AC.)
	EXISTING PROPERTY SETBACK
	EXISTING STREAM
	EXISTING TREELINE
	EXISTING ROADWAYS
	EXISTING WETLANDS
	DESIGN CONTOUR (C.I. = 2'/10')
	DESIGN CONTOUR (PREVIOUS PHASE) (C.I. = 2'/10')
	PHASE DEVELOPMENT DIVISION LINE
	12" COMPOST FILTER SOCK
	24" COMPOST FILTER SOCK
	12" SILTFENCE
	REINFORCED SILTFENCE
	ORANGE SAFETY FENCE
	PERMANENT CHANNEL LINING: TRM-1' NAG P300 OR APPROVED EQUAL
	TEMPORARY LINING - SSM-III' NAG SC150BN OR APPROVED EQUAL - SEDIMENT BASIN BTM; S150BN

- NOTES**
- EXISTING TOPOGRAPHY BASED ON SURVEY/FLYOVER COMPLETED BY LAND & MAPPING SERVICES ON DECEMBER 31, 2014 UPDATED MARCH 08, 2016.
 - HORIZONTAL REFERENCE DATUM CODE: NAD 1983 STATE PLANE PENNSYLVANIA SOUTH; AND VERTICAL ALTITUDE DATUM NAME: NAVD 1929.

PHASE DEVELOPMENT VOLUME

SURFACES:
 BASE FOR PHASE C EXCAVATION (FLYOVER COMBINED WITH PHASE B EXCAVATION)
 PHASE C EXCAVATION

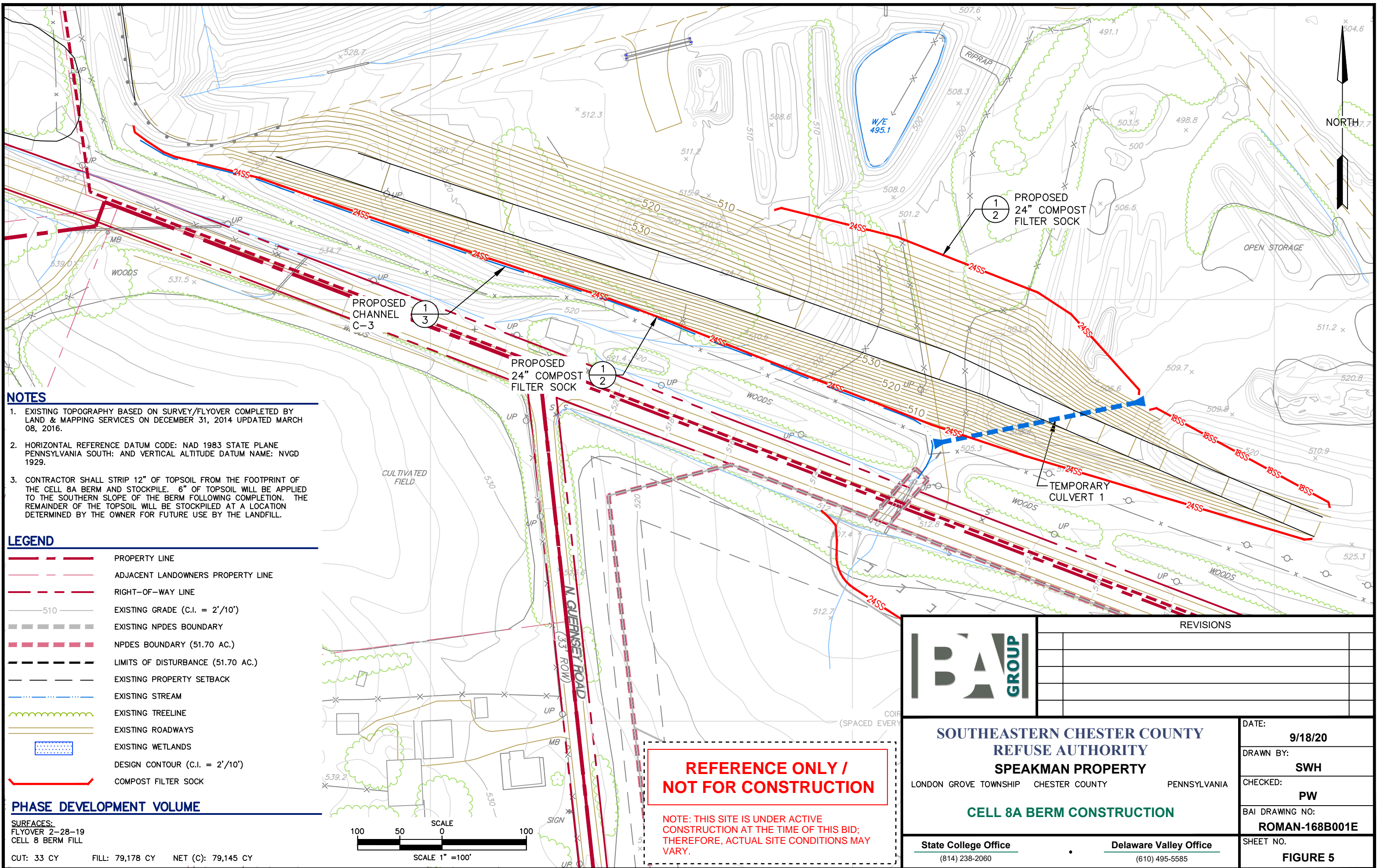
CUT: 159,924 CY FILL: 19 CY NET (C): 159,906 CY



REFERENCE ONLY / NOT FOR CONSTRUCTION

NOTE: THIS SITE IS UNDER ACTIVE CONSTRUCTION AT THE TIME OF THIS BID; THEREFORE, ACTUAL SITE CONDITIONS MAY VARY.

	REVISIONS	
SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY		DATE: 9/16/20
SPEAKMAN PROPERTY		DRAWN BY: SWH
LONDON GROVE TOWNSHIP CHESTER COUNTY PENNSYLVANIA		CHECKED: PW
PHASE C DEVELOPMENT		BAI DRAWING NO: ROMAN-168B001D
State College Office (814) 238-2060	Delaware Valley Office (610) 495-5585	SHEET NO. FIGURE 4



NOTES

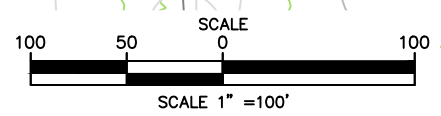
1. EXISTING TOPOGRAPHY BASED ON SURVEY/FLYOVER COMPLETED BY LAND & MAPPING SERVICES ON DECEMBER 31, 2014 UPDATED MARCH 08, 2016.
2. HORIZONTAL REFERENCE DATUM CODE: NAD 1983 STATE PLANE PENNSYLVANIA SOUTH; AND VERTICAL ALTITUDE DATUM NAME: NAVD 1929.
3. CONTRACTOR SHALL STRIP 12" OF TOPSOIL FROM THE FOOTPRINT OF THE CELL 8A BERM AND STOCKPILE. 6" OF TOPSOIL WILL BE APPLIED TO THE SOUTHERN SLOPE OF THE BERM FOLLOWING COMPLETION. THE REMAINDER OF THE TOPSOIL WILL BE STOCKPILED AT A LOCATION DETERMINED BY THE OWNER FOR FUTURE USE BY THE LANDFILL.

LEGEND

- PROPERTY LINE
- ADJACENT LANDOWNERS PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING GRADE (C.I. = 2'/10')
- EXISTING NPDES BOUNDARY
- NPDES BOUNDARY (51.70 AC.)
- LIMITS OF DISTURBANCE (51.70 AC.)
- EXISTING PROPERTY SETBACK
- EXISTING STREAM
- EXISTING TREELINE
- EXISTING ROADWAYS
- EXISTING WETLANDS
- DESIGN CONTOUR (C.I. = 2'/10')
- COMPOST FILTER SOCK

PHASE DEVELOPMENT VOLUME

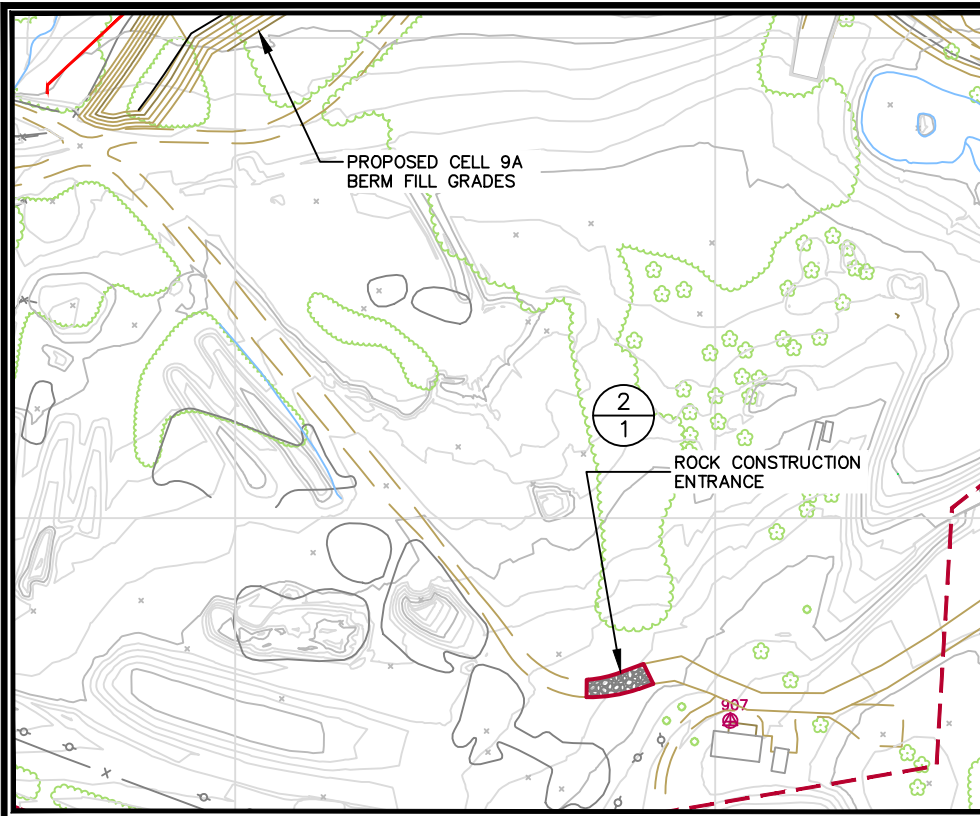
SURFACES:
 FLYOVER 2-28-19
 CELL 8 BERM FILL
 CUT: 33 CY FILL: 79,178 CY NET (C): 79,145 CY



**REFERENCE ONLY /
 NOT FOR CONSTRUCTION**

NOTE: THIS SITE IS UNDER ACTIVE
 CONSTRUCTION AT THE TIME OF THIS BID;
 THEREFORE, ACTUAL SITE CONDITIONS MAY
 VARY.

	REVISIONS	
SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY		DATE: 9/18/20
SPEAKMAN PROPERTY		DRAWN BY: SWH
LONDON GROVE TOWNSHIP CHESTER COUNTY PENNSYLVANIA		CHECKED: PW
CELL 8A BERM CONSTRUCTION		BAI DRAWING NO: ROMAN-168B001E
State College Office (814) 238-2060	Delaware Valley Office (610) 495-5585	SHEET NO. FIGURE 5



ACCESS ROAD INSET
SCALE: 1" = 200'

NOTES

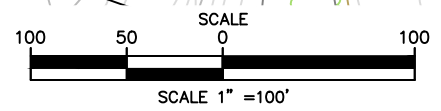
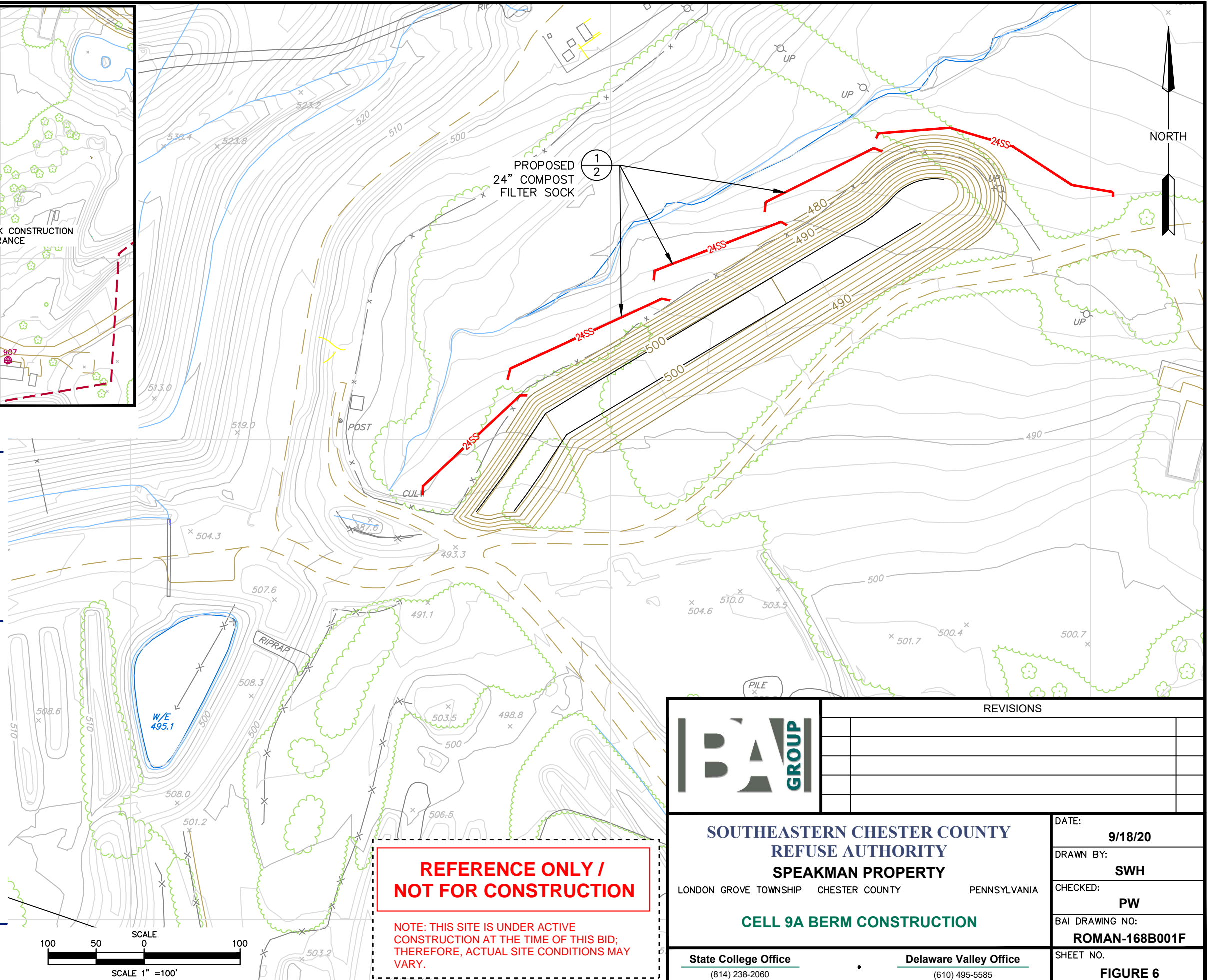
1. EXISTING TOPOGRAPHY BASED ON SURVEY/FLYOVER COMPLETED BY LAND & MAPPING SERVICES ON DECEMBER 31, 2014 UPDATED MARCH 08, 2016.
2. HORIZONTAL REFERENCE DATUM CODE: NAD 1983 STATE PLANE PENNSYLVANIA SOUTH; AND VERTICAL ALTITUDE DATUM NAME: NAVD 1929.
3. CONTRACTOR SHALL STRIP 12" OF TOPSOIL FROM THE FOOTPRINT OF THE CELL 9A BERM AND STOCKPILE. 6" OF TOPSOIL WILL BE APPLIED TO THE WESTERN AND NORTHERN SLOPES OF THE BERM FOLLOWING COMPLETION. THE REMAINDER OF THE TOPSOIL WILL BE STOCKPILED AT A LOCATION DETERMINED BY THE OWNER FOR FUTURE USE BY THE LANDFILL.

LEGEND

- PROPERTY LINE
- ADJACENT LANDOWNERS PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING GRADE (C.I. = 2'/10')
- EXISTING NPDES BOUNDARY
- NPDES BOUNDARY (51.70 AC.)
- LIMITS OF DISTURBANCE (51.70 AC.)
- EXISTING PROPERTY SETBACK
- EXISTING STREAM
- EXISTING TREELINE
- EXISTING ROADWAYS
- EXISTING WETLANDS
- DESIGN CONTOUR (C.I. = 2'/10')
- COMPOST FILTER SOCK

PHASE DEVELOPMENT VOLUME

SURFACES:
FLYOVER 2-28-19
CELL 9 BERM FILL
CUT: 0 CY FILL: 25,666 CY NET (C): 25,666 CY



**REFERENCE ONLY /
NOT FOR CONSTRUCTION**

NOTE: THIS SITE IS UNDER ACTIVE CONSTRUCTION AT THE TIME OF THIS BID; THEREFORE, ACTUAL SITE CONDITIONS MAY VARY.



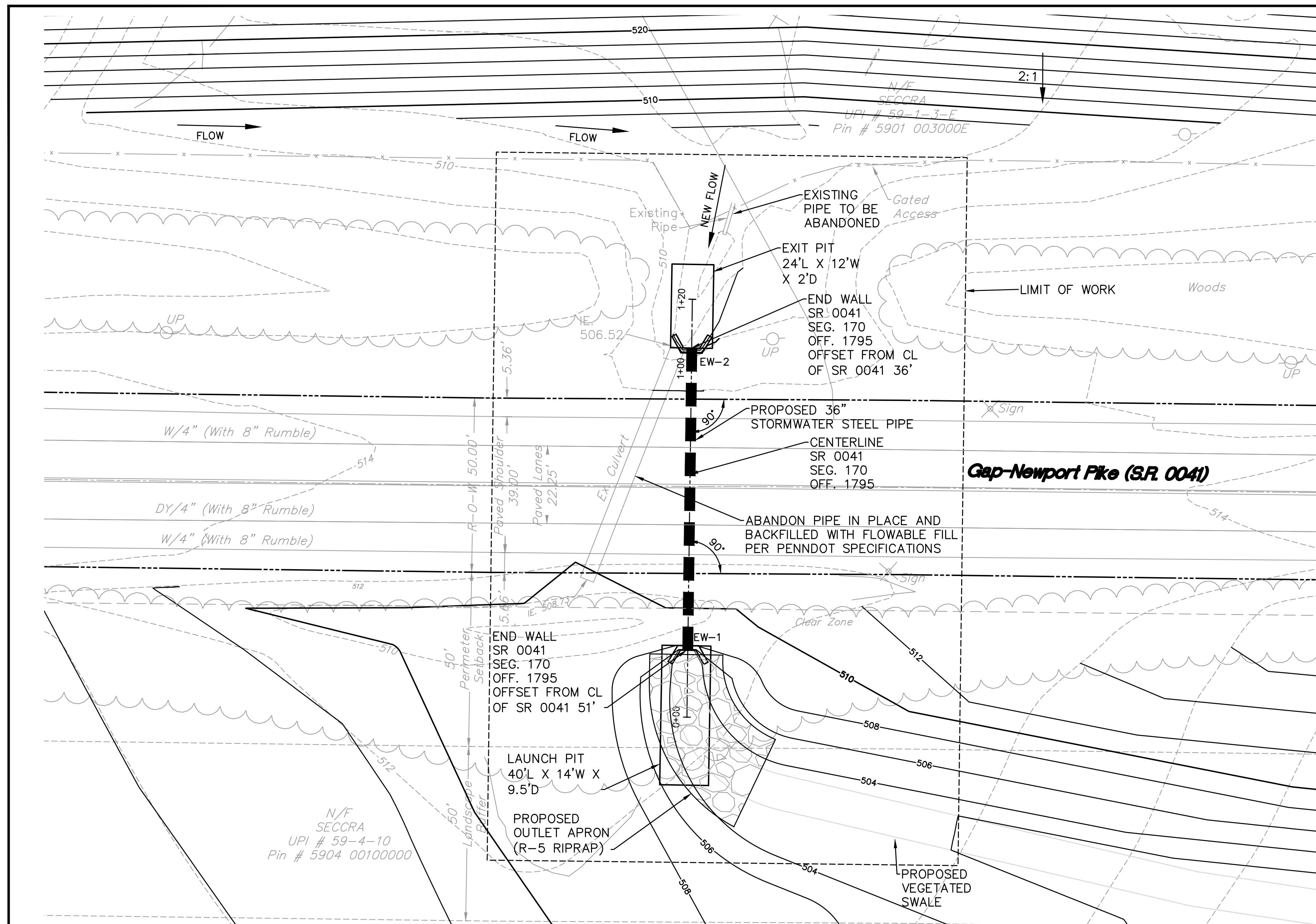
REVISIONS	

**SOUTHEASTERN CHESTER COUNTY
REFUSE AUTHORITY**
SPEAKMAN PROPERTY
LONDON GROVE TOWNSHIP CHESTER COUNTY PENNSYLVANIA

CELL 9A BERM CONSTRUCTION

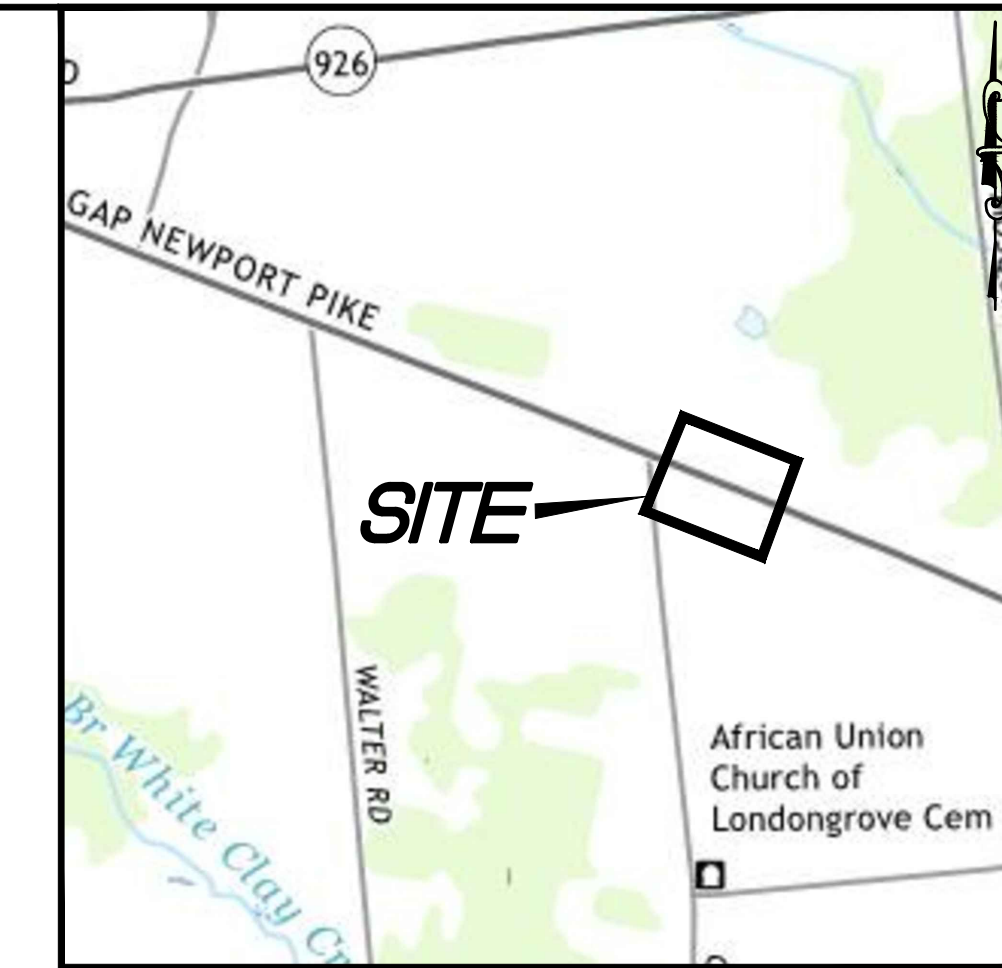
State College Office Delaware Valley Office
(814) 238-2060 (610) 495-5585

DATE: **9/18/20**
DRAWN BY: **SWH**
CHECKED: **PW**
BAI DRAWING NO: **ROMAN-168B001F**
SHEET NO. **FIGURE 6**



LEGEND

	EXISTING TREEROW
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	EXISTING PROPERTY LINE
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR



INCLUDED:
 HOP PLAN 3 SHEETS
 HOP DETAILS AND NOTES 2 SHEETS

PA ONE CALL INFORMATION
 PA ONE CALL SERIAL NUMBER: 20203231280, 20203231281
 MUNICIPALITY: LONDON GROVE TOWNSHIP, CHESTER COUNTY, PA

IT IS THE CONTRACTORS RESPONSIBILITY TO COMPLY WITH THE PENNSYLVANIA ACT 287 AND TO CONTACT THE "ONE CALL SYSTEM" THREE (3) WORKING DAYS (UNLESS OTHERWISE NOTED) PRIOR TO START OF CONSTRUCTION.

PA ONE CALL CONTACTS:

COMPANY: LONDON GROVE TOWNSHIP
 ADDRESS: 372 ROSE HILL RD
 WEST GROVE, PA 19390
 CONTACT: SHANE KINSEY
 EMAIL: SKINSEY@LONDONGROVE.ORG

COMPANY: LONDON GROVE MUNICIPAL AUTHORITY
 ADDRESS: 372 ROSEHILL RD, SUITE 300
 WEST GROVE, PA 19390
 CONTACT: KAREN LINAWEAVER
 EMAIL: KLINAWAVER@LONDONGROVE.ORG

COMPANY: AVONDALE BOROUGH
 ADDRESS: PO BOX 247
 AVONDALE, PA 19311
 CONTACT: BECKY BROWNBACK
 EMAIL: SECRETARY_AVONDALE-BORO@COMCAST.NET

COMPANY: PECO ENERGY C/O USIC
 ADDRESS: 450 S HENDERSON RD SUITE B,
 KING OF PRUSSIA, PA. 15406
 CONTACT: NIKKIA SIMPKINS
 EMAIL: NIKKIASIMPKINS@USICLLC.COM

COMPANY: CHESTER WATER AUTHORITY
 ADDRESS: 437 W FRONT ST, PO BOX 467
 CHESTER, PA 19013
 CONTACT: VITO PAGANO
 EMAIL: VITO.PAGANO@CHESTERWATER.COM

COMPANY: UNITI FIBER
 ADDRESS: 107 ST FRANCIS ST SUITE 1800
 MOBILE, AL 36602
 CONTACT: ANDREW WILSON
 EMAIL: ANDREW.WILSON@UNITI.COM

COMPANY: COMCAST
 ADDRESS: 1004 CORNERSTONE BLVD.
 DOWNTOWN, PA 19335
 CONTACT: TOM RUSSO
 EMAIL: TOM_RUSSO@CABLE.COMCAST.COM

COMPANY: VERIZON PA, LLC
 ADDRESS: 1050 VIRGINIA DR.
 FORT WASHINGTON, PA 19034
 CONTACT: DARLINE LEPPERD JOHNSON

OWNER, APPLICANT, AND DEVELOPER:

THE CONTACT FOR THIS PROJECT IS:
 AL ROMAN - ROMAN CONSULTING, INC.
 EMAIL: ROMAN543@AOL.COM

SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY (SECCRA)
 SCOTT MENGLE
 EMAIL: SCOTT@SECCRA.ORG
 ADDRESS: 219 STREET ROAD
 WEST GROVE, PA 19390
 PHONE: 610-869-2452

THE ENGINEER CONTACT FOR THIS PROJECT IS:
 NICK SZEREDAI, PE
 MUNICIPAL / CIVIL ENGINEER

SPOTTS, STEVENS AND McCOY (SSM GROUP INC.)
 1047 PARK ROAD
 P.O. BOX 6307
 READING, PA 19610
 EMAIL: NICK.SZEREDAI@SSMGROUP.COM
 PHONE: 610-621-2000

PROJECT DESCRIPTION:

THIS PROJECT CONSISTS INSTALLING A 36-INCH DIAMETER STEEL PIPE UNDER SR 41, THROUGH THE METHOD OF BORING AND JACKING, AND FILLING AND ABANDONING AN EXISTING 30-INCH DIAMETER PIPE.

PROJECT DATUM:

- HORIZONTAL REFERENCE DATUM CODE: NAD 1983 STATE PLANE PENNSYLVANIA SOUTH; AND VERTICAL ALTITUDE DATUM NAME: NAVD 1929.
- EXISTING TOPOGRAPHY BASED ON SURVEY/FLYOVER COMPLETED BY LAND AND MAPPING SERVICES ON DECEMBER 31, 2014 UPDATED MARCH 08, 2016.

GENERAL ADDRESS

4470 GAP NEWPORT PIKE
 WEST GROVE, PA 19390

REFERENCE PLAN NOTE

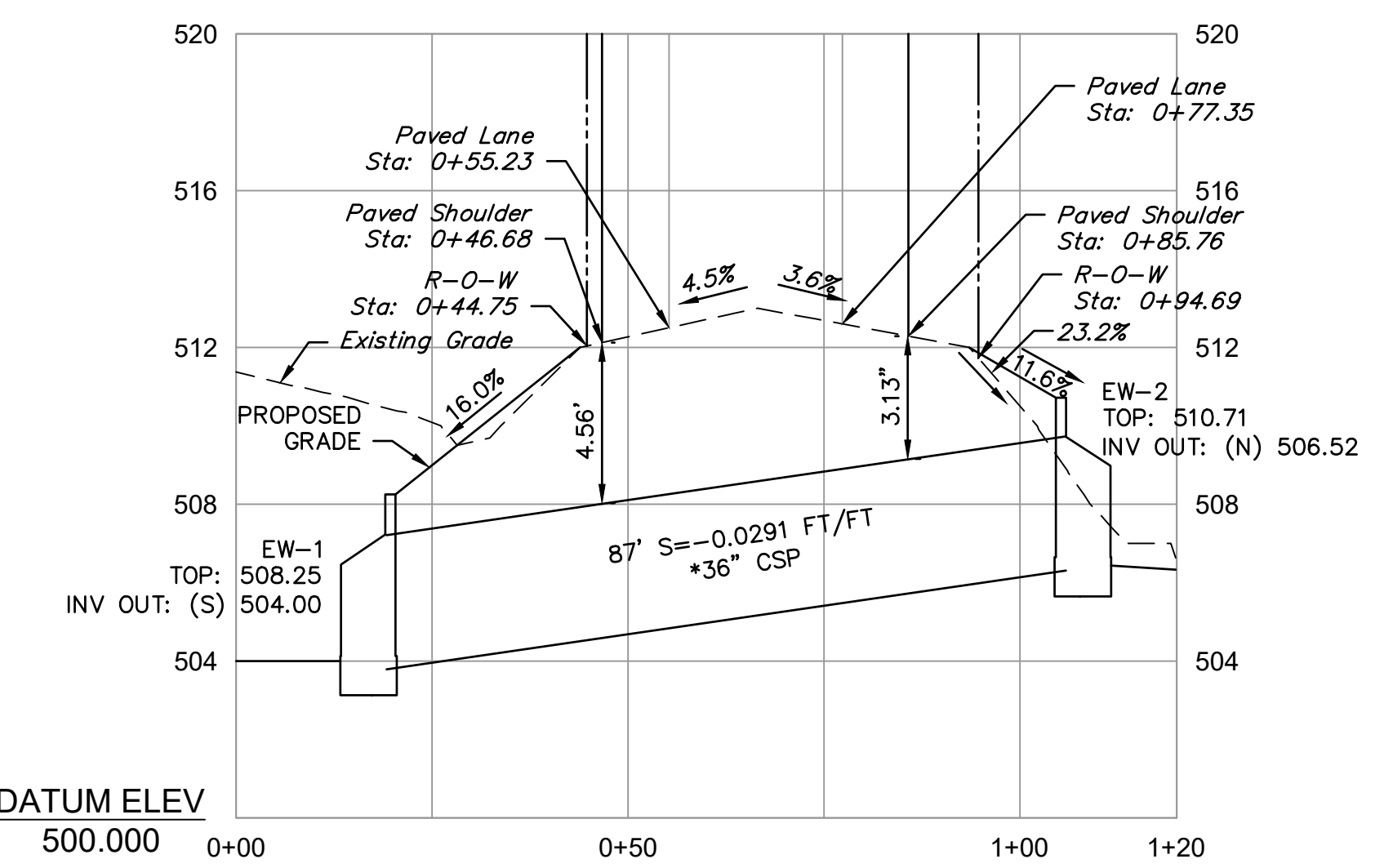
BASE PLAN AND SURVEY HAS BEEN DESIGNED BY BAI ASSOCIATES. REFER TO SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY POST CONSTRUCTION STORMWATER MANAGEMENT PLAN DATED MAY 2020 (REVISED AUGUST 2020.)

***36" CULVERT PIPE SPECIFICATIONS**

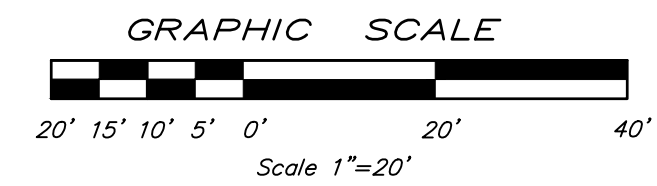
36" DIAMETER CARBON STEEL PIPE - 0.625" THICKNESS. MINIMUM YIELD AND TENSILE OF ASTM A139 GR. B (35,000 PSI MIN. YIELD AND 60,000 MIN. TENSILE). PIPE OUTER DIAMETER TO BE COATED WITH A 1 MIL CARBOLINE - BITUMASTIC 300M/SEAL.

BIDDING NOTES:

- THIS SITE IS UNDER ACTIVE CONSTRUCTION AT THE TIME OF THIS BID; THEREFORE, ACTUAL EXISTING SITE CONDITIONS MAY VARY FROM THE PLANS. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXISTING SITE CONDITIONS AT THE TIME OF BIDDING. BIDS SHALL BE BASED ON ACTUAL SITE CONDITIONS AT THE TIME OF BID.
- THE "LIMIT OF WORK" IS INDICATED ON THE PLANS AND IS STRICTLY ASSOCIATED WITH THE ITEMS OF WORK TO BE COMPLETED AS PART OF THE "SECCRA - SR 0041 PIPE REPLACEMENT - SPECIFICATION 108872.0004". NO PROPOSED WORK OUTSIDE OF THE DEFINED "LIMIT OF WORK," OTHER THAN APPLICABLE EROSION AND SEDIMENT CONTROL ITEMS AS DEFINED WITHIN THE CONTRACT, ARE TO BE COMPLETED AS PART OF THIS PROJECT.
- REFERENCE PLANS, OTHER THAN THIS PLAN, SHALL NOT DICTATE THE CONSTRUCTION OF THE SR 0041 PIPE CROSSING FOR CONSTRUCTION PURPOSES.
- NO SR 0041 PIPE CROSSING CONSTRUCTION SHALL OCCUR UNTIL THE GEOTECHNICAL REPORT(S) IS REVIEWED BY THE ENGINEER AND THE OWNER APPROVES SAID CONSTRUCTION.



PROPOSED 36" PIPE
 HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 4'



PADOT HOP EPS NO.: 230534

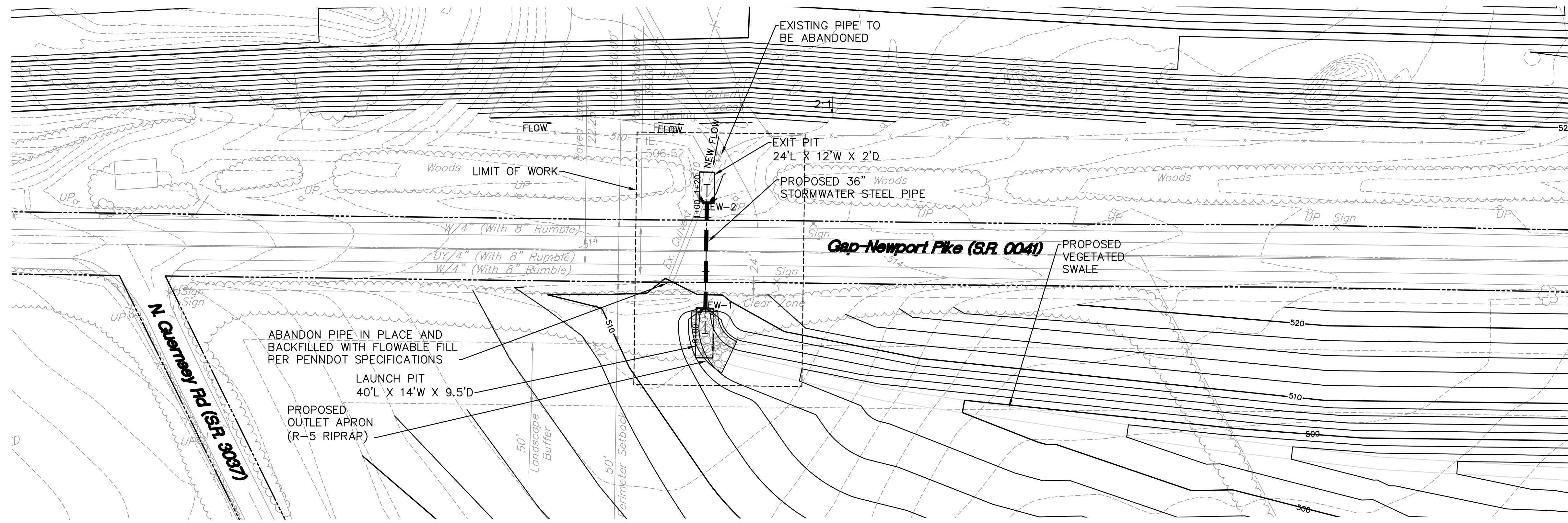
NO.	DATE	DESCRIPTION
1	07/05/21	RELEASED FOR BIDDING PURPOSES ONLY
2	07/14/21	PENNDOT REVISIONS NO. 1
		DESIGNED BY: NS
		CHECKED BY: CM

RELEASED FOR: BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION

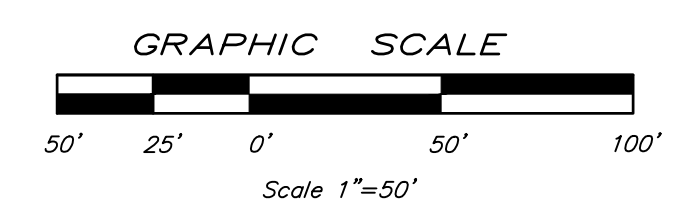
SSM
 SPOTTS, STEVENS & McCOY
 Engineers and Consultants
 1047 Park Road
 Reading, PA 19610
 Phone: 610-621-2000
 Fax: 610-621-2001
 Website: www.ssmgroup.com

SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY (SECCRA)
 219 STREET ROAD, WEST GROVE, PA 19390
PENNDOT STORMWATER HOP SUBMISSION
 GAP NEWPORT PIKE (SR 0041) SITE PLAN
 HOP PLAN
 COPYRIGHT 2020, SPOTTS, STEVENS & McCOY

12/23/20	108872.0004
DATE	DIGITAL FILENAME
108872.0004	
WORK ORDER NUMBER	
C.7-01	
DRAWING NUMBER	



MATCHLINE SEE SHEET C.7-03



PADOT HOP EPS NO.: 230534

NO.	DATE	DESCRIPTION
1	07/05/21	RELEASE FOR BIDDING PURPOSES ONLY
2	07/05/21	PENNDOT REVISIONS NO. 1
		MADE BY: MBD
		CHECKED BY: CM

RELEASED FOR:
BIDDING PURPOSES ONLY
 NOT FOR CONSTRUCTION

PROJECT MANAGER: NS
 BASE BY: BA ASSOC.
 DRAWN BY: MBD
 DATE: 12/16/2020
 N.B.:
 DESIGNED BY: NS
 CHECKED BY: CM

SSM
 SPOTTS, STEVENS & MCCOY
 Engineers and Consultants
 106
 1600 N. Cedar Crest Blvd
 19154-1000
 PA 19380
 610.662.2000

LEHIGH VALLEY
 1000 N. Cedar Crest Blvd
 19154-1000
 PA 19380
 610.662.2000

READING
 1000 N. Cedar Crest Blvd
 19154-1000
 PA 19380
 610.662.2000

PO BOX 6007
 19101-0007
 610.662.2000

PA 19101
 610.662.2000

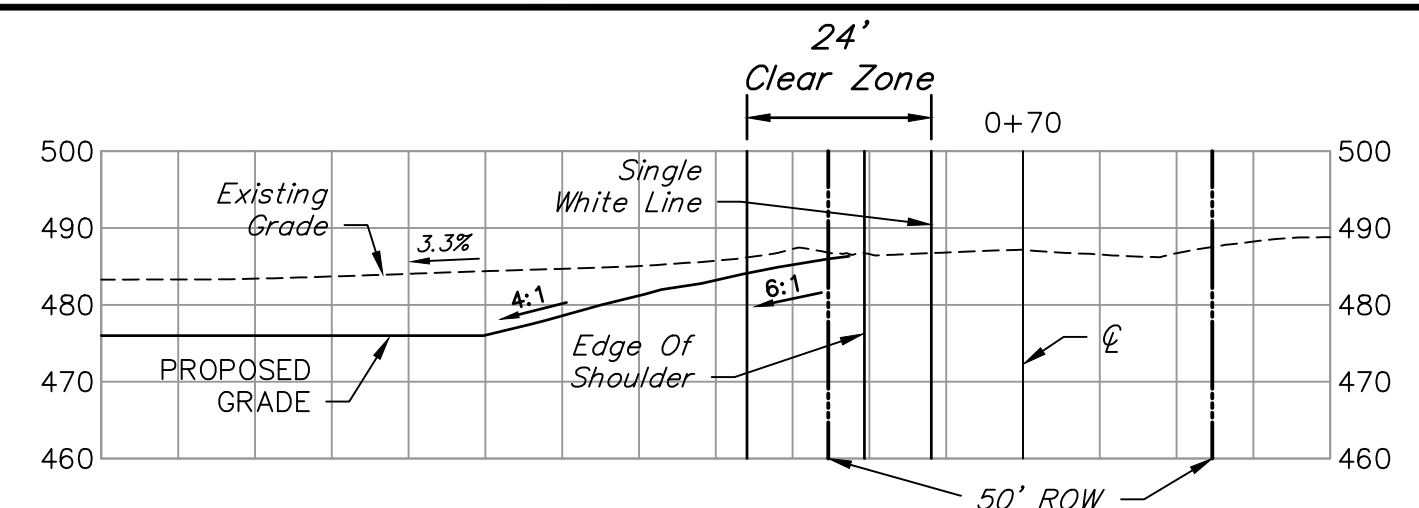
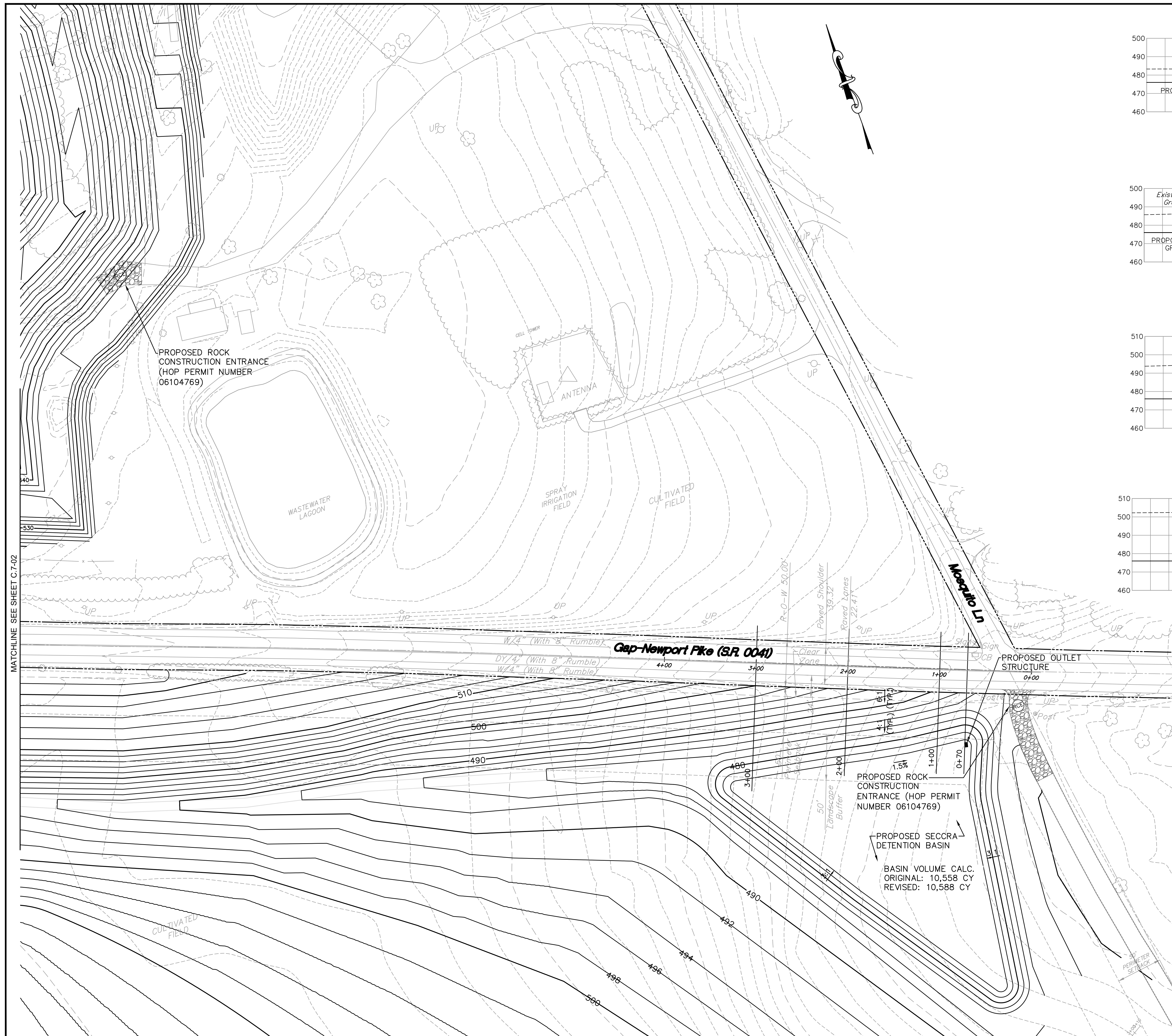
WWW.SSMGROUP.COM

SOUTHEASTERN CHESTER COUNTY
 REFUSE AUTHORITY (SECCRA)
 219 STREET ROAD, WEST GROVE, PA 19380

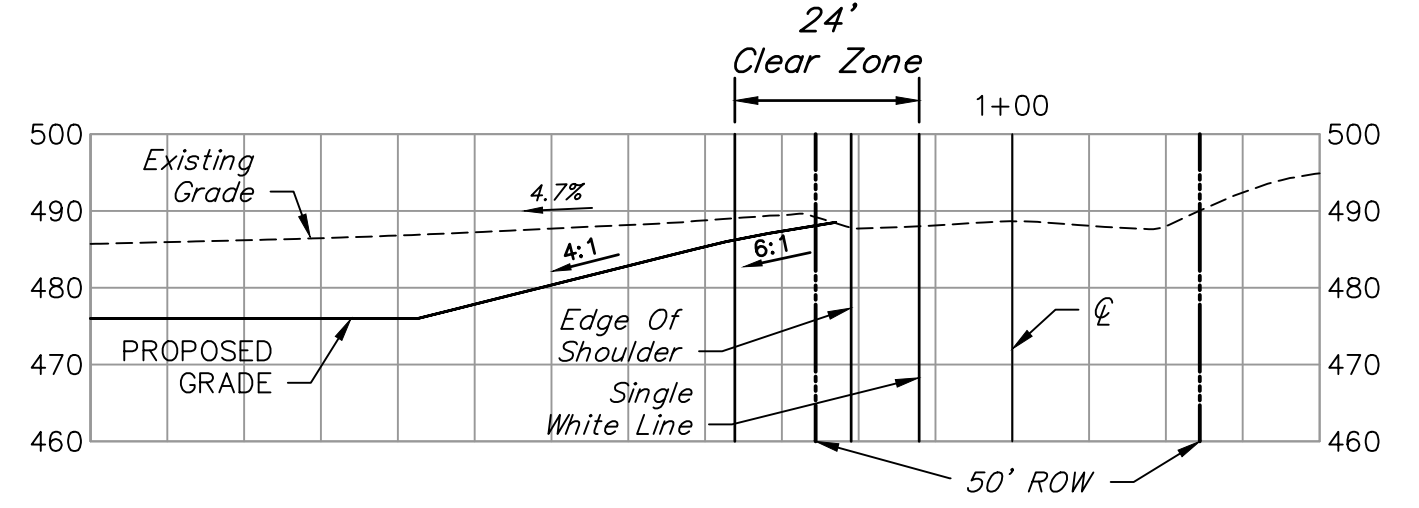
PENNDOT STORMWATER HOP SUBMISSION
 GAP NEWPORT PIKE (SR 0041) SITE PLAN - EXPANDED VIEW
 HOP PLAN

COPYRIGHT 2020, SPOTTS, STEVENS & MCCOY

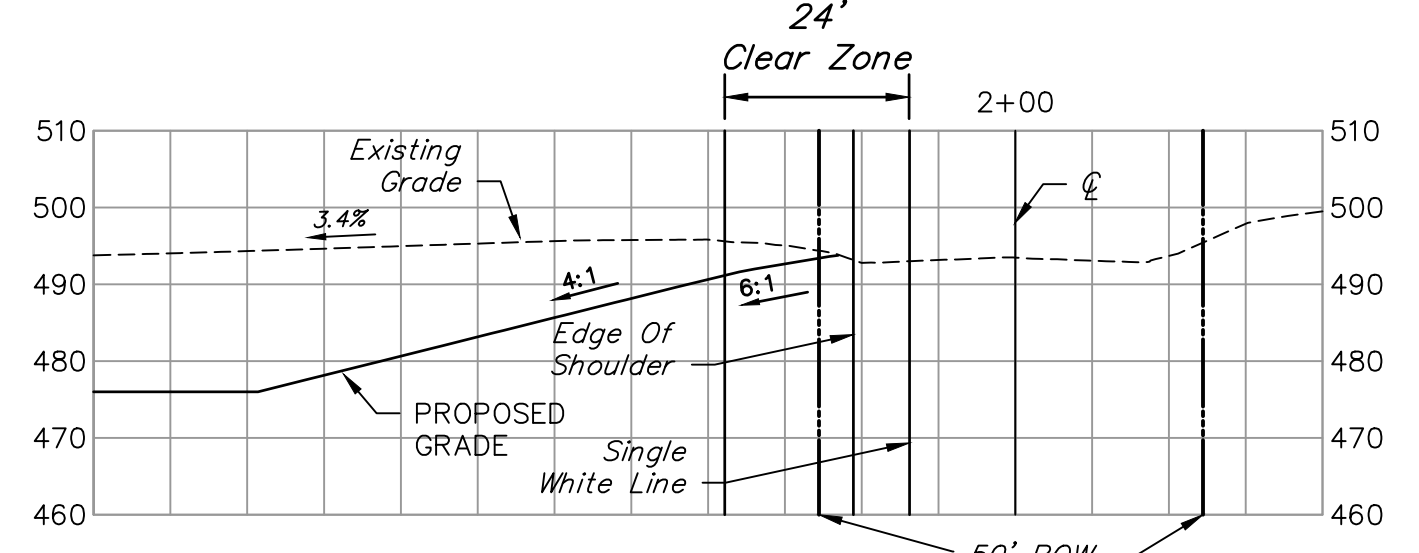
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DATE	DIGITAL FILENAME
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WORK ORDER NUMBER	
C.7-02	
DRAWING NUMBER	



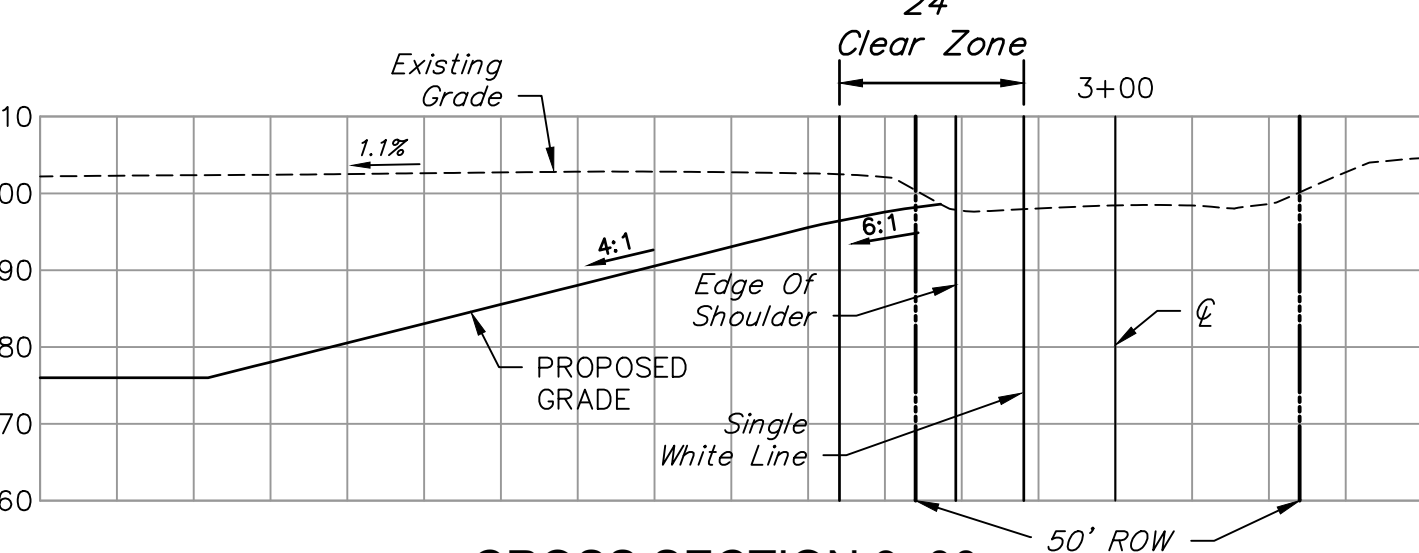
CROSS SECTION 0+70
SCALE: 1" = 25'



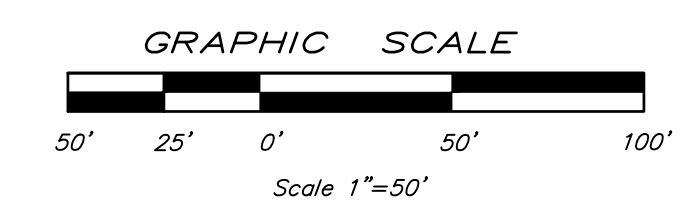
CROSS SECTION 1+00
SCALE: 1" = 25'



CROSS SECTION 2+00
SCALE: 1" = 25'



CROSS SECTION 3+00
SCALE: 1" = 25'



PADOT HOP EPS NO.: 230534

NO.	DATE	DESCRIPTION
1	01/14/21	RELEASE FOR PURPOSES ONLY
2	07/09/21	PENNDOT REVISION NO. 1

RELEASED FOR:
BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION

PROJECT MANAGER: NS
BASE BY: BA ASSOC.
DRAWN BY: MBD

DESIGNED BY: NS
CHECKED BY: CM

SSM
SPOTTS, STEVENS & MCCOY
Engineers and Consultants
www.ssmgroup.com

LEHIGH VALLEY
1000 N. Cedar Crest Blvd.
Allentown, PA 18106
610.489.0700
610.489.0702
610.489.0703
610.489.0704
610.489.0705
610.489.0706
610.489.0707
610.489.0708
610.489.0709
610.489.0710
610.489.0711
610.489.0712
610.489.0713
610.489.0714
610.489.0715
610.489.0716
610.489.0717
610.489.0718
610.489.0719
610.489.0720

SOUTHEASTERN CHESTER COUNTY
REFUSE AUTHORITY (SECCRA)
218 STREET ROAD, WEST GROVE, PA 19380

PENNDOT STORMWATER HOP SUBMISSION
GAP NEWPORT PIKE (SR 0041) SITE PLAN - EXPANDED VIEW
HOP PLAN

COPYRIGHT 2020, SPOTTS, STEVENS & MCCOY

DATE	12/23/20
DIGITAL FILENAME	108872.0004 C.7-03
WORK ORDER NUMBER	108872.0004
DRAWING NUMBER	C.7-03

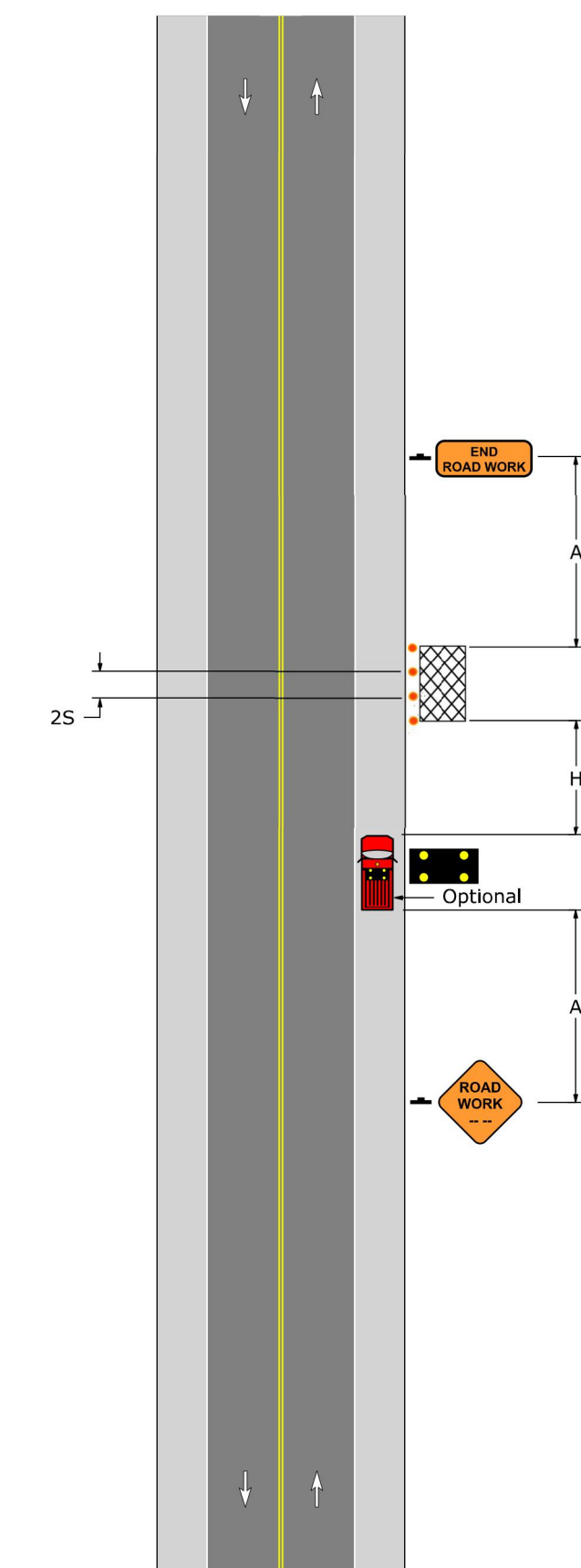
PATA 201-A

- TTC devices are not required if the work space is outside the highway right-of-way, behind barrier, more than 2' behind curb, or 15' or more from the edge of the roadway.
- When a shadow vehicle is not used, distance A is measured from the ROAD WORK sign location to beginning of the work space.

Signs	
W20-1	G20-2

Speed S (MPH)	Channelizing Devices Spacing 2S (Feet)	Sign Spacing		Roll Ahead Space H (Feet)
		Urban A (Feet)	Rural A (Feet)	
25	50	100 - 200	500 - 800	150
30	60	100 - 200	500 - 800	150
35	70	100 - 200	500 - 800	150
40	80	350 - 500	500 - 800	150
45	90	350 - 500	500 - 800	150
50	100	350 - 500	500 - 800	250
55	110	350 - 500	500 - 800	250

PATA 201-A



PATA 202-A

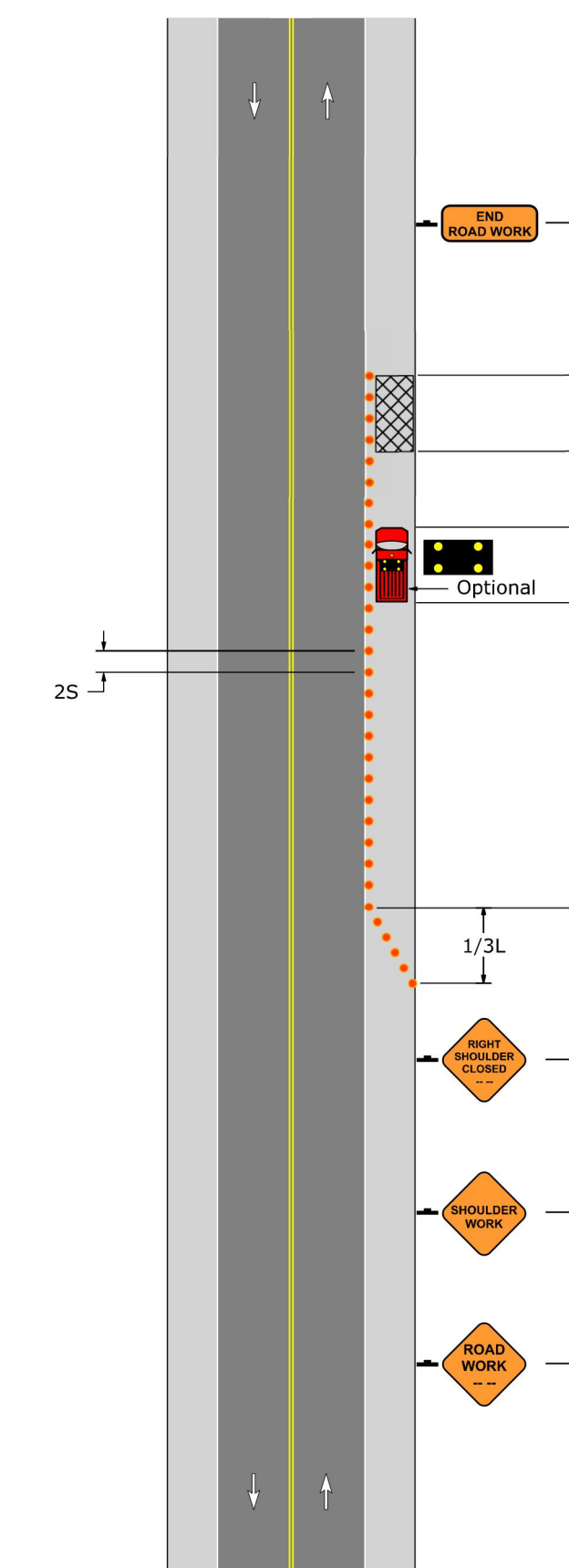
- TTC devices are not required if the work space is outside the highway right-of-way, behind barrier, more than 2' behind curb, or 15' or more from the edge of the roadway.
- When a shadow vehicle is not used, distance E is measured from the end of the taper to the beginning of the work space.

Signs			
W20-1	W21-5	W21-5BR	G20-2

Speed S (MPH)	Channelizing Devices Spacing 2S (Feet)	Sign Spacing		Buffer Space E (Feet)	Roll Ahead Space H (Feet)
		Urban A (Feet)	Rural A (Feet)		
25	50	100 - 200	500 - 800	155	150
30	60	100 - 200	500 - 800	200	150
35	70	100 - 200	500 - 800	250	150
40	80	350 - 500	500 - 800	305	150
45	90	350 - 500	500 - 800	360	150
50	100	350 - 500	500 - 800	425	250
55	110	350 - 500	500 - 800	495	250

Taper Lengths and Minimum Number of Channelizing Devices		
Speed S (MPH)	Shoulder Taper: 1/3L	
	Length (Feet)	Minimum Number Of Devices
25	45	6
30	60	6
35	85	6
40	110	6
45	180	6
50	200	6
55	220	6

PATA 202-A



RELEASED FOR:
BIDDING PURPOSES ONLY
NOT FOR CONSTRUCTION

SSM
SPOTTIS, STEVENS & MCCOY
Engineers and Consultants
8800 N. Cedar Crest Blvd
101 East Evans Street
Ft. Worth, TX 76114
101 East Evans Street
Ft. Worth, TX 76114

SOUTHEASTERN CHESTER COUNTY
REFUSE AUTHORITY (SECCRA)
219 STREET ROAD, WEST GROVE, PA 19380
PENNDOT STORMWATER HOP SUBMISSION
GAP NEWPORT PIKE (SR 0041) DETAILS AND NOTES
HOP DETAILS AND NOTES
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12/23/20	108872.0004 C.7-05
DATE	DIGITAL FILENAME
108872.0004	
WORK ORDER NUMBER	
108872.0004	
DRAWING NUMBER	
C.7-05	

PADOT HOP EPS NO.: 230534

SECTION 7
PREVAILING WAGE RATES

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project Name:	Speakman 2020
Awarding Agency:	SECCRA Landfill
Contract Award Date:	11/11/2020
Serial Number:	20-06472
Project Classification:	Highway
Determination Date:	10/21/2020
Assigned Field Office:	Philadelphia
Field Office Phone Number:	(215)560-1858
Toll Free Phone Number:	
Project County:	Chester County

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	5/29/2017		\$47.30	\$34.85	\$82.15
Asbestos & Insulation Workers	5/1/2018		\$49.30	\$35.85	\$85.15
Asbestos & Insulation Workers	5/1/2019		\$51.20	\$36.95	\$88.15
Asbestos & Insulation Workers	6/1/2020		\$54.20	\$36.95	\$91.15
Boilermakers	1/1/2016		\$42.26	\$33.36	\$75.62
Boilermakers	3/1/2018		\$45.89	\$33.73	\$79.62
Bricklayer	5/1/2017		\$40.98	\$26.78	\$67.76
Bricklayer	5/1/2018		\$43.73	\$26.78	\$70.51
Bricklayer	5/1/2019		\$46.48	\$26.78	\$73.26
Bricklayer	5/1/2020		\$44.45	\$30.31	\$74.76
Carpenter - Chief of Party (Surveying & Layout)	5/1/2017		\$45.25	\$27.59	\$72.84
Carpenter - Chief of Party (Surveying & Layout)	5/1/2018	4/30/2019	\$45.83	\$27.59	\$73.42
Carpenter - Chief of Party (Surveying & Layout)	5/1/2019		\$46.54	\$27.59	\$74.13
Carpenter - Chief of Party (Surveying & Layout)	5/1/2020		\$47.73	\$27.59	\$75.32
Carpenter - Instrument Person (Surveying & Layout)	5/1/2017		\$39.35	\$27.59	\$66.94
Carpenter - Instrument Person (Surveying & Layout)	5/1/2018	4/30/2019	\$39.85	\$27.59	\$67.44
Carpenter - Instrument Person (Surveying & Layout)	5/1/2019		\$40.47	\$27.59	\$68.06
Carpenter - Instrument Person (Surveying & Layout)	5/1/2020		\$41.50	\$27.59	\$69.09
Carpenter - Rodman (Surveying & Layout)	5/1/2017		\$19.68	\$19.64	\$39.32
Carpenter - Rodman (Surveying & Layout)	5/1/2018	4/30/2019	\$19.93	\$19.49	\$39.42
Carpenter - Rodman (Surveying & Layout)	5/1/2019		\$20.24	\$19.69	\$39.93
Carpenter - Rodman (Surveying & Layout)	5/1/2020		\$20.75	\$19.49	\$40.24
Carpenters	5/1/2017		\$39.35	\$27.59	\$66.94
Carpenters	5/1/2018	4/30/2019	\$39.85	\$27.59	\$67.44
Carpenters	5/1/2019	4/30/2020	\$40.87	\$27.59	\$68.46
Carpenters	5/1/2020		\$41.90	\$27.59	\$69.49
Cement Masons	5/1/2017		\$36.45	\$31.76	\$68.21
Cement Masons	5/1/2018		\$37.50	\$32.26	\$69.76
Cement Masons	5/1/2019		\$38.50	\$32.81	\$71.31
Cement Masons	5/1/2020		\$39.45	\$33.46	\$72.91
DockBuilder/ Divers (Building Heavy & Highway)	5/1/2020		\$52.44	\$37.27	\$89.71
DockBuilder/Pile Drivers (Building, Heavy & Highway)	5/1/2018		\$43.45	\$34.47	\$77.92
DockBuilder/Pile Drivers (Building, Heavy & Highway)	5/1/2020		\$43.70	\$37.27	\$80.97
DockBuilder/Pile Drivers/ Diver Tender(Building Heavy & Highway)	5/1/2020		\$43.70	\$37.27	\$80.97
Dockbuilder/Piledriver (Building, Heavy, Highway)	11/1/2017		\$43.45	\$33.22	\$76.67
Dockbuilder/Piledriver (Building, Heavy, Highway)	5/1/2018		\$44.70	\$33.22	\$77.92
Drywall Finisher	5/1/2017		\$37.11	\$26.75	\$63.86
Drywall Finisher	5/1/2018		\$39.27	\$27.49	\$66.76
Drywall Finisher	5/1/2019		\$37.75	\$28.11	\$65.86
Drywall Finisher	5/1/2020		\$38.27	\$28.59	\$66.86
Electricians	5/29/2017		\$43.16	\$28.46	\$71.62
Electricians	6/4/2018	6/3/2019	\$42.87	\$30.41	\$73.28
Electricians	6/3/2019		\$42.87	\$32.41	\$75.28
Electricians	6/1/2020		\$44.47	\$33.31	\$77.78

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Electricians	5/31/2021		\$46.06	\$34.22	\$80.28
Electricians	5/30/2022		\$47.64	\$35.14	\$82.78
Electricians	5/29/2023		\$49.24	\$36.04	\$85.28
Elevator Constructor	1/1/2018		\$55.76	\$33.05	\$88.81
Elevator Constructor	1/1/2020		\$59.44	\$35.25	\$94.69
Floor Coverer	5/1/2019		\$44.37	\$28.44	\$72.81
Floor Coverer	5/1/2020		\$46.01	\$28.44	\$74.45
Floor Layer	5/1/2017		\$42.51	\$27.91	\$70.42
Floor Layer	5/1/2018		\$43.11	\$28.09	\$71.20
Glazier	5/1/2017		\$41.30	\$30.80	\$72.10
Glazier	5/1/2018		\$43.32	\$32.33	\$75.65
Glazier	5/1/2019		\$43.87	\$33.38	\$77.25
Glazier	5/1/2020		\$44.92	\$33.63	\$78.55
Interior Finish	5/1/2019		\$30.20	\$25.80	\$56.00
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2017		\$47.30	\$32.91	\$80.21
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2018		\$51.46	\$30.60	\$82.06
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2019		\$49.30	\$34.41	\$83.71
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	1/1/2020		\$49.80	\$34.41	\$84.21
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2020		\$50.80	\$34.91	\$85.71
Iron Workers (Riggers)	7/1/2017		\$39.83	\$27.92	\$67.75
Ironworker (Rodman)	7/1/2017		\$42.56	\$29.30	\$71.86
Ironworker (Rodman)	7/1/2018		\$42.88	\$30.60	\$73.48
Ironworker (Rodman)	7/1/2019		\$43.88	\$30.85	\$74.73
Ironworker (Rodman)	7/1/2020		\$44.82	\$31.60	\$76.42
Laborers (Class 01 - General)	5/1/2020		\$32.05	\$25.25	\$57.30
Laborers (Class 01 - See notes)	5/1/2017		\$28.65	\$24.95	\$53.60
Laborers (Class 01 - See notes)	5/1/2019		\$30.20	\$25.80	\$56.00
Laborers (Class 02 - See notes)	5/1/2017		\$30.85	\$25.65	\$56.50
Laborers (Class 02 - See notes)	5/1/2019		\$33.15	\$26.50	\$59.65
Laborers (Class 02 - see notes)	5/1/2020		\$35.15	\$26.15	\$61.30
Laborers (Class 03 - See notes)	5/1/2017		\$28.92	\$25.18	\$54.10
Laborers (Class 03 - See notes)	5/1/2019		\$30.52	\$25.98	\$56.50
Laborers (Class 03 - See notes)	5/1/2020		\$32.47	\$25.43	\$57.90
Laborers (Class 04 - See notes)	5/1/2017		\$28.95	\$24.95	\$53.90
Laborers (Class 04 - See notes)	5/1/2019		\$30.52	\$25.98	\$56.50
Laborers (Class 04 - See notes)	5/1/2020		\$32.47	\$25.43	\$57.90
Laborers (Class 05 - See notes)	5/1/2017		\$28.65	\$24.95	\$53.60
Laborers (Class 05 - See notes)	5/1/2019		\$30.20	\$25.80	\$56.00
Laborers (Class 05 - See notes)	5/1/2020		\$32.05	\$25.25	\$57.30
Landscape Laborer	5/1/2017		\$22.71	\$23.08	\$45.79
Landscape Laborer	5/1/2019		\$24.64	\$23.68	\$48.32

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Landscape Laborer	5/1/2020		\$26.55	\$23.13	\$49.68
Marble Finisher	5/1/2017		\$35.55	\$24.17	\$59.72
Marble Finisher	5/1/2018		\$37.55	\$24.17	\$61.72
Marble Finisher	5/1/2019		\$39.75	\$24.17	\$63.92
Marble Finisher	5/1/2020		\$37.57	\$27.65	\$65.22
Marble Mason	5/1/2017		\$40.36	\$26.99	\$67.35
Marble Mason	5/1/2018		\$43.11	\$26.99	\$70.10
Marble Mason	5/1/2019		\$45.86	\$26.99	\$72.85
Marble Mason	5/1/2020		\$44.25	\$30.10	\$74.35
Mason Tender, Cement	5/1/2019		\$30.52	\$25.98	\$56.50
Millwright	7/1/2017		\$41.35	\$32.24	\$73.59
Millwright	5/1/2018		\$43.33	\$32.96	\$76.29
Millwright	5/1/2019		\$45.50	\$33.29	\$78.79
Millwright	6/8/2020		\$46.80	\$33.19	\$79.99
Millwright	5/1/2021		\$48.60	\$33.19	\$81.79
Millwright	5/1/2022		\$50.60	\$33.19	\$83.79
Operators (Building, Class 01 - See Notes)	5/1/2017		\$44.87	\$28.14	\$73.01
Operators (Building, Class 01 - See Notes)	5/1/2017		\$44.87	\$28.14	\$73.01
Operators (Building, Class 01 - See Notes)	5/1/2018		\$46.41	\$28.60	\$75.01
Operators (Building, Class 01 - See Notes)	5/1/2019		\$46.41	\$30.60	\$77.01
Operators (Building, Class 01 - See Notes)	5/1/2020		\$47.96	\$31.05	\$79.01
Operators (Building, Class 01 - See Notes)	5/1/2021		\$49.50	\$31.51	\$81.01
Operators (Building, Class 01A - See Notes)	5/1/2017		\$47.86	\$29.03	\$76.89
Operators (Building, Class 01A - See Notes)	5/1/2018		\$49.41	\$29.49	\$78.90
Operators (Building, Class 01A - See Notes)	5/1/2019		\$49.41	\$31.49	\$80.90
Operators (Building, Class 01A - See Notes)	5/1/2020		\$50.96	\$31.94	\$82.90
Operators (Building, Class 01A - See Notes)	5/1/2021		\$52.51	\$32.39	\$84.90
Operators (Building, Class 02 - See Notes)	5/1/2017		\$44.62	\$28.07	\$72.69
Operators (Building, Class 02 - See Notes)	5/1/2018		\$46.16	\$28.53	\$74.69
Operators (Building, Class 02 - See Notes)	5/1/2019		\$46.16	\$30.53	\$76.69
Operators (Building, Class 02 - See Notes)	5/1/2020		\$47.71	\$30.98	\$78.69
Operators (Building, Class 02 - See Notes)	5/1/2021		\$49.25	\$31.44	\$80.69
Operators (Building, Class 02A - See Notes)	5/1/2017		\$47.61	\$28.97	\$76.58
Operators (Building, Class 02A - See Notes)	5/1/2018		\$49.16	\$29.42	\$78.58
Operators (Building, Class 02A - See Notes)	5/1/2019		\$49.17	\$31.41	\$80.58
Operators (Building, Class 02A - See Notes)	5/1/2020		\$50.71	\$31.87	\$82.58
Operators (Building, Class 02A - See Notes)	5/1/2021		\$52.26	\$32.32	\$84.58
Operators (Building, Class 03 - See Notes)	5/1/2017		\$40.53	\$26.87	\$67.40
Operators (Building, Class 03 - See Notes)	5/1/2018		\$42.07	\$27.33	\$69.40
Operators (Building, Class 03 - See Notes)	5/1/2019		\$42.08	\$29.32	\$71.40
Operators (Building, Class 03 - See Notes)	5/1/2020		\$43.62	\$29.78	\$73.40
Operators (Building, Class 03 - See Notes)	5/1/2021		\$45.16	\$30.24	\$75.40
Operators (Building, Class 04 - See Notes)	5/1/2017		\$40.24	\$26.78	\$67.02
Operators (Building, Class 04 - See Notes)	5/1/2018		\$41.78	\$27.22	\$69.00

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Building, Class 04 - See Notes)	5/1/2019		\$41.78	\$29.23	\$71.01
Operators (Building, Class 04 - See Notes)	5/1/2020		\$43.32	\$29.69	\$73.01
Operators (Building, Class 04 - See Notes)	5/1/2021		\$44.87	\$30.14	\$75.01
Operators (Building, Class 05 - See Notes)	5/1/2017		\$38.51	\$26.27	\$64.78
Operators (Building, Class 05 - See Notes)	5/1/2018		\$40.05	\$26.73	\$66.78
Operators (Building, Class 05 - See Notes)	5/1/2019		\$40.06	\$28.72	\$68.78
Operators (Building, Class 05 - See Notes)	5/1/2020		\$41.60	\$29.18	\$70.78
Operators (Building, Class 05 - See Notes)	5/1/2021		\$43.14	\$29.64	\$72.78
Operators (Building, Class 06 - See Notes)	5/1/2017		\$37.52	\$25.98	\$63.50
Operators (Building, Class 06 - See Notes)	5/1/2018		\$39.07	\$26.43	\$65.50
Operators (Building, Class 06 - See Notes)	5/1/2019		\$39.07	\$28.43	\$67.50
Operators (Building, Class 06 - See Notes)	5/1/2020		\$40.61	\$28.89	\$69.50
Operators (Building, Class 06 - See Notes)	5/1/2021		\$42.16	\$29.34	\$71.50
Operators (Building, Class 07A- See Notes)	5/1/2017		\$54.14	\$32.47	\$86.61
Operators (Building, Class 07A- See Notes)	5/1/2018		\$55.99	\$33.02	\$89.01
Operators (Building, Class 07A- See Notes)	5/1/2019		\$56.30	\$35.11	\$91.41
Operators (Building, Class 07A- See Notes)	5/1/2020		\$58.16	\$35.65	\$93.81
Operators (Building, Class 07A- See Notes)	5/1/2021		\$60.00	\$36.21	\$96.21
Operators (Building, Class 07B- See Notes)	5/1/2017		\$53.84	\$32.40	\$86.24
Operators (Building, Class 07B- See Notes)	5/1/2018		\$55.70	\$32.92	\$88.62
Operators (Building, Class 07B- See Notes)	5/1/2019		\$56.00	\$35.03	\$91.03
Operators (Building, Class 07B- See Notes)	5/1/2020		\$57.86	\$35.57	\$93.43
Operators (Building, Class 07B- See Notes)	5/1/2021		\$59.72	\$36.11	\$95.83
Painters Class 1 (see notes)	5/1/2017		\$37.82	\$26.46	\$64.28
Painters Class 1 (see notes)	5/1/2018		\$38.64	\$27.64	\$66.28
Painters Class 1 (see notes)	5/1/2019		\$39.04	\$28.99	\$68.03
Painters Class 1 (see notes)	2/1/2020		\$46.16	\$28.75	\$74.91
Painters Class 1 (see notes)	5/1/2020		\$40.14	\$29.64	\$69.78
Painters Class 2 (see notes)	2/1/2017		\$53.67	\$26.09	\$79.76
Painters Class 2 (see notes)	2/1/2018		\$54.14	\$27.27	\$81.41
Painters Class 2 (see notes)	2/1/2019		\$55.52	\$28.39	\$83.91
Painters Class 2 (see notes)	2/1/2020		\$57.12	\$28.79	\$85.91
Plasterers	5/1/2017		\$37.42	\$28.83	\$66.25
Plasterers	5/1/2018		\$37.42	\$30.04	\$67.46
Plasterers	5/1/2019		\$37.72	\$30.74	\$68.46
Plasterers	5/1/2020		\$38.12	\$31.34	\$69.46
plumber	5/1/2018		\$53.45	\$33.54	\$86.99
plumber	5/1/2019		\$55.45	\$34.54	\$89.99
plumber	8/1/2020		\$57.33	\$35.66	\$92.99
Plumbers	5/1/2017		\$51.42	\$32.57	\$83.99
Pointers, Caulkers, Cleaners	5/1/2017		\$42.26	\$25.69	\$67.95
Pointers, Caulkers, Cleaners	5/1/2018		\$45.01	\$25.69	\$70.70
Pointers, Caulkers, Cleaners	5/1/2019		\$47.76	\$25.69	\$73.45
Pointers, Caulkers, Cleaners	5/1/2020		\$45.75	\$29.20	\$74.95

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Roofers (Composition)	5/1/2017		\$36.15	\$30.22	\$66.37
Roofers (Composition)	5/1/2018		\$37.15	\$31.27	\$68.42
Roofers (Composition)	5/1/2019		\$38.35	\$31.80	\$70.15
Roofers (Composition)	5/1/2020		\$39.50	\$32.30	\$71.80
Roofers (Shingle)	5/1/2016		\$25.70	\$19.17	\$44.87
Roofers (Shingle)	5/1/2019		\$28.50	\$20.87	\$49.37
Roofers (Shingle)	5/1/2020		\$29.50	\$21.25	\$50.75
Roofers (Slate & Tile)	5/1/2016		\$28.70	\$19.17	\$47.87
Roofers (Slate & Tile)	5/1/2018		\$30.50	\$20.37	\$50.87
Roofers (Slate & Tile)	5/1/2019		\$31.50	\$20.87	\$52.37
Roofers (Slate & Tile)	5/1/2020		\$32.50	\$21.25	\$53.75
Sheet Metal Workers	5/1/2017		\$46.42	\$39.51	\$85.93
Sheet Metal Workers	5/1/2018		\$47.58	\$41.60	\$89.18
Sheet Metal Workers	5/1/2019		\$49.79	\$42.89	\$92.68
Sheet Metal Workers	5/1/2020		\$52.04	\$44.19	\$96.23
Sheet Metal Workers	5/1/2021		\$49.79	\$49.94	\$99.73
Sign Makers and Hangars	5/20/2011		\$23.70	\$17.69	\$41.39
Sprinklerfitters	4/1/2017		\$37.40	\$21.74	\$59.14
Sprinklerfitters	4/1/2018		\$38.80	\$22.74	\$61.54
Sprinklerfitters	5/1/2019		\$57.20	\$28.32	\$85.52
Sprinklerfitters	5/1/2020		\$59.10	\$29.22	\$88.32
Steamfitters	5/1/2017		\$54.64	\$32.84	\$87.48
Steamfitters	5/1/2018		\$56.37	\$34.39	\$90.76
Steamfitters	5/1/2019		\$58.17	\$35.99	\$94.16
Steamfitters	5/1/2020		\$60.47	\$37.24	\$97.71
Steamfitters	5/1/2021		\$60.47	\$40.89	\$101.36
Steamfitters	5/1/2022		\$60.47	\$44.63	\$105.10
Stone Masons	5/1/2017		\$40.36	\$26.99	\$67.35
Stone Masons	5/1/2018		\$43.11	\$26.99	\$70.10
Stone Masons	5/1/2019		\$45.86	\$26.99	\$72.85
Stone Masons	5/1/2020		\$44.25	\$30.10	\$74.35
Terrazzo Finisher	5/1/2017		\$39.06	\$22.73	\$61.79
Terrazzo Finisher	5/1/2018		\$41.31	\$22.73	\$64.04
Terrazzo Finisher	5/1/2019		\$43.61	\$22.73	\$66.34
Terrazzo Finisher	5/1/2020		\$41.46	\$26.37	\$67.83
Terrazzo Grinder	5/1/2016		\$37.33	\$22.73	\$60.06
Terrazzo Grinder	5/1/2017		\$39.33	\$22.73	\$62.06
Terrazzo Grinder	5/1/2018		\$41.58	\$22.73	\$64.31
Terrazzo Grinder	5/1/2019		\$43.88	\$22.73	\$66.61
Terrazzo Grinder	5/1/2020		\$41.73	\$26.37	\$68.10
Terrazzo Mechanics	5/1/2017		\$43.71	\$24.81	\$68.52
Terrazzo Mechanics	5/1/2018		\$46.46	\$24.81	\$71.27
Terrazzo Mechanics	5/1/2019		\$49.21	\$24.81	\$74.02
Terrazzo Mechanics	5/1/2020		\$47.51	\$28.01	\$75.52

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Tile Finisher	5/1/2017		\$35.55	\$24.17	\$59.72
Tile Finisher	5/1/2018		\$37.55	\$24.17	\$61.72
Tile Finisher	5/1/2019		\$39.75	\$24.17	\$63.92
Tile Finisher	5/1/2020		\$37.57	\$27.65	\$65.22
Tile Setter	5/1/2016		\$41.21	\$24.81	\$66.02
Tile Setter	5/1/2017		\$43.71	\$24.81	\$68.52
Tile Setter	5/1/2018		\$46.46	\$24.81	\$71.27
Tile Setter	5/1/2019		\$49.21	\$24.81	\$74.02
Tile Setter	5/1/2020		\$47.51	\$28.01	\$75.52
Truckdriver class 1(see notes)	5/1/2017		\$30.46	\$17.96	\$48.42
Truckdriver class 1(see notes)	5/1/2018		\$31.93	\$17.96	\$49.89
Truckdriver class 1(see notes)	5/1/2019		\$32.21	\$19.19	\$51.40
Truckdriver class 1(see notes)	5/1/2020		\$34.93	\$17.96	\$52.89
Truckdriver class 1(see notes)	5/1/2021		\$36.48	\$17.96	\$54.44
Truckdriver class 2 (see notes)	5/1/2017		\$30.56	\$17.96	\$48.52
Truckdriver class 2 (see notes)	5/1/2018		\$32.03	\$17.96	\$49.99
Truckdriver class 2 (see notes)	5/1/2019		\$32.31	\$19.19	\$51.50
Truckdriver class 2 (see notes)	5/1/2020		\$35.03	\$17.96	\$52.99
Truckdriver class 2 (see notes)	5/1/2021		\$36.58	\$17.96	\$54.54
Truckdriver class 3 (see notes)	5/1/2017		\$30.81	\$17.96	\$48.77
Truckdriver class 3 (see notes)	5/1/2018		\$32.28	\$17.96	\$50.24
Truckdriver class 3 (see notes)	5/1/2019		\$32.56	\$19.19	\$51.75
Truckdriver class 3 (see notes)	5/1/2020		\$35.28	\$17.96	\$53.24
Truckdriver class 3 (see notes)	5/1/2021		\$36.83	\$17.96	\$54.79
Wallcoverer	5/1/2020		\$40.52	\$29.64	\$70.16
Window Film / Tint Installer	6/1/2019		\$24.52	\$12.08	\$36.60

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Carpenter - Chief of Party (Surveying & Layout)	5/1/2017		\$51.42	\$27.39	\$78.81
Carpenter - Chief of Party (Surveying & Layout)	5/1/2018	4/30/2019	\$53.20	\$27.69	\$80.89
Carpenter - Chief of Party (Surveying & Layout)	5/1/2019	4/30/2020	\$55.38	\$27.69	\$83.07
Carpenter - Chief of Party (Surveying & Layout)	5/1/2020	4/30/2021	\$57.63	\$27.69	\$85.32
Carpenter - Chief of Party (Surveying & Layout)	5/1/2021		\$59.93	\$27.69	\$87.62
Carpenter - Instrument Person (Surveying & Layout)	5/1/2017		\$44.71	\$27.39	\$72.10
Carpenter - Instrument Person (Surveying & Layout)	5/1/2018	4/30/2019	\$46.26	\$27.69	\$73.95
Carpenter - Instrument Person (Surveying & Layout)	5/1/2019	4/30/2020	\$48.16	\$27.69	\$75.85
Carpenter - Instrument Person (Surveying & Layout)	5/1/2020	4/30/2021	\$50.11	\$27.69	\$77.80
Carpenter - Instrument Person (Surveying & Layout)	5/1/2021		\$52.11	\$27.69	\$79.80
Carpenter - Rodman (Surveying & Layout)	5/1/2017		\$35.77	\$21.19	\$56.96
Carpenter - Rodman (Surveying & Layout)	5/1/2018	4/30/2019	\$37.01	\$21.34	\$58.35
Carpenter - Rodman (Surveying & Layout)	5/1/2019	4/30/2020	\$38.53	\$21.34	\$59.87
Carpenter - Rodman (Surveying & Layout)	5/1/2020	4/30/2021	\$40.09	\$21.34	\$61.43
Carpenter - Rodman (Surveying & Layout)	5/1/2021		\$41.69	\$21.34	\$63.03
Carpenter	5/1/2018	4/30/2019	\$46.26	\$27.69	\$73.95
Carpenter	5/1/2019	4/30/2020	\$47.81	\$28.04	\$75.85
Carpenter	5/1/2020		\$49.46	\$28.34	\$77.80
Carpenter	5/1/2021		\$51.76	\$28.04	\$79.80
Carpenters	5/1/2017		\$44.71	\$27.39	\$72.10
Carpenters	5/1/2018		\$46.56	\$27.39	\$73.95
Carpenters	5/1/2019		\$48.46	\$27.39	\$75.85
Carpenters	5/1/2020		\$50.41	\$27.39	\$77.80
Carpenters	5/1/2021		\$52.41	\$27.39	\$79.80
Cement Masons	5/1/2017		\$34.45	\$31.51	\$65.96
Cement Masons	5/1/2018		\$35.65	\$32.01	\$67.66
Cement Masons	5/1/2019		\$37.90	\$31.51	\$69.41
Cement Masons	5/1/2020		\$37.95	\$33.26	\$71.21
DockBuilder/ Divers (Building Heavy & Highway)	5/1/2020		\$52.44	\$37.27	\$89.71
DockBuilder/Pile Drivers/ Diver Tender(Building Heavy & Highway)	5/1/2020		\$43.70	\$37.27	\$80.97
Electric Lineman	5/29/2017		\$52.60	\$26.37	\$78.97
Electric Lineman	5/28/2018		\$53.64	\$27.45	\$81.09
Electric Lineman	5/27/2019		\$54.66	\$28.56	\$83.22
Electric Lineman	6/1/2020		\$55.96	\$29.76	\$85.72
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	1/1/2017		\$46.20	\$31.26	\$77.46
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2020		\$50.80	\$34.91	\$85.71
Iron Workers	7/1/2017		\$47.30	\$32.91	\$80.21
Iron Workers	7/1/2019		\$49.30	\$34.41	\$83.71
Iron Workers	1/1/2020		\$49.80	\$34.41	\$84.21
Ironworker (Rodman)	7/1/2020		\$44.82	\$31.60	\$76.42
Laborers (Class 01 - See notes)	5/1/2017		\$29.75	\$25.65	\$55.40
Laborers (Class 01 - See notes)	5/1/2018		\$31.25	\$25.65	\$56.90

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 01 - See notes)	5/1/2019		\$31.95	\$26.50	\$58.45
Laborers (Class 01 - See notes)	5/1/2020		\$33.95	\$26.15	\$60.10
Laborers (Class 01 - See notes)	5/1/2021		\$36.20	\$25.65	\$61.85
Laborers (Class 02 - See notes)	5/1/2017		\$29.95	\$25.65	\$55.60
Laborers (Class 02 - See notes)	5/1/2018		\$31.45	\$25.65	\$57.10
Laborers (Class 02 - See notes)	5/1/2019		\$32.15	\$26.50	\$58.65
Laborers (Class 02 - See notes)	5/1/2020		\$34.15	\$26.15	\$60.30
Laborers (Class 02 - See notes)	5/1/2021		\$36.40	\$25.65	\$62.05
Laborers (Class 03 - See notes)	5/1/2017		\$29.95	\$25.65	\$55.60
Laborers (Class 03 - See notes)	5/1/2018		\$31.45	\$25.65	\$57.10
Laborers (Class 03 - See notes)	5/1/2019		\$32.15	\$26.50	\$58.65
Laborers (Class 03 - See notes)	5/1/2020		\$34.15	\$26.15	\$60.30
Laborers (Class 03 - See notes)	5/1/2021		\$36.40	\$25.65	\$62.05
Laborers (Class 04 - See notes)	5/1/2017		\$24.55	\$25.65	\$50.20
Laborers (Class 04 - See notes)	5/1/2018		\$26.05	\$25.65	\$51.70
Laborers (Class 04 - See notes)	5/1/2019		\$26.75	\$26.50	\$53.25
Laborers (Class 04 - See notes)	5/1/2020		\$28.75	\$26.15	\$54.90
Laborers (Class 04 - See notes)	5/1/2021		\$31.00	\$25.65	\$56.65
Laborers (Class 05 - See notes)	5/1/2017		\$30.60	\$25.65	\$56.25
Laborers (Class 05 - See notes)	5/1/2018		\$32.10	\$25.65	\$57.75
Laborers (Class 05 - See notes)	5/1/2019		\$32.80	\$26.50	\$59.30
Laborers (Class 05 - See notes)	5/1/2020		\$34.80	\$26.15	\$60.95
Laborers (Class 05 - See notes)	5/1/2021		\$37.05	\$25.65	\$62.70
Laborers (Class 06 - See notes)	5/1/2017		\$30.65	\$25.65	\$56.30
Laborers (Class 06 - See notes)	5/1/2018		\$32.15	\$25.65	\$57.80
Laborers (Class 06 - See notes)	5/1/2019		\$32.85	\$26.50	\$59.35
Laborers (Class 06 - See notes)	5/1/2020		\$34.85	\$26.15	\$61.00
Laborers (Class 06 - See notes)	5/1/2021		\$37.10	\$25.65	\$62.75
Laborers (Class 07 - See notes)	5/1/2017		\$30.50	\$25.65	\$56.15
Laborers (Class 07 - See notes)	5/1/2018		\$32.00	\$25.65	\$57.65
Laborers (Class 07 - See notes)	5/1/2019		\$32.70	\$26.50	\$59.20
Laborers (Class 07 - See notes)	5/1/2020		\$34.70	\$26.15	\$60.85
Laborers (Class 07 - See notes)	5/1/2021		\$36.95	\$25.65	\$62.60
Laborers (Class 08 - See notes)	5/1/2017		\$30.25	\$25.65	\$55.90
Laborers (Class 08 - See notes)	5/1/2018		\$31.75	\$25.65	\$57.40
Laborers (Class 08 - See notes)	5/1/2019		\$32.45	\$26.50	\$58.95
Laborers (Class 08 - See notes)	5/1/2020		\$34.45	\$26.15	\$60.60
Laborers (Class 08 - See notes)	5/1/2021		\$36.70	\$25.65	\$62.35
Laborers (Class 09 - See notes)	5/1/2017		\$30.10	\$25.65	\$55.75
Laborers (Class 09 - See notes)	5/1/2018		\$31.60	\$25.65	\$57.25
Laborers (Class 09 - See notes)	5/1/2019		\$32.30	\$26.50	\$58.80
Laborers (Class 09 - See notes)	5/1/2020		\$34.30	\$26.15	\$60.45
Laborers (Class 09 - See notes)	5/1/2021		\$36.55	\$25.65	\$62.20
Laborers (Class 10- See notes)	5/1/2017		\$30.25	\$25.65	\$55.90

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 10- See notes)	5/1/2018		\$33.30	\$25.65	\$58.95
Laborers (Class 10- See notes)	5/1/2019		\$32.45	\$26.50	\$58.95
Laborers (Class 10- See notes)	5/1/2020		\$34.45	\$26.15	\$60.60
Laborers (Class 10- See notes)	5/1/2021		\$36.70	\$25.65	\$62.35
Laborers (Class 11 -See Notes)	5/1/2017		\$30.15	\$25.65	\$55.80
Laborers (Class 11 -See Notes)	5/1/2018		\$31.55	\$25.65	\$57.20
Laborers (Class 11 -See Notes)	5/1/2019		\$32.35	\$26.50	\$58.85
Laborers (Class 11 -See Notes)	5/1/2020		\$34.35	\$26.15	\$60.50
Laborers (Class 11 -See Notes)	5/1/2021		\$36.50	\$25.65	\$62.15
Laborers (Class 12 -See Notes)	5/1/2017		\$30.95	\$25.65	\$56.60
Laborers (Class 12 -See Notes)	5/1/2018		\$32.45	\$25.65	\$58.10
Laborers (Class 12 -See Notes)	5/1/2019		\$34.05	\$26.50	\$60.55
Laborers (Class 12 -See Notes)	5/1/2020		\$36.05	\$26.15	\$62.20
Laborers (Class 12 -See Notes)	5/1/2021		\$37.40	\$25.65	\$63.05
Laborers (Class 13 -See Notes)	5/1/2017		\$33.88	\$25.65	\$59.53
Laborers (Class 13 -See Notes)	5/1/2018		\$35.38	\$25.65	\$61.03
Laborers (Class 13 -See Notes)	5/1/2019		\$36.08	\$26.50	\$62.58
Laborers (Class 13 -See Notes)	5/1/2020		\$38.08	\$26.15	\$64.23
Laborers (Class 13 -See Notes)	5/1/2021		\$40.33	\$25.65	\$65.98
Laborers (Class 14 -See Notes)	5/1/2017		\$30.00	\$25.65	\$55.65
Laborers (Class 14 -See Notes)	5/1/2018		\$31.50	\$25.65	\$57.15
Laborers (Class 14 -See Notes)	5/1/2019		\$32.20	\$26.50	\$58.70
Laborers (Class 14 -See Notes)	5/1/2020		\$34.20	\$26.15	\$60.35
Laborers (Class 14 -See Notes)	5/1/2021		\$36.45	\$25.65	\$62.10
Laborers Utility (PGW ONLY) (Flagperson)	5/1/2017		\$23.52	\$17.58	\$41.10
Laborers Utility (PGW ONLY)	5/1/2017		\$30.55	\$17.58	\$48.13
Landscape Laborer	5/1/2015		\$20.29	\$22.30	\$42.59
Landscape Laborer	5/1/2016		\$21.19	\$22.65	\$43.84
Landscape Laborer	5/1/2019		\$24.22	\$23.50	\$47.72
Landscape Laborer	5/1/2020		\$26.13	\$22.95	\$49.08
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2017		\$44.87	\$28.14	\$73.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2018		\$46.41	\$28.60	\$75.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2019		\$46.41	\$30.60	\$77.01
Operators Class 01 - See Notes (Building, Heavy, Highway)	5/1/2020		\$47.96	\$31.20	\$79.16
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2017		\$47.86	\$29.03	\$76.89
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2018		\$49.41	\$29.49	\$78.90
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2019		\$49.41	\$31.49	\$80.90
Operators Class 01a - See Notes (Building, Heavy, Highway)	5/1/2020		\$50.96	\$32.09	\$83.05
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2017		\$44.62	\$28.07	\$72.69

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Highway)					
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2018		\$46.16	\$28.53	\$74.69
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2019		\$46.16	\$30.53	\$76.69
Operators Class 02 - See Notes (Building, Heavy, Highway)	5/1/2020		\$47.71	\$31.13	\$78.84
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2017		\$47.61	\$28.97	\$76.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2018		\$49.16	\$29.42	\$78.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2019		\$49.17	\$31.41	\$80.58
Operators Class 02a - See Notes (Building, Heavy, Highway)	5/1/2020		\$50.71	\$32.02	\$82.73
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2017		\$40.53	\$26.87	\$67.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2018		\$42.07	\$27.33	\$69.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2019		\$42.08	\$29.32	\$71.40
Operators Class 03 - See Notes (Building, Heavy, Highway)	5/1/2020		\$43.62	\$29.93	\$73.55
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2017		\$40.24	\$26.78	\$67.02
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2018		\$41.78	\$27.22	\$69.00
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2019		\$41.78	\$29.23	\$71.01
Operators Class 04 - See Notes (Building, Heavy, Highway)	5/1/2020		\$43.32	\$29.84	\$73.16
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2017		\$38.51	\$26.27	\$64.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2018		\$40.05	\$26.73	\$66.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2019		\$40.06	\$28.72	\$68.78
Operators Class 05 - See Notes (Building, Heavy, Highway)	5/1/2020		\$41.60	\$29.33	\$70.93
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2017		\$37.52	\$25.98	\$63.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2018		\$39.07	\$26.43	\$65.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2019		\$39.07	\$28.43	\$67.50
Operators Class 06 - See Notes (Building, Heavy, Highway)	5/1/2020		\$40.61	\$29.04	\$69.65
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2017		\$54.14	\$32.47	\$86.61
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2018		\$55.99	\$33.02	\$89.01
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2019		\$56.30	\$35.11	\$91.41

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 20-06472 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators Class 07 (A) - See Notes (Building, Heavy, Highway)	5/1/2020		\$58.16	\$35.80	\$93.96
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2017		\$53.84	\$32.40	\$86.24
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2018		\$55.70	\$32.92	\$88.62
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2019		\$56.00	\$35.03	\$91.03
Operators Class 07 (B) - See Notes (Building, Heavy, Highway)	5/1/2020		\$57.86	\$35.72	\$93.58
Painters (Bridges, Stacks, Towers)	2/1/2017		\$53.67	\$26.09	\$79.76
Painters (Bridges, Stacks, Towers)	2/1/2018		\$54.14	\$27.27	\$81.41
Painters (Bridges, Stacks, Towers)	2/1/2019		\$55.52	\$28.39	\$83.91
Painters (Bridges, Stacks, Towers)	2/1/2020		\$57.12	\$28.79	\$85.91
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2017		\$51.91	\$32.53	\$84.44
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2020		\$60.47	\$36.93	\$97.40
Steamfitters	5/1/2018		\$56.37	\$34.39	\$90.76
Truckdriver class 1(see notes)	5/1/2017		\$30.31	\$17.96	\$48.27
Truckdriver class 1(see notes)	5/1/2018		\$31.78	\$17.96	\$49.74
Truckdriver class 1(see notes)	5/1/2019		\$32.06	\$19.19	\$51.25
Truckdriver class 1(see notes)	5/1/2020		\$34.78	\$17.96	\$52.74
Truckdriver class 1(see notes)	5/1/2021		\$36.33	\$17.96	\$54.29
Truckdriver class 2 (see notes)	5/1/2017		\$30.41	\$17.96	\$48.37
Truckdriver class 2 (see notes)	5/1/2018		\$31.88	\$17.96	\$49.84
Truckdriver class 2 (see notes)	5/1/2019		\$32.16	\$19.19	\$51.35
Truckdriver class 2 (see notes)	5/1/2020		\$34.88	\$17.96	\$52.84
Truckdriver class 2 (see notes)	5/1/2021		\$36.43	\$17.96	\$54.39
Truckdriver class 3 (see notes)	5/1/2017		\$30.66	\$17.96	\$48.62
Truckdriver class 3 (see notes)	5/1/2018		\$32.13	\$17.96	\$50.09
Truckdriver class 3 (see notes)	5/1/2019		\$32.41	\$19.19	\$51.60
Truckdriver class 3 (see notes)	5/1/2020		\$35.13	\$17.96	\$53.09
Truckdriver class 3 (see notes)	5/1/2021		\$36.68	\$17.96	\$54.64

BID CHECKLIST

Please complete the following checklist:

- _____ Bid security submitted
- _____ All blanks on Bid Form completed in ink or by typewriter
- _____ Two original copy of Bid are to be submitted
- _____ Subcontractors have been identified
- _____ All names must be typed or printed below all signatures
- _____ Page 2 of the BID FORM (section 9.9), should have some type of tag for ease of finding during Bid Opening
- _____

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we

_____(CONTRACTOR),hereinafter called the Principal and

_____hereinafter called the Surety, are hereby held and firmly bound unto SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY (SECCRA), OWNER, hereinafter called the Oblige, as hereinafter set forth, in the full and just sum of

_____Dollars (\$) _____) lawful money of the United States of America, for the payment of which we bind ourselves, our heir, executors, administrators, successors and assigns jointly and severally, firmly by these presents.

WITNESSETH THAT:

WHEREAS, The Principal is herewith submitting to the Oblige a certain Bid dated _____, 20__, to perform the work for the Oblige in connection with **SR 41 PIPE 2021.**

NOW, THEREFORE,

- (a) If said Bid shall be rejected by the Oblige, or in the alternative,
- (b) If said Bid shall be accepted by the Oblige, and the Principal shall duly execute and deliver the Form of Agreement in the form attached hereto and shall execute and deliver the Performance and Payment Bonds (in the forms attached hereto) and evidence of adequate insurance coverage, all within the stipulated time;

THEN THIS BID BOND SHALL BE VOID; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all defaults of the Principal or claims hereunder shall in no event exceed the amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and this Bond shall in no way be impaired or affected by an extension of the time within which the Oblige may accept such Bid and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and Surety cause this Bond to be signed, sealed and delivered this _____ day of _____, 20__.

BY: _____

Representative)

Title: _____

BY: _____

(Officer or *Authorized

Title: _____

WITNESS:

(Corporate Seal)

*Attach appropriate proof, dated as of the same date as the Bond, evidencing authority to execute in behalf of the Corporation.

(Corporate Surety)

(Name of Corporation)

WITNESS:

(Corporate Seal)

**BY:

Attorney-in-Fact

**** Attach an appropriate Power of Attorney, dated as of the same date as the Bond, evidencing the authority of the Attorney-in-Fact to act in behalf of the Corporation.**

FORM OF AGREEMENT

This Agreement is dated as of the _____ day of _____ in the year 20__ by and between SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY (SECCRA) (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK.

The Work is generally described as follows:

SR 41 PIPE 2021 The Project for which the Work under the Contract Documents is required is generally described as follows:

The work consists of furnishing all labor, equipment, supervision, materials, and services necessary to complete the SR 41 PIPE 2021, as indicated in the Bid Specification, for the SECCRA Community Landfill.

Article 2. OWNER'S REPRESENTATIVE

2.1 The "Authorized Representative of the Owner" shall mean the following individual, who has the authority to execute the Contract or Change Order on behalf of the Owner:

John Robbins, Chairman of the Board of Directors
c/o Scott Mengle, General Manger
219 Street Rd
West Grove, PA 19390

2.2 The Project will be managed on a day by day basis by the CONSTRUCTION MANAGER:

Roman Consulting, Inc.
P.O. Box 106
Oley, PA 19547
Alan Roman, (610) 587-9240.

Article 3. ENGINEER

The Project was designed by:

Nicholas Szeredai, PE
Municipal Engineer
Spotts, Stevens and McCoy
1047 North Park Road
P.O. Box 6307
Reading, PA 19610
nick.szeredai@ssmgroup.com
Cell: 610-468-4742

Article 4. CONTRACT TIME

4.1 The contract time for this project shall be **60** calendar days from the notice to proceed. The contractor shall assume normal weather delays in the project schedule.

4.2 The Work shall be completed as described in CONTRACTOR's bid.

4.3 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial losses if each item of work is not completed within the times as specified in paragraph 4.1 above or any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize what delays, expenses and difficulties would be involved in proving in a court of law or in an arbitration proceeding the actual losses suffered by OWNER if the work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER One Thousand Dollars (\$1,000.00) for each calendar day that expires after the time specified in paragraph 4.1 for Substantial Completion until the Work is substantially complete. After Substantial Completion if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER One Thousand Dollars (\$1,000.00) for each calendar day that expires after the time specified in paragraph 4.1 for completion and readiness of final payment.

Article 5. CONTRACT PRICE

5.1 CONTRACTOR agrees to perform and furnish all the Work in the Contract Documents in accordance with all terms and conditions of the Contract Documents for the total

Contract Price of \$_____.

Article 6. PER UNIT COST OF CHANGE ORDER WORK

6.1 In the event that a Change Order is placed by the OWNER in accordance with the terms of Article 10 of the General Conditions, such Change Order shall be completed for the unit prices denoted in Section 9.9 of the Bid Specification, Bid Form, which is incorporated into this contract by reference herewith.

Article 7. NON-PER UNIT COST OF CHANGE ORDER WORK

7.1 In the event that a Change Order entails Work or Materials not specified elsewhere, such work shall be completed at the Cost of Work as determined in accordance with paragraphs 11.4 and 11.5 of the General Conditions **plus a 10 (ten) percent** Contractor's fixed fee.

Article 8. IDENTIFICATION OF SUBCONTRACTORS

8.1 Whenever any portion of the Work is to be performed for CONTRACTOR by Subcontractors, CONTRACTOR shall have identified in writing, given to OWNER prior to the Notice of Award, those portions of the Work that he proposes to subcontract, and after the Notice of Award may only subcontract other portions of the Work with OWNER'S written consent.

Article 9. CLEANUP

9.1 CONTRACTOR shall at all times during performance of the Work, and upon the completion thereof, remove from Owner's premises and the vicinity thereof and properly dispose of all debris and rubbish caused by CONTRACTOR'S operations. Upon completion of the Work, CONTRACTOR shall leave OWNER'S premises and the vicinity thereof clean and ready for use. Should OWNER request CONTRACTOR to perform such cleanup at any time or from time to time during the progress of the Work, CONTRACTOR shall promptly comply with such request. All cleanup by CONTRACTOR shall be performed in a manner satisfactory to OWNER. In the event CONTRACTOR does not perform cleanup in accordance with the foregoing, the OWNER may perform the cleanup on behalf of CONTRACTOR and at the expense of CONTRACTOR after giving advance notice to CONTRACTOR. CONTRACTOR shall promptly pay OWNER its costs of performing cleanup on behalf of CONTRACTOR.

9.2 Upon completion of the Work, CONTRACTOR shall promptly remove from OWNER'S premises all of CONTRACTOR'S equipment, material, scaffolding, temporary buildings, and like items, leaving the premises and the vicinity clean and ready for use. In the event CONTRACTOR shall fail to effect such removal within seven (7) calendar days after written notice from OWNER to so remove, OWNER shall have the right without further notice to CONTRACTOR to remove such items at the risk and expense of CONTRACTOR and to store such items at a place of OWNER'S choosing on behalf of CONTRACTOR and at CONTRACTOR'S risk and expense. Owner shall promptly notify CONTRACTOR of said place of storage. CONTRACTOR shall promptly pay to OWNER all costs to OWNER of said removal and storage.

Article 10. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. OWNER will process Applications for Payment as provided in the General Conditions.

10.1 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as provided below. All progress payments shall be on the basis of the progress of the Work measured by the schedule of values established in paragraph 2.9 of the General Conditions or, in the event there is no schedule of values, as provided in the General Requirements.

10.1.1 Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as OWNER shall determine or OWNER may withhold in

accordance with paragraph 14.7 of the General Conditions.

OWNER may retain ten percent (10%) of the amount of all progress payments due until fifty percent (50%) of the Work has been completed. When the Contract is fifty percent (50%) completed, the CONTRACTOR may apply for a reduction in retainage. At that time, one-half (½) of the amount retained by OWNER shall be returned to CONTRACTOR provided that OWNER approves the Application for Payment, that the CONTRACTOR is making satisfactory progress and there is no specific cause for greater withholding. OWNER, after fifty percent (50%) of the Work has been completed, may retain five percent (5%) of the remaining progress payments. After substantial completion, OWNER may retain one and one-half (1½) times such amount as is required to complete any, then required, uncompleted items as certified by OWNER.

10.1.2 Upon Substantial Completion, payment will be made in an amount sufficient to increase total payments to CONTRACTOR to 100% of the Contract Price, less such amounts as OWNER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of General Conditions.

10.2 Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, OWNER shall pay the remainder of the Contract Price as provided in said paragraph 14.13.

Article 11. CONTRACTOR'S REPRESENTATIONS.

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

11.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, the Work, the site, the locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or the furnishing of the Work.

11.2 CONTRACTOR has correlated the results of all such observations, examination, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

11.3 CONTRACTOR has given OWNER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by OWNER is acceptable to CONTRACTOR.

Article 12. ACCOUNTING RECORDS.

CONTRACTOR shall check all materials, equipment and labor entering into the Work and shall keep such full and detailed accounts as may be necessary for proper financial management under this Agreement. These accounting methods shall be satisfactory to OWNER. OWNER shall be afforded access to all CONTRACTOR'S records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda and similar data relating to the Cost of the

Work and Contractor's Fee. CONTRACTOR shall preserve all such documents for a period of three years after the final payment by OWNER.

Article 13. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 13.1 This Agreement (plus General Conditions).
- 13.2 Exhibits to this Agreement.
- 13.3 Performance and Payment Bonds.
- 13.4 Notice of Award.
- 13.5 Bid Bond.
- 13.6 Instructions to Bidders.
- 13.7 Bid Notice.
- 13.8 Checklist.
- 13.9 Bid Form.
- 13.10 Construction Performance Bond
- 13.11 Construction Payment Bond
- 13.12 Certificate of Insurance
- 13.13 Stipulation Against Liens
- 13.14 Insured Claim Waiver
- 13.15 Notice to Proceed
- 13.16 Standard General Conditions of the Construction Contract.
- 13.17 Supplementary Conditions (attached to General Conditions and labeled "SC -1")
- 13.18 Specifications that consist of multiple divisions and bound herewith, as listed in the table of contents thereof.
- 13.19 Engineering drawings included with bid package.

- 13.20 Prevailing Wage Determination.
- 13.21 All addenda _____ to _____.
- 13.22 Documentation submitted by CONTRACTOR prior to Notice of Award (pages ___ to___ , inclusive).
- 13.23 The following which may be delivered or issued after the Effective Date of the Agreement and which are not attached hereto: All written amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraphs 3.4 and 3.5 of the General Conditions.
- 13.24 The documents listed in paragraphs 13.2 et. seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 13. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.4 and 3.5 of the General Conditions.

Article 14. MISCELLANEOUS

14.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings as indicated in such General Conditions.

14.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on the other party hereto without the written consent of the party sought to be bound; and specifically, but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law) and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

14.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representative to the other party hereto, in respect of all covenants, agreements and obligations contained in the Contract Documents.

Article 15. PUBLICITY

The CONTRACTOR shall not make news releases or issue other advertising pertaining to the Project Work or the Contract Document without first obtaining the written approval of OWNER.

Article 16. OWNERSHIP AND USE OF DRAWINGS

All drawings, technical documents, and data prepared or developed by the CONTRACTOR and furnished to the OWNER in performance of this Agreement and the

Contract Document shall be the property of the OWNER and may be used by OWNER without restriction.

Article 17. COMMUNICATIONS

17.1 All communications pursuant to or in connection with the Contract Document shall be made by first class mail, e-mail or facsimile (fax) in accordance with the provisions of this Article set forth below.

17.2 Insurance: All Certificates of Insurance and other insurance communications required by this Agreement shall be addressed to OWNER'S Office address.

17.3 Data Requirements: All data requirements pursuant to this Agreement shall be addressed to OWNER'S Office address marked Attn: CONSTRUCTION MANAGER.

17.4 Reports: All schedules and reports required by this Agreement shall be addressed to OWNER'S Office address marked Attn: CONSTRUCTION MANAGER.

17.5 Pricing and Take-off: All correspondence regarding pricing and take-off shall be addressed to OWNER'S Office address marked Attn: Secretary with a copy to be addressed to the CONSTRUCTION MANAGER

17.6 Invoices: All invoices shall be transmitted in two (2) copies addressed to OWNER's Office address marked Attn: CONSTRUCTION MANAGER.

ARTICLE 18. LAWS AND REGULATIONS

18.1 The CONTRACTOR shall comply strictly with all local, municipal, state, federal and governmental laws, orders, codes and regulations applicable to the CONTRACTOR'S operations in the performance of the Work hereunder.

18.2 The CONTRACTOR shall not under any circumstances apply to or enter into negotiations with any governmental authority or agency for the acceptance of variations from or revisions to environmental, safety or health, or air, water or noise pollution laws or regulations relating to the Contract Document or to the performance thereof without the owner's prior written approval.

ARTICLE 19. PUBLIC CONTRACTING REQUIREMENTS

19.1 CONTRACTOR shall comply with the following laws: (1) Antitid Rigging Act, 73 P.S. §1611 et seq. and sign the accompanying affidavit, (2) the Labor and Public Works Act, 43 P.S. §151 et seq. and sign the accompanying affidavit, (3) Steel Products Procurement Act, 73 P.S. §18881 et seq., (4) Prevailing Wage Act, and (5) the Adverse Interest Act.

19.2 The CONTRACTOR shall see that there is included in every trade/subcontract that trade/subcontractors strictly comply with all state, federal and governmental laws, orders,

codes and regulations applicable to trade/subcontracts, including but not limited to (1) the Antitid Rigging Act, 73 P.S. §1611 et seq.; (2) the Labor and Public Works Act, 43 P.S. §151 et seq.; (3) Steel Products Procurement Act, 73 P.S. §18881 et seq., (4) Prevailing Wage Act, 43 P.S. §1651 et seq. and (5) the Adverse Interest Act.

19.3 All trade/subcontractor contracts shall be in writing and shall require signed affidavits in accordance with the Antitid Rigging Act, Labor and Public Works Act, Steel Products Procurement Act.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER and CONTRACTOR. All portions of the Contract Documents have been signed or identified by OWNER and by CONTRACTOR.

This Agreement will be effective on _____ upon signing of both parties _____, 20__.

OWNER: SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY

CONTRACTOR: _____

BY: _____

BY: _____

(CORPORATE SEAL)

(CORPORATE SEAL)

ATTEST _____

ATTEST _____

Address for giving notices

Address for giving notices

License No.: _____

Agent for services in process:

(If CONTRACTOR is a corporation, attach evidence of authority to sign.)

CONSTRUCTION PERFORMANCE BOND

CONTRACTOR (Name and Address): SURETY (Name and Principal Place of business):

Owner: Southeastern Chester County Refuse Authority
219 Street Road
West Grove, PA 19390

CONSTRUCTION CONTRACT Date: _____, 20__

Amount: \$

Description (Name & Location): SR 41 PIPE 2021
Southeastern Chester County Refuse Authority
219 Street Road
West Grove, PA 19390

BOND

Date (Not earlier than Construction Contract Date): _____

Bond Number: _____

Amount: \$ _____

The obligations of CONTRACTOR and the Surety under this Bond include one year correction period obligations contained in Section 13.12 of the Standard General Conditions of the Construction Contract, Engineers' Joint Contract Documents Committee Form No. 1910-8 (1986 Edition).

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.

3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:
 - 3.1. The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below, that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a contractor Default: and

- 3.2. The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1: and
- 3.3. The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.
4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 4.1. Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract: or
 - 4.2. Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors: or
 - 4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default: or
 - 4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
 - 4.5. After investigation, determine the amount for which it may be liable to the Owner and as soon as practicable after the amount is determined, tender payment therefore to the Owner: or
 - 4.6. Deny liability in whole or in part and notify the Owner citing reasons therefore.
5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4 and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:
 - 6.1. The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract:
 - 6.2. The legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and
 - 6.3. Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or nonperformance of the Contractor.
7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, or successors.
8. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.
11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, and provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond

and not as a common law bond.

12. Definitions.

- 12.1. Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
- 12.2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 12.3. Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.
- 12.4. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

CONTRACTOR AS PRINCIPAL

SURETY

Company:

Company:

(Corp. Seal)

(Corp. Seal)

Signature: _____
Name and Title:

Signature: _____
Name and Title:

4. The Surety shall have no obligation to Claimants under this Bond until:
 - 4.1. Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and with substantial accuracy, the amount of the claim.
 - 4.2. Claimants who do not have direct contact with the Contractor:
 1. Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
 - 6.1. Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2. Pay or arrange for payment of any undisputed amounts.
7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
8. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner

accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2 (iii), or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

- 15.1. Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water,

gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

- 15.2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 15.3. Owner Default: Failure of the Owner, which has neither been remedied nor waived to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

CONTRACTOR AS PRINCIPAL

SURETY

Company:

Company:

(Corp. Seal)

(Corp.Seal)

Signature: _____

Signature: _____

NOTICE TO PROCEED

TO:

DATE:

RE: **SR 41 PIPE 2021**

Gentlemen:

The Southeastern Chester County Refuse Authority, hereinafter referred to as the OWNER, and represented by the undersigned, received the executed Agreement, Performance Bond, Payment Bond, and Certificates of Insurance Coverage, and found them to be in order. A copy of the Agreement, which was executed by the OWNER, is enclosed for your files. You are hereby notified to proceed with the Work. In accordance with Article 4 of the Agreement, Substantial Completion shall occur as noted, and Final Completion shall occur as noted hereof, respectively.

Please return an accepted copy of this NOTICE TO PROCEED to the attention of the undersigned.

SOUTHEASTERN CHESTER COUNTY
REFUSE AUTHORITY

BY: _____.

ACCEPTANCE OF NOTICE

Receipt of this NOTICE TO PROCEED is hereby acknowledged this day of ,
20____.

BY: _____
TITLE

FOR: _____
CONTRACTOR

CERTIFICATE OF INSURANCE

Use this form, or substitute your own.

** All Parties listed in the Project Directory Section 3.1, shall be listed as Additional Insured.*

NAME OF INSUREDS

ADDRESS

COVERAGE		LIMITS OF LIABILITY		EXPIRATION DATE	POLICY NO:
1. Worker's Compensation State/Fed. Employer's Liability		Statutory \$100,000/\$500,000/\$100,000			
////////////////////////////////////		Bodily Injury	Property Damage	////////	////////
2. Comprehensive General Liability	- Comprehensive Form	Each Occurrence (\$1,000,000 req'd.)	Each Occurrence (\$500,000 req'd)		
	- Premises Operations Explosion & Collapse Hazard	Annual Aggregate (\$1,000,000 req'd)	Annual Aggregate (\$500,000 req'd)		
	- Underground Hazard Products/Completed Operations Hazard				
	- Contractual Insurance Broad Form Property Damage Independent				
	- Personal Injury Including Employees	Each Occurrence (\$1,000,000 req'd)	Aggregate (\$1,000,000 req'd)		
3. Automotive Liability	- Comprehensive Form	Each Person (\$500,000 req'd)	Each Occurrence (\$250,000 req'd)		
	- Owner Hired Non-Owned	Each Occurrence (\$1,000,000 req'd)	OR Combined Single Limit of (\$1,000,000)		
4. Excess Liability	- Umbrella Form Other Than Umbrella Form	Each Occurrence (\$5,000,000) Annual Aggregate (\$5,000,000)			
5. Other					

This is to certify that:

1. Policies of insurance, in the amounts shown and as described above, have been issued to the above named insured and are in force at this time.
2. The coverage under the above policies will not be cancelled or materially changed until at least thirty (30) days prior written notice has been given to additional insureds named below.
3. Coverage under Comprehensive General Liability, in the amounts shown and as described above, include those entities which are contained in Project Directory.

Deductible Limit for Property Insurance: \$ _____

NAME OF INSURANCE COMPANY

NAME OF AGENCY

ADDRESS

ADDRESS

DATE

AUTHORIZED SIGNATURE

TITLE

INSURANCE COMPANY RATING
BY A. M. BEST & COMPANY

BID FORM

For: [SR 41 PIPE 2021](#)

SOUTHEASTERN CHESTER COUNTY REFUSE AUTHORITY
219 Street Road
West Grove, PA 19390

Attention: Mr. Scott Mengle

Gentlemen:

In conformity with the specifications as prepared by Southeastern Chester County Refuse Authority, 219 Street Road, West Grove, Pennsylvania 19390 and after an examination of these Bid Documents, the undersigned submits this bid.

It is hereby certified that the undersigned is (are) the only person(s) interested in this bid as principal or officer, and that this proposal is made without collusion with any person, firm or corporation. The undersigned further guarantees that, if awarded a contract, the bidder will furnish and deliver all materials and perform all labor, tools, tests, and services required to execute, in an expeditious, substantial and workmanlike manner, the requirements of and in accordance with the specifications, to the complete satisfaction and acceptance of SECCRA.

It is understood that SECCRA reserves the right to reject any or all bids, or parts thereof, or items therein and to waive technicalities. It is further understood that competency and responsibility of bidders will receive consideration before the award of the contract.

Bidder submits this bid with the understanding that the materials and/or services will be delivered on or before the date stated in this proposal and that the time for the delivery of the materials and/or services shall be considered as of the essence of this contract. It is further understood, however, that any extension of time, regardless of cause, beyond the agreed date, must be requested by letter from the supplier and any extension must be granted by letter from SECCRA prior to same becoming effective.

The Bidder agrees not to assign this bid or any rights or interests thereunder without the written consent of SECCRA.

The undersigned acknowledges receipt of the following addenda, and the cost, if any, of such revisions has been included in the bid sum:

ADDENDUM NO. _____ DATED _____

ADDENDUM NO. _____ DATED _____

BID FORM (continued)

The undersigned Bidder proposes and agrees, if this Bid is accepted, to perform and furnish all the Work as specified in the Bidding Documents within the Contract Times indicated in this Bid and in accordance with all other terms and conditions of the Bidding Documents for the prices written below:

Project: [SR 41 PIPE 2021](#)

Item No.	Description See Section 6.1 for detail	Unit Type	Units	Cost per unit	Bid price
A. 1.	Erosion & Sediment Pollution Control	LS	1	\$	\$
A. 2.	Clearing and Grubbing	LS	1	\$	\$
A. 3.	Launch and Exit Pits Unclassified Excavation	CY	250	\$	\$
A. 4.	Bore and Jack Pipe 36" Diameter-0.625" Thick Steel	LF	90	\$	\$
A. 5.	Flowable Fill – Existing Pipe	CY	30	\$	\$
A. 6.	Pre-Cast D-W Concrete Endwall	EA	2	\$	\$
A. 7.	Rip-Rap Outlet Apron (R-5)	TN	30	\$	\$
A. 8.	Boring / Geotechnical Investigation	LS	1	\$	\$
A. 9.	Traffic Control	LS	1	\$	\$
A. 10.	Contingency Allowance (See Section 012000)			\$ 15,000.00	\$ 15,000.00
	TOTAL BID				

Contract time shall be 60 calendar days form Notice to Proceed.

Firm Name _____
 Contact Person _____
 Address _____
 Telephone _____
 Authorized Signature(s) _____

_____ Print _____ Print

EQUIPMENT RATES

Project Name: [SR 41 PIPE 2021](#)

The following Equipment Rates shall be used to adjust the actual value of the subcontract and as a basis for any additional work. These Equipment Rates shall include all normal routine maintenance (labor & materials), fuel, taxes, insurances, overhead and profit.

DESCRIPTION	(\$) Hourly Rate	(\$) Daily Rate	(\$) Weekly Rate	(\$) Monthly Rate
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
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_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

MATERIAL SUPPLIERS

Project Name: [SR 41 PIPE 2021](#)

SUBCONTRACTOR LIST

Please list below all material suppliers who will be supplying more than two thousand dollars (\$2,000.00) of material to this project. Failure to furnish this information will affect payment under this contract.

<u>Name/Address</u>	<u>Telephone</u>	<u>Material Supplied</u>	<u>Value</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

CONTRACT CHANGE ORDER

CHANGE ORDER NO. _____

DATE _____

CONTRACT NO. _____

PROJECT NO. _____

OWNER _____

PROJECT _____

TO: _____ (CONTRACTOR)

_____ (ADDRESS)

You are directed to make following changes in the Contract Documents:

Item No.	Description of Changes	Decrease in CONTRACT PRICE	Increase in CONTRACT PRICE
Totals		\$	\$
Net Change in CONTRACT PRICE		\$	\$

Reason for CHANGE ORDER _____

APPROVED _____ (OWNER) _____ (DATE)

7/23/21

Section 9.10

Page 1 of 4

WORK DIRECTIVE CHANGE

(Instructions on following page)

No. _____

PROJECT:

DATE OF ISSUANCE:

OWNER:

(name,
Address)

OWNER'S Project No. _____

ENGINEER:

CONTRACT FOR:

ENGINEER'S Project NO. _____

You are directed proceed promptly with the following change(s):

Description:

Purpose of Work Directive Change:

Attachments: (List documents supporting change)

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:

Method of determining change in Contract Time:

Time and materials
Unit Prices
Cost plus fixed fee
Other _____

Contractor's Records
Engineer's Records
Other

Estimated increase (decrease) in Contract Price: \$_____.
If the change involves an increase, the estimated amount is not to be exceeded without further authorization.

Estimated increase (decrease) in Contract Time: _____days. If the change involves an increase, the estimated time is not to be exceeded without further authorization.

RECOMMENDED:

AUTHORIZED:

by _____

by _____

Construction Manager

Owner

The changes result in the following adjustment of CONTRACT PRICE and CONTRACT TIME:

CONTRACT PRICE prior to this CHANGE ORDER	\$ _____
Net (Increase)(Decrease) resulting from this CHANGE ORDER	\$ _____
Current CONTRACT PRICE including this CHANGE ORDER	\$ _____
CONTRACT TIME prior to this CHANGE ORDER	____ Calendar Days
Net (Increase)(Decrease) resulting from this CHANGE ORDER	____ Calendar Days
Current CONTRACT TIME including this CHANGE ORDER	____ Calendar Days

Recommended by: _____
(CONSTRUCTION MANAGER)

Date _____

Approved by: _____
(OWNER)

Date _____

Approved by: _____
(CONTRACTOR)

Date _____

WORK DIRECTIVE CHANGE ORDER

INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed for use in situations involving changes in the Work which, if not processed expeditiously, might delay the Project. These changes are often initiated in the field and may affect the Contract Price or the Contract Time. This is not a Change Order, but only a directive to proceed with Work that may be included in a subsequent Change Order.

For supplemental instructions and minor changes not involving a change in the Contract Price or the Contract Time, a field Order may be used.

B. COMPLETING THE WORK DIRECTIVE CHANGE FORM

OWNER initiates the form, including a description of the items involved and attachments.

Based on conversations between OWNER and Contractor, OWNER completes the

following:

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT PRICE: Mark the method to be used in determining the final cost of Work involved and the net effect on the Contract Price. If the change involves an increase in the Contract Price and the estimated amount is approached before the additional or changed Work is completed, another Work Directive Change must be issued to change the time or Contractor may stop the changed Work when the estimated time is reached. If the Work Directive Change is not likely to change the Contract Time, the space for estimated increase (decrease) should be marked "Not Applicable."

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT TIME: Mark the method to be used in determining the change in Contract Time and the estimated increase or decrease in Contract Time. If the change involves an increase in Contract Time and the estimated time is approached before the additional or changed Work is completed, another Work Directive Change must be issued to change the time or Contractor may stop the changed Work when the estimated time is reached. If the Work Directive Change is not likely to change the Contract Time, the space for estimated increase (decrease) should be marked "Not Applicable."

Once OWNER has completed and signed the form, all copies should be sent to OWNER for authorization. Once authorized by OWNER, a copy will be delivered by OWNER to Contractor.

Once the Work covered by this directive is completed or final cost and time determined, Contractor should submit documentation for inclusion in a Change Order.

THIS IS A DIRECTIVE TO PROCEED WITH A CHANGE THAT MAY AFFECT THE CONTRACT PRICE OR THE CONTRACT TIME. A CHANGE ORDER, IF ANY, SHOULD BE CONSIDERED PROMPTLY.

CONSENT OF SURETY TO REDUCTION
IN OR PARTIAL RELEASE OF RETAINAGE

PROJECT:
(name, address)

TO (OWNER)

CONSTRUCTION MANAGER'S PROJECT NO.:

CONTRACT FOR:

CONTRACT DATE:

In accordance with the provisions of the Contract between the OWNER and the CONTRACTOR as indicated above, the (here insert name and address of Surety as it appears in the bond).

_____, SURETY,
on bond of (here insert name and address of CONTRACTOR as it appears in the bond)

_____, CONTRACTOR,
hereby approves the reduction in or partial release of retainage to the CONTRACTOR as follows:

The Surety agrees that such reduction in or partial release of retainage to the CONTRACTOR shall not relieve the Surety of any of its obligations to (here insert name and address of OWNER)

_____, OWNER,
as set forth in the said Surety's bond.

IN WITNESS WHEREOF,
the Surety has hereunto set its hand this _____ day of _____ 20

Surety

Signature of Authorized Representative

Attest
(Seal):

Title

SECTION 10.

CONTRACT DRAWINGS and MISCELLANEOUS INFORMATION

SEE TECHNICAL SPECIFICATIONS