

**ADVERTISEMENT OF INVITATION TO BID
WESTMINSTER, ABBEY, AND UPSHUR
STORMWATER MANAGEMENT UPGRADES
TOWN OF BERLIN, MARYLAND**

Electronic and/or sealed hard copy proposals will be received by the Mayor and Council of Berlin, Worcester County, Maryland, at the Berlin Visitor Center located at 13 S. Main Street, Berlin, Maryland 21811 until 1:30 p.m., on 26 August 2026 for the **WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES**.

Electric submissions are to be sent to mbohlen@berlinmd.gov, kdaub@berlinmd.gov, and info@berlinmd.gov. Hard copies are to be submitted at the Berlin Visitor Center located at 13 S. Main Street, Berlin, MD 21811. The bid opening will occur at 2:00pm on 26 August 2026 at the Berlin Police Station located at 129 Decatur Street, Berlin, MD 21811 where the proposals will be opened publicly and read aloud.

Potential bidders are encouraged to attend the non-mandatory Pre-Bid Meeting which will be held on 23 July 2026, at 2:00 p.m. at the Berlin Police Station located at 129 Decatur Street, Berlin, Maryland.

Bid documents are available on the Town of Berlin website
<https://berlinmd.gov/government/request-for-proposals/>.

All inquiries shall be directed to Steven Lemasters, P.E., Project Manager, EA Engineering, Science, and Technology, Inc., PBC at 410-641-5341.

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Contract Documents and Construction Specifications

Town of Berlin Westminster, Abbey, and Upshur Stormwater Management Upgrades

Prepared for

Town of Berlin
Department of Water Resources
10 William Street
Berlin, Maryland 21811

Prepared by

EA Engineering, Science, and Technology, Inc., PBC
11200 Racetrack Road, Unit A101
Berlin, Maryland 21811
(410) 641-5341

July 2026
EA Project No. 61470410

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TABLE OF CONTENTS

SECTION A: INSTRUCTIONS TO BIDDERS

Advertisement for Bids
Instructions to Bidders

SECTION B: GENERAL CONDITIONS OF THE CONTRACT

Standard General Conditions of the Construction Contract

SECTION C: SUPPLEMENTARY CONDITIONS

Supplementary Conditions

SECTION D: BONDS AND BID FORMS

Proposal Bond
Performance Bond
Payment Bond
Bid Form
Notice of Award
Agreement Between Owner and Contractor
Notice to Proceed
Contractor's Application for Payment Form
Change Order
Certificate of Substantial Completion

SECTION E: SPECIFICATIONS

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01 10 00 SUMMARY OF WORK
SECTION 01 20 00 MEASUREMENT AND PAYMENT
SECTION 01 33 00 SUBMITTALS
SECTION 01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS

DIVISION 2 – SITEWORK

SECTION 02 11 00 CLEARING AND GRUBBING
SECTION 02 25 00 TRENCH EXCAVATION, BACKFILL, AND COMPACTION
SECTION 02 41 16 DEMOLITION
SECTION 02 74 10 ASPHALT PAVING
SECTION 02 80 00 RESTORATION

DIVISION 3 – CONCRETE

SECTION 03 00 00 CONCRETE

SECTION 03 05 16 PRECAST CONCRETE STRUCTURES
SECTION 03 10 00 CONCRETE FORMS AND ACCESSORIES
SECTION 03 30 00 CAST-IN-PLACE CONCRETE

DIVISION 31 – EARTHWORK

SECTION 31 05 15 EARTHWORK
SECTION 31 05 16 AGGREGATES
SECTION 31 25 00 EROSION AND SEDIMENT CONTROL

DIVISION 32 – EXTERIOR IMPROVEMENTS

SECTION 32 92 00 LAWNS AND GRASSES

DIVISION 33 – UTILITIES

SECTION 33 31 00 PIPING AND APPURTENANCES

SECTION F: DRAWINGS (Bound Separately)

G-001	TITLE SHEET
G-002	ABBREVIATIONS, NOTES, LEGEND, AND SITE DATA
C-101	EXISTING CONDITIONS AND DEMOLITION PLAN
C-102	PROPOSED SITE AND STORMWATER MANAGEMENT PLAN
C-103	PROPOSED PLANTING PLAN
C-201	PROFILES
C-202	PROFILES
C-501	DETAIL SHEET I
C-502	DETAIL SHEET II
C-503	DETAIL SHEET III
C-504	DETAIL SHEET IV
C-701	EROSION AND SEDIMENT CONTROL PLAN
C-702	EROSION AND SEDIMENT CONTROL NOTES
C-703	EROSION AND SEDIMENT CONTROL DETAILS

SECTION G: FIGURE 1 – PROPOSED STORM DRAIN PLAN BID ALTERNATE 1

Section A

Instructions to Bidders

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INSTRUCTIONS TO BIDDERS

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 the lowest, 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 Advertisement of Invitation to Bid, Instructions to Bidders, the Bid Form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids). The “Owner” shall be defined as “Town of Berlin – Department of Water Resources”

2. COPIES OF BIDDING DOCUMENTS

- A. Complete electronic sets of the Bidding Documents may be obtained from the Town of Berlin’s website at <https://berlinmd.gov/government/request-for-proposals/>. Hard copies of the bid documents are not available.
- B. Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- C. Owner and 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.

3. QUALIFICATIONS OF BIDDERS

To demonstrate qualifications to perform the Work, each Bidder must be prepared to submit within five (5) days of Owner’s request, written evidence, such as financial data, previous experience, present commitments, and other such data, as may be called for below (or in the Supplementary Conditions). Each Bid must contain evidence of the Bidder’s qualifications to do business in the state where the project is located or a covenant to obtain such qualification prior to award of the Contract.

4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- A. 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, performance or furnishing of the Work; (c) consider federal, state, and local laws and regulations that may affect cost, progress, performance, or furnishing of the Work; (d) study and carefully correlate Bidder’s observations with the Contract Documents; and (e) notify Owner and Engineer of all conflicts, errors, or discrepancies in the Contract Documents.

- B. Reference is made to the Supplementary Conditions for identification of:
1. Those reports of explorations and tests of subsurface conditions at the site which have been utilized by Engineer in preparation of the Contract Documents. Bidder 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 the purposes of bidding or construction.
 2. Those drawings of physical conditions in or relating to existing surface and subsurface conditions (except Underground Facilities) which are at or contiguous to the site which have been utilized by Engineer in preparation of the Contract Documents. Bidder may rely upon the accuracy of the technical data contained in such drawings, but not upon the completeness thereof for the purposes of bidding or construction.
 3. Copies of such reports and drawings will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the technical data contained therein, upon which Bidder is entitled to rely as provided in Paragraphs 4.B.1 and 4.B.2, are incorporated therein by reference. Such technical data have been identified and established in the Supplementary Conditions.
- C. Information and data reflected in the Contract Documents, with respect to Underground Facilities at or contiguous to the site, is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities or others, and Owner does not assume responsibility for the accuracy or completeness thereof, unless it is expressly provided otherwise in the Supplementary Conditions.
- D. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities, and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in Paragraphs 4.B and 4.C of the General Conditions.
- E. Before submitting a Bid, each Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests, and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface, and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance, or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents.
- F. On request in advance, Owner will provide each Bidder access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. The bidder shall fill all holes, clean up, and restore the site to its former condition upon completion of such explorations.
- G. The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by the Contractor in performing the

Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Contractor.

- H. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and 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 understanding of all terms and conditions for performance and furnishing of the Work.

5. INTERPRETATIONS AND ADDENDA

- A. All questions about the meaning or intent of the Contract Document are to be directed to Engineer. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda, mailed or delivered to all parties, and recorded by Engineer as having received the Bidding Documents. Questions received less than ten (10) days prior to the date for opening Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- B. Addenda may also be issued to modify the Bidding Documents as deemed advisable by Owner or Engineer.

6. BID SECURITY

- A. Each Bid must be accompanied by Bid security made payable to Owner in an amount of five (5) percent 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.A of the General Conditions.
- B. The Bid security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required contract security, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required contract security within ten (10) 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 sixty-first day after the Bid opening, whereupon Bid security furnished by such Bidders will be returned. Bid security with Bids which are not competitive will be returned within seven (7) days after the Bid opening.

7. CONTRACT TIME

The numbers of days within which, or the dates by which, the Work is to be substantially completed and also completed and ready for final payment (the Contract Time) are set forth in the Bid Form and the Agreement.

8. LIQUIDATED DAMAGES

Provisions for liquidated damages are \$1,000 per day, as set forth in the Agreement.

9. SUBSTITUTE OR “OR-EQUAL” ITEMS

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or “or-equal” item. Substitute or “or-equal” materials or equipment may be furnished or used by Contractor if acceptable to Engineer; application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement. The procedure for submission of any such application by Contractor and consideration by Engineer is set forth in Article 7 of the General Conditions and may be supplemented in the General Requirements.

10. SUBCONTRACTORS, SUPPLIERS, AND OTHERS

If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, and other persons and organizations (including those who are to finish the principal items of material and equipment) to be submitted to Owner in advance of the specified date prior to the Effective Date of Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within seven (7) days after the Bid opening submit to Owner a list of all such Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, person, or organization if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, other person or organization, Owner may request the apparent Successful Bidder to submit an acceptable substitute prior to the Notice of Award, in which case that Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

11. BID FORM

- A. The Bid Form (Form of Proposal) is included with the Bidding Documents; additional copies may be obtained from Owner.
- B. All blanks on the Bid Form must be completed in ink or typed. All blanks on the Bid Form must be completed; use N/A or a dashed line to indicate items that are not applicable.

- C. Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.
- D. Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- E. All names must be typed or printed below the signature.
- F. The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).
- G. The address and telephone number for communications regarding the Bid must be shown.
- H. The name, address, and telephone number of the laboratory to perform testing must be provided on the Bid Form.

12. SUBMISSION OF BIDS

Bids shall be submitted before 1:30 p.m. (EDT) on 26 August 2026. Electronic and hard copy submissions are both acceptable. Electric submissions are to be sent to mbohlen@berlinmd.gov, kdaub@berlinmd.gov, and info@berlinmd.gov. Hard copies are to be submitted at the Berlin Visitor Center located at 13 S. Main Street, Berlin, MD 21811 shall be enclosed in an opaque, sealed envelope, marked with the Project title, and name and address of the Bidder and accompanied by the Bid security and other related documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope. The notation “**BID ENCLOSED: TOWN OF BERLIN – WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES**” on the face of it.

13. MODIFICATION AND WITHDRAWAL OF BIDS

Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

14. OPENING OF BIDS

The bid opening will occur at 2:00pm on 26 August 2026 at the Berlin Police Station located at 129 Decatur Street, Berlin, MD 21811.

An abstract of the amounts of the base Bids and major alternates will be made available to Bidders after the opening of Bids.

15. BIDS TO REMAIN SUBJECT TO ACCEPTANCE

All bids will remain subject to acceptance for sixty (60) days after the day of the Bid opening, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to that date.

16. AWARD OF CONTRACT

- A. Owner reserves the right to reject any and all Bids, to waive any and all informalities not involving price, time, or changes in the Work and to negotiate Contract terms with the Successful Bidder, and the right to disregard all nonconforming, nonresponsive, 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. Discrepancies in the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- B. 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 in the Bid Form or prior to the Notice of Award.
- C. 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 guarantees 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.
- D. Owner may conduct such investigations, as Owner deems necessary, to assist in the evaluation of any Bid 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 to Owner's satisfaction within the prescribed time.
- E. If the Contract is to be awarded, it will be awarded to the lowest Bidder whose evaluation by Owner indicates that the award will be in the best interests of the Project.
- F. If the Contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within thirty (30) days after the day of the Bid opening.

17. CONTRACT SECURITY

Article 6.01 of the General Conditions 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.

18. 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 other written Contract Documents attached. Within five (5) days thereafter, Contractor shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner with the required Bonds. Within five (5) days thereafter, Owner shall deliver one fully signed counterpart to Contractor. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification.

19. PREBID CONFERENCE

A prebid conference will be held at 11:00 a.m. (EDT) on 23 July 2026 at the Berlin Police Station located at 129 Decatur Street, Berlin, MD 21811. Representatives of the Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. The engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference.

20. PERMITS

All required permits shall be obtained and paid for by Contractor and are hereby made a part of this contract.

21. RETAINAGE

Provisions concerning retainage are set forth in the AGREEMENT.

22. AWARD OF BIDS/ALTERNATES

The successful Bidder, for purpose of contract award, shall be the conforming responsible Bidder offering the low unit price bid for the Base Bid Items. After the successful Bidder has been determined by this method, Owner reserves the right to select alternates out of the listed sequence and to make award for only those items so selected and to accept any or all of the balance of the alternates within sixty (60) days of award of the Contract.

23. CONTACT SCHEDULE

All Bidders are required to submit an itemized construction schedule outlining activities from the notice to proceed through project completion. In addition to the completed Bid Form and Bonds, and required bid documents, the Town reserves the right to evaluate the qualified bids based on the construction schedule.

24. INSTRUCTIONS TO BIDDERS – INDEX

	<u>Page</u>
1. DEFINED TERMS	1
2. COPIES OF BIDDING DOCUMENTS.....	1
3. QUALIFICATIONS OF BIDDERS	1
4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE	1
5. INTERPRETATIONS AND ADDENDA.....	3
6. BID SECURITY	3
7. CONTRACT TIME	4
8. LIQUIDATED DAMAGES	4
9. SUBSTITUTE OR “OR-EQUAL” ITEMS.....	4
10. SUBCONTRACTORS, SUPPLIERS, AND OTHERS.....	4
11. BID FORM	4
12. SUBMISSION OF BIDS	5
13. MODIFICATION AND WITHDRAWAL OF BIDS	5
14. OPENING OF BIDS.....	5
15. BIDS TO REMAIN SUBJECT TO ACCEPTANCE.....	6
16. AWARD OF CONTRACT.....	6
17. CONTRACT SECURITY	6
18. SIGNING OF AGREEMENT	7
19. PREBID CONFERENCE	7
20. PERMITS.....	7
21. RETAINAGE.....	7
22. AWARD OF BIDS/ALTERNATES	7
23. CONTACT SCHEDULE.....	7
24. INSTRUCTIONS TO BIDDERS – Index	8

Section B

General Conditions of the Contract

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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 Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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NOTE: EJCDC publications may be purchased at www.ejcdc.org, or from any of the sponsoring organizations above.

GUIDELINES FOR USE OF EJCDC® C-700, STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

1.0 PURPOSE AND INTENDED USE OF THE DOCUMENT

EJCDC® C-700, Standard General Conditions of the Construction Contract (2018), is the foundation document for the EJCDC Construction Series. The General Conditions define the basic rights, responsibilities, risk allocations, and contractual relationship of the Owner and Contractor, and establish how the Contract is to be administered.

2.0 OTHER DOCUMENTS

EJCDC documents are intended to be used as a system and changes in one EJCDC document may require a corresponding change in other documents. Other EJCDC documents may also serve as a reference to provide insight or guidance for the preparation of this document.

These General Conditions have been prepared for use with either EJCDC® C-520, Agreement Between Owner and Contractor for Construction Contract (Stipulated Price), or EJCDC® C-525, Agreement Between Owner and Contractor for Construction Contract (Cost-Plus-Fee) (2018 Editions). The provisions of the General Conditions and the Agreement are interrelated, and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018).

The full EJCDC Construction series of documents is discussed in the EJCDC® C-001, Commentary on the 2018 EJCDC Construction Documents (2018).

3.0 ORGANIZATION OF INFORMATION

All parties involved in a construction project benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location; doing so frequently leads to confusion and unanticipated legal consequences. Careful attention should be given to the guidance provided in EJCDC® N-122/AIA® A521, Uniform Location of Subject Matter (2012 Edition) when preparing documents. EJCDC® N-122/AIA® A521 is available at no charge from the EJCDC website, www.ejcdc.org, and from the websites of EJCDC's sponsoring organizations.

If CSI MasterFormat™ is used for organizing the Project Manual, consult CSI MasterFormat™ for the appropriate document number (e.g., under 00 11 00, Advertisements and Invitations), and accordingly number the document and its pages.

4.0 EDITING THIS DOCUMENT

Remove these Guidelines for Use. Some users may also prefer to remove the two cover pages.

Although it is permissible to revise the Standard EJCDC Text of C-700 (the content beginning at page 1 and continuing to the end), it is common practice to leave the Standard EJCDC Text of C-700 intact and unaltered, with modifications and supplementation of C-700's provisions set forth in EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018). If the Standard Text itself is revised, the

user must comply with the terms of the License Agreement, Paragraph 4.0, Document-Specific Provisions, concerning the tracking or highlighting of revisions. The following is a summary of the relevant License Agreement provisions:

1. The term “Standard EJCDC Text” for C-700 refers to all text prepared by EJCDC in the main body of the document. Document covers, logos, footers, instructions, or copyright notices are not Standard EJCDC Text for this purpose.
2. During the drafting or negotiating process for C-700, it is important that the two contracting parties are both aware of any changes that have been made to the Standard EJCDC Text. Thus, if a draft or version of C-700 purports to be or appears to be an EJCDC document, the user must plainly show all changes to the Standard EJCDC Text, using “Track Changes” (redline/strikeout), highlighting, or other means of clearly indicating additions and deletions.
3. If C-700 has been revised or altered and is subsequently presented to third parties (such as potential bidders, grant agencies, lenders, or sureties) as an EJCDC document, then the changes to the Standard EJCDC Text must be shown, or the third parties must receive access to a version that shows the changes.
4. Once the document is ready to be finalized (and if applicable executed by the contracting parties), it is no longer necessary to continue to show changes to the Standard EJCDC Text. The user may produce a final version of the document in a format in which all changes are accepted, and the document at that point does not need to include any “Track Changes,” redline/strikeout, highlighting, or other indication of additions and deletions to the Standard EJCDC Text.

5.0 LICENSE AGREEMENT

This document is subject to the terms and conditions of the **License Agreement, 2018 EJCDC® Construction Series Documents**. A copy of the License Agreement was furnished at the time of purchase of this document, and is available for review at www.ejcdc.org and the websites of EJCDC’s sponsoring organizations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1—Definitions and Terminology.....	1
1.01 Defined Terms.....	1
1.02 Terminology	6
Article 2—Preliminary Matters	7
2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance.....	7
2.02 Copies of Documents	7
2.03 Before Starting Construction	7
2.04 Preconstruction Conference; Designation of Authorized Representatives	8
2.05 Acceptance of Schedules	8
2.06 Electronic Transmittals	8
Article 3—Contract Documents: Intent, Requirements, Reuse	9
3.01 Intent.....	9
3.02 Reference Standards	9
3.03 Reporting and Resolving Discrepancies	10
3.04 Requirements of the Contract Documents	10
3.05 Reuse of Documents	11
Article 4—Commencement and Progress of the Work	11
4.01 Commencement of Contract Times; Notice to Proceed	11
4.02 Starting the Work.....	11
4.03 Reference Points	11
4.04 Progress Schedule	12
4.05 Delays in Contractor’s Progress	12
Article 5—Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions	13
5.01 Availability of Lands	13
5.02 Use of Site and Other Areas.....	14
5.03 Subsurface and Physical Conditions.....	15
5.04 Differing Subsurface or Physical Conditions	16

5.05	Underground Facilities	17
5.06	Hazardous Environmental Conditions at Site	19
Article 6—Bonds and Insurance.....		21
6.01	Performance, Payment, and Other Bonds	21
6.02	Insurance—General Provisions	22
6.03	Contractor’s Insurance	24
6.04	Builder’s Risk and Other Property Insurance	25
6.05	Property Losses; Subrogation	25
6.06	Receipt and Application of Property Insurance Proceeds	27
Article 7—Contractor’s Responsibilities		27
7.01	Contractor’s Means and Methods of Construction	27
7.02	Supervision and Superintendence	27
7.03	Labor; Working Hours	27
7.04	Services, Materials, and Equipment	28
7.05	“Or Equals”	28
7.06	Substitutes	29
7.07	Concerning Subcontractors and Suppliers	31
7.08	Patent Fees and Royalties	32
7.09	Permits	33
7.10	Taxes	33
7.11	Laws and Regulations.....	33
7.12	Record Documents.....	33
7.13	Safety and Protection.....	34
7.14	Hazard Communication Programs	35
7.15	Emergencies	35
7.16	Submittals	35
7.17	Contractor’s General Warranty and Guarantee	38
7.18	Indemnification	39
7.19	Delegation of Professional Design Services	39
Article 8—Other Work at the Site		40
8.01	Other Work	40
8.02	Coordination	41
8.03	Legal Relationships.....	41

Article 9—Owner’s Responsibilities	42
9.01 Communications to Contractor	42
9.02 Replacement of Engineer	42
9.03 Furnish Data	42
9.04 Pay When Due.....	42
9.05 Lands and Easements; Reports, Tests, and Drawings	43
9.06 Insurance.....	43
9.07 Change Orders	43
9.08 Inspections, Tests, and Approvals.....	43
9.09 Limitations on Owner’s Responsibilities	43
9.10 Undisclosed Hazardous Environmental Condition.....	43
9.11 Evidence of Financial Arrangements.....	43
9.12 Safety Programs	43
Article 10—Engineer’s Status During Construction	44
10.01 Owner’s Representative.....	44
10.02 Visits to Site.....	44
10.03 Resident Project Representative.....	44
10.04 Engineer’s Authority	44
10.05 Determinations for Unit Price Work	45
10.06 Decisions on Requirements of Contract Documents and Acceptability of Work	45
10.07 Limitations on Engineer’s Authority and Responsibilities	45
10.08 Compliance with Safety Program.....	45
Article 11—Changes to the Contract	46
11.01 Amending and Supplementing the Contract	46
11.02 Change Orders	46
11.03 Work Change Directives.....	46
11.04 Field Orders.....	47
11.05 Owner-Authorized Changes in the Work	47
11.06 Unauthorized Changes in the Work.....	47
11.07 Change of Contract Price	47
11.08 Change of Contract Times.....	49
11.09 Change Proposals.....	49
11.10 Notification to Surety.....	50

Article 12—Claims.....	50
12.01 Claims.....	50
Article 13—Cost of the Work; Allowances; Unit Price Work	51
13.01 Cost of the Work	51
13.02 Allowances	55
13.03 Unit Price Work.....	55
Article 14—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work	56
14.01 Access to Work.....	56
14.02 Tests, Inspections, and Approvals.....	56
14.03 Defective Work	57
14.04 Acceptance of Defective Work.....	58
14.05 Uncovering Work	58
14.06 Owner May Stop the Work	58
14.07 Owner May Correct Defective Work.....	59
Article 15—Payments to Contractor; Set-Offs; Completion; Correction Period	59
15.01 Progress Payments.....	59
15.02 Contractor’s Warranty of Title	62
15.03 Substantial Completion.....	62
15.04 Partial Use or Occupancy	63
15.05 Final Inspection	64
15.06 Final Payment.....	64
15.07 Waiver of Claims	65
15.08 Correction Period	66
Article 16—Suspension of Work and Termination	67
16.01 Owner May Suspend Work	67
16.02 Owner May Terminate for Cause.....	67
16.03 Owner May Terminate for Convenience.....	68
16.04 Contractor May Stop Work or Terminate	68
Article 17—Final Resolution of Disputes	69
17.01 Methods and Procedures.....	69
Article 18—Miscellaneous	69
18.01 Giving Notice	69
18.02 Computation of Times	69

18.03	Cumulative Remedies	70
18.04	Limitation of Damages	70
18.05	No Waiver	70
18.06	Survival of Obligations	70
18.07	Controlling Law	70
18.08	Assignment of Contract	70
18.09	Successors and Assigns	70
18.10	Headings.....	70

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *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 Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
- 11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 - 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 - 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 - 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 - 15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 - 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 - 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 - 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 - 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 - 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 - 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice 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.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. 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.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. 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 or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract 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 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument 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 or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading of Structures:* 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 structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, 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.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

- A. 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 maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, 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 performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. 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 an 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 will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to 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 specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to 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.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

- A. 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.

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (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 any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer 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 Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
- 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 - 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 - 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
 - 1. Observations by Engineer;
 - 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. Use or occupancy of the Work or any part thereof by Owner;
 - 5. Any review and approval of a Shop Drawing or Sample submittal;
 - 6. The issuance of a notice of acceptability by Engineer;
 - 7. The end of the correction period established in Paragraph 15.08;
 - 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will 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, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site 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 generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.
- B. *Change Proposal Procedures*
 - 1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
 - 2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

- 3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
- 4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
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 in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials 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 accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any 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 and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. 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.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages 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 include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, 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 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
 - 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
 - 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 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 not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 - 6. Expenses incurred in preparing and advancing Claims.
 - 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee*
- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
 - 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, 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. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. 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 performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
1. the cash 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
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. 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.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then 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 will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or 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, 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, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer 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.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 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.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
- 3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. 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.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
1. Contractor's persistent failure 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);
 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, 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 complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

- attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
 - G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
 - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 - 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
 - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 - 2. agree with the other party to submit the dispute to another dispute resolution process; or
 - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
 - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract 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.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto 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 by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. 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.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is 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.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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Section C

Supplementary Conditions

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SUPPLEMENTARY CONDITIONS

SC-1

The terms used in these Supplementary Conditions have the meanings assigned to them in the Standard General Conditions of the Construction Contract.

SC-2

In the preparation of Drawings and Specifications, Engineer has relied upon:

2.2.1 Survey data gathered by Benchmark Land Surveying, Inc. during a topographical survey completed in October 2023.

2.2.2 Information obtained from site visits and GIS Data.

2.2.3 Information previously obtained by ground Utility and Easement Surveys prepared by L.E. Bunting Survey's, Inc and provided by Benchmark Land Surveying, LLC.

2.2.4 Information obtained from historical Town design and as-built documents.

These drawings are not included with Bidding Documents but may be examined at the Town of Berlin Department of Public Works, 10 William Street, Berlin, Maryland 21811, during regular business hours. These Drawings are not part of these Contract Documents, but the technical data contained therein upon which Contractor is entitled to rely as provided in General Conditions Article 3 and as identified and established above are incorporated herein by reference.

2.2.5 Town of Berlin Design and Construction Standards

Contractor shall be required to abide by the construction specifications and details identified and illustrated in the *Design and Construction Standards For Water, Sewer, and Roadway Systems, July 2016* prepared by Davis, Bowen and Friedel, Inc.

The design standards can be located at the link below:

<https://media.berlinmd.gov/wp-content/uploads/2019/03/22103234/Berlin-Town-Standards-July-2016.pdf>

SC-3

3.1 The limits of liability for the insurance required by Article 6 of the General Conditions shall provide coverage for not less than the following amounts, or greater, where required by Laws and Regulations:

3.1.1 Worker's Compensation:

- | | |
|--|-----------|
| • State: | Statutory |
| • Applicable Federal (e.g., Longshoreman's): | Statutory |
| • Employers Liability: | \$100,000 |

3.1.2 Bodily Injury (including completed operations and products liability):

- Each Occurrence: \$1,000,000
- Annual Aggregate: \$1,000,000

3.1.3 Property Damage:

- Each Occurrence: \$500,000
- Annual Aggregate: \$1,000,000

Property damage liability insurance will provide coverage for explosion, collapse, and underground utilities.

3.1.4 Automobile Liability:

All statutory requirements, or as listed below which ever is higher:

- Bodily Injury:
 - Each Person: \$300,000
 - Each Occurrence: \$1,000,000
- Property Damage:
 - Each Occurrence: \$250,000
 - Annual Limit: \$1,000,000

3.2 Article 6 requires contractual liability coverage with respect to Contractor's obligations under Article 7 with respect to indemnification.

SC-4

4.1 The testing laboratories utilized shall be acceptable to the Engineer.

4.2 The equipment suppliers shall be required to provide a specific warranty as fully described in the Construction Specifications.

4.3 The Contractor shall warranty all material and workmanship for a period not less than two (2) years from the date of acceptance of the work by the County.

SC-5 Other Supplementary Conditions

5.1 Night, Saturday, Sunday, and Holiday Work: Contractor shall perform no work at night, on Saturday, Sunday, or legal holidays (as published by the Town of Berlin), except in the case of emergency or at the direction of the Engineer and then only upon written authorization of the Engineer. Where no emergency exists, but the Contractor feels it advantageous to work at night, or on Saturdays, the Contractor shall notify the Owner and Engineer at least two (2) days in advance, requesting written permission. Should the Contractor request to work on non-working days, the Contractor will be responsible for the payment of the Owner's Construction Inspector at a rate of \$130.00/hour.

5.2 Water: The Contractor shall be responsible for supplying an adequate supply of water suitable for his use and for construction and drinking. At his own expense, he shall provide and maintain adequate water supplies in such locations and install them in such a manner as may be satisfactory to the Engineer.

5.3 Temporary Power Supply: The Contractor shall furnish, at his own expense, all electrical power that may be required for this Contract.

5.4 If conflicts exist among these Contract Documents, the documents shall be considered in the following order.

1. Change Orders
2. Addendum
3. Specifications
4. Drawings
5. Other Documents.

5.5 All questions regarding these Bid Documents shall be submitted to the Engineer (EA Engineering, Science, and Technology, Inc., PBC, 11200 Racetrack Rd, Unit A101, Ocean Pines, Maryland 21811), attention Steven Lemasters, P.E. slemasters@eaest.com, in writing by 5:00 p.m. local time on 12 August 2026.

5.6 The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather-dependent activities.

**MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON SIX (6)-DAY WORK WEEK**

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
7	6	6	5	5	4	4	4	4	5	6	6

5.7 The Contractor shall maintain functionality of all water lines when possible. When a shutdown is required, the Contractor must notify the Owner and Engineer in writing seven (7) calendar days prior to proposed shutdown. The time and date of the shutdown shall be solely at the discretion of the Engineer and the Owner.

5.8 Equipment and material within the building that is shown to be removed, may, with written permission of the Engineer, be reincorporated into the work. The Contractor shall warranty the salvaged material for the same duration as new material that would have been supplied by the Contractor. The Owner is entitled to salvage, at no cost, any material or equipment that has been removed, and the Contractor is to properly dispose of the remainder.

SC-6 Measurement and Payment

Payment for labor and materials required by these Contract Documents shall be based on a percent of completion of project elements defined by the approved Schedule of Values for Contract Payments. Providing for and complying with the provisions of individual specifications sections will not be measured for payment, but the cost thereof will be considered incidental to the lump sum cost of the Contract.

**** End of Section ****

Section D

Bonds and Bid Forms

Proposal Bond

Performance Bond

Payment Bond

Bid Form

Notice of Award

Agreement Between Owner and Contractor

Notice to Proceed

Contractor's Application for Payment Form

Change Order

Certificate of Substantial Completion

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PROPOSAL BOND

KNOW ALL MEN BY THESE PRESENTS, that _____
(CONTRACTOR)

hereinafter called the PRINCIPAL and _____
(SURETY)

hereinafter called the SURETY, are hereby held and firmly bound unto Town of Berlin Mayor and Council, 10 William Street, Berlin, Maryland hereinafter called the OWNER, in the penal sum of FIVE-PERCENT-OF-BID Dollars (\$5%-of-bid) for the payment of which sum, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrations, successors, and assigns.

The condition of the above obligation is such that, whereas, the PRINCIPAL has submitted to the OWNER a certain PROPOSAL attached hereto and hereby made a part hereof, to enter into a CONTRACT in writing, for the Construction of the WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES, Town of Berlin, Maryland.

NOW, THEREFORE,

- a. If said PROPOSAL shall be rejected by the OWNER, or in the alternative,
- b. If within five (5) days of notice from the OWNER or the OWNER'S AGENT of the OWNER'S intention to award a CONTRACT to the PRINCIPAL in accordance with the PROPOSAL, the PRINCIPAL shall duly execute and deliver a PERFORMANCE BOND and PAYMENT BOND in the amounts required and in the forms set forth in the CONTRACT DOCUMENTS under which the PROPOSAL was submitted with a Surety or Sureties as required by said CONTRACT DOCUMENTS and in the event of acceptance of his PROPOSAL by the OWNER shall within the period specified therefor, enter into a written CONTRACT with the OWNER in accordance with the Bid as accepted and furnish to the OWNER proper evidence of insurance coverage as required the CONTRACT DOCUMENTS.

Then this obligation 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 default of the PRINCIPAL or claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The SURETY, for value received stipulates and agrees that the obligation of said SURETY and its bond shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such PROPOSAL and said SURETY does hereby waive notice of any such extension.

IN WITNESS THEREOF, the PRINCIPAL and SURETY have executed this instrument under their several seals this ____ day of _____, 202__, the name and corporate seal of each

corporate party being hereby affixed and these presents duly signed by its proper officers, pursuant to authority of its governing body.

In presence of

(INDIVIDUAL PRINCIPAL) SEAL

(ADDRESS) (BUSINESS ADDRESS)

(INDIVIDUAL PRINCIPAL) SEAL

(ADDRESS) (BUSINESS ADDRESS)

Attest:

(CORPORATE PRINCIPAL)

(BUSINESS ADDRESS)

BY: _____ BY:

Affix Corporate Seal

Witness:

(CORPORATE SURETY)

(BUSINESS ADDRESS)

BY: _____ BY:

Affix Corporate Seal

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS that we, _____, as Principal (the “Principal”), and _____, a corporation organized and existing under the laws of the _____ of _____, as Surety (the “Surety”), are held and firmly bound unto Town of Berlin Mayor and Council as Obligee (“the Obligee”), as hereinafter set forth, in the full and just sum of (total bid price) Dollars (\$ _____), lawful money of the United States of America, for the payment of which sum we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WITNESS THAT:

WHEREAS, the Principal heretofore has submitted to the Obligee a certain proposal, dated _____, 202__, (the “Proposal”), to perform certain construction work for the Obligee, in connection with WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES, pursuant to plans, specifications, and other related documents constituting the contract documents, which are incorporated into the Proposal by reference (the “Contract Documents”), as prepared by EA Engineering, Science, and Technology, Inc., PBC; and WHEREAS, the Obligee is a “contracting body” under the laws of the State of Maryland,

WHEREAS, it also is a condition of the Contract Documents that this Bond shall be furnished by the Principal to the Obligee; and

WHEREAS, under the Contract Documents, it is provided, inter alia, that if the Principal shall furnish this Bond to the Obligee, and if the Obligee shall make an award to the Principal in accordance with the Proposal, then the Principal and the Obligee shall enter into an agreement with respect to performance of such work (the “Agreement”), the form of which Agreement is set forth in the Contract Documents.

NOW, THEREFORE, the terms and conditions of this Bond are and shall be that if; (a) the Principal well, truly, and faithfully shall comply with and shall perform the Agreement in accordance with the Contract Documents, at the time and in the manner provided in the Agreement and in the Contract Documents, and if the Principal shall satisfy all claims and demands incurred in or related to the performance of the Agreement by the Principal or growing out of the performance of the Agreement by the Principal, and if the Principal shall indemnify completely and shall save harmless the Obligee and all of its officers, agents, and employees from any and all costs and damages which the Obligee and all its officers, agents, and employees may sustain or suffer reason of the failure of the Principal to do so, and if the Principal shall reimburse completely and shall pay to the Obligee any an all costs and expenses which the Obligee and all of its officers, agents, and employees may incur by reason of any such default or failure of the Principal; and (b) if the Principal shall remedy, without cost to the Obligee, all defects which may develop during the period of one (1) year from the date of completion by the Principal and acceptance of the Obligee of the work to be performed under the Agreement in accordance with the Contract Documents, which defects, in the sole judgement of the Obligee or

its legal successors in interest, shall be caused by or shall result from defective or inferior materials or workmanship, then this Bond shall be void; otherwise, this Bond shall be and shall remain in force and effect.

The Principal and the Surety agree that any alterations, changes, and/or additions to the Contract Documents, and/or any alterations, changes and/or additions to the work to be performed under the Agreement in accordance with the Contract Documents, and/or any alterations, changes and/or additions to the Agreement, and/or any giving by the Obligee of any extensions of time for the performance of the Agreement in accordance with the Contract Documents, and/or any act of forbearance of either the Principal or the Obligee toward the other with respect to the Contract Documents and the Agreement, and/or the reduction of any percentage to be retained by the Obligee as permitted by the Contract Documents and by the Agreement, shall not release, in any manner whatsoever, the Principal and the Surety, or either of them, or their heirs, executors, administrators, successors, and assigns, from liability and obligations under this Bond; and the Surety, for value received, does waive notice of any such alterations, changes, additions, extensions of time, acts of forbearance and/or reduction of retained percentage.

IN WITNESS THEREOF, the Principal and the Surety cause this Bond to be signed, sealed, and delivered this ___ day of _____, 202__.

(Individual Principal)

_____ (SEAL)

WITNESS:

_____ By:

(Partnership Principal)

(Name of Partnership)

WITNESS:

_____	By: _____ (SEAL)
_____	By: _____ (SEAL)
_____	By: _____ (SEAL)
_____	By: _____ (SEAL)

(Corporate Principal)

(Name of Corporation)

ATTEST:

By:

(CORPORATE SEAL)

(Corporate Surety)

(Name of Corporation)

WITNESS:

_____ By:

**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.

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PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that we, _____, as Principal (the “Principal”), and _____, a corporation organized and existing under the laws of the _____ of _____, as Surety (the “Surety”), are held and firmly bound into The Town of Berlin Mayor and Council, as Obligee (the “Obligee”), 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 sum we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WITNESS THAT:

WHEREAS, the Principal heretofore has submitted to the Obligee a certain proposal, dated _____, 202__ (the “Proposal”) to perform certain construction work for the Obligee, in connection with the WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES pursuant to plans, specifications, and other related documents, which are incorporated into the Proposal by reference (the “Contract Documents”), as prepared by EA Engineering, Science, and Technology, Inc., PBC.

WHEREAS, the Obligee is a “Contracting body” under the laws of the State of Maryland; and

WHEREAS, the Obligee requires that, before an award shall be made to the Principal by the Obligee in accordance with the Proposal, the Principal shall furnish this Bond to the Obligee, with this Bond to become binding upon the award of a contract to the Principal by the Obligee in accordance with the Proposal; and

WHEREAS, it also is a condition of the Contract Documents that this Bond shall be furnished by the Principal to the Obligee; and

WHEREAS, under the Contract Documents, it is provided, inter alia, that if the Principal shall furnish this Bond to the Obligee, and if the Obligee shall make an award to the Principal in accordance with the Proposal, then the Principal and the Obligee shall enter into an agreement with respect to performance of such work (the “Agreement”), the form of which Agreement is set forth in the Contract Documents.

NOW, THEREFORE, the terms and conditions of this Bond are and shall be that if the Principal and any subcontractor of the Principal to whom any portion of the work under the Agreement shall be subcontracted, and if all assignees of the Principal and of any such subcontractor, promptly shall pay or shall cause to be paid, in full, all money which may be due any claimant supplying labor or materials in the prosecution and performance of the work in accordance with that Agreement and in accordance with the Contract Documents, including any amendment, extension, or addition to the Agreement and/or to the Contract Documents, for material furnished or labor supplied or labor performed, then this Bond shall be void; otherwise, this bond shall be and shall remain in force and effect.

The Bond shall be solely for the protection of claimants supplying labor or materials to the Principal or to any subcontractor of the Principal in the prosecution of the work covered by the Agreement, including any amendment, extension, or addition to the Agreement. The term "claimant," when used herein shall mean any individual, firm, partnership, association, or corporation. The phrase "labor or materials," when used herein, shall include public utility services and reasonable rentals of equipment, but only for periods when the equipment rented is actually used at the site of the work covered by the Agreement. The provisions of this Bond shall be applicable whether or not the material furnished or labor performed enters into and becomes a component part of the public building, public work, or public improvement contemplated by the Contract Documents and the Agreement.

As provided and required, the Principal and the Surety agree that any claimant, who has performed labor or furnished material in the prosecution of the work in accordance with the Agreement and in accordance with the Contract Documents, including any amendment, extension, or addition to the Agreement and/or to the Contract Documents, and who has not been paid therefor, in full, before the expiration of ninety (90) days after the day on which such claimant performed the last of such labor or furnished the last of such materials for which payment is claimed, may institute an action upon this Bond, in the name of the claimant, to recover any amount due the claimant for such labor or material, and may prosecute such action to final judgement and may have execution upon the judgement; provided, however, that: (a) any claimant who has a direct contractual relationship with any subcontractor of the Principal, but has no contractual relationship, express or implied, with the Principal, may institute an action upon this Bond only if such claimant first shall have given written notice, served in the manner provided in the Act, to the Principal, within ninety (90) days from the date upon which such claimant performed the last of the labor or furnished the last of the materials for which payment is claimed, stating, with substantial accuracy, the amount claimed and the name of the person for whom the work was performed or to whom the material was furnished; and (b) no action upon this Bond shall be commenced after the expiration of one (1) year from the day upon which the last of the labor was performed or material was supplied, for the payment of which such action is instituted by the claimant; and (c) every action upon this Bond shall be instituted either in the appropriate court of the County where the Agreement is to be performed or of such other County as Maryland statutes shall provide, or in the United States district court for the district in which the project, to which the Agreement relates, is situated, and not elsewhere.

The Principal and the Surety agree that any alterations, changes and/or additions to the Contract Documents, and/or any alterations, changes and/or additions to the work to be performed under the Agreement in accordance with the Contract Documents, and/or any alterations, changes and/or additions to the Agreement, and/or any giving by the Obligee of any extensions of time for the performance of the Agreement in accordance with the Contract Documents, and/or any act of forbearance of either the Principal or the Obligee toward the other with respect to the Contract Documents and the Agreement, and/or the reduction of any percentage to be retained by the Obligee as permitted by the Contract Documents and by the Agreement, shall not release, in any manner whatsoever, the Principal and the Surety, or either of them, or their heirs, executors, administrators, successors, and assigns, from liability and obligations under this Bond; any changes, additions, extensions of time, acts of forbearance and/or reduction of retained percentage.

IN WITNESS THEREOF, the Principal and the Surety cause this Bond to be signed, sealed and delivered this ____ day of _____, 202__.

(Individual Principal)

(Signature of Individual) (SEAL)

WITNESS:

_____ By:

(Partnership Principal)

(Name of Partnership)

WITNESS:

_____ By: _____(SEAL)
(Partner)

_____ By: _____(SEAL)
(Partner)

_____ By: _____(SEAL)
(Partner)

_____ By: _____(SEAL)
(Partner)

(Corporation Principal)

(Name of Corporation)

ATTEST:

By:

(Secretary)

(CORPORATE SEAL)

of (if appropriate)

WITNESS:

(Authorized Representative)

*By:

*Attach appropriate proof, dated as of the same date as the Bond, evidencing authority to execute in behalf of the Corporation.

(Corporation Surety)

(Name of Corporation)

WITNESS:

**By:

**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.

BID FORM

PROJECT IDENTIFICATION: **WESTMINSTER, ABBEY, AND UPSHUR
STORMWATER MANAGEMENT UPGRADES**

THIS BID IS SUBMITTED TO: Town of Berlin – Town Council, Owner

HARD COPY DELIVERY ADDRESS: Berlin Visitor Center
14 S. Main Street
Berlin, Maryland 21811
Attention: Mary Bohlen – Town Administrator

ELECTRONIC DELIVERY ADDRESSES: mbohlin@berlinmd.gov
kdaub@berlinmd.gov
info@berlinmd.gov

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with Owner in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. Bidder accepts all of the terms and conditions of the Advertisement and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for sixty days after the day of Bid opening. Bidder will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen days after the date of Owner's Notice of Award.
3. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:
 - a. Bidder has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date(s)	Number(s)
_____	_____
_____	_____
_____	_____

- b. Bidder has familiarized self with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance, or furnishing of the Work.

- c. Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, and studies which pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance, or furnishing of the Work as Bidder considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.02 of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, or similar information or data are or will be required by Bidder for such purposes.
 - d. Bidder has reviewed and checked all information and data shown on or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, or similar information or data in respect of said Underground Facilities are or will be required by Bidder in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.04 of the General Conditions.
 - e. Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents.
 - f. Bidder has given Engineer written notice of all conflicts, errors, or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to Bidder.
 - g. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation: Bidder has not directly or indirectly induced or solicited any other bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm, or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over the Owner.
4. Bidder will complete the Work within ninety (150) calendar days from receipt of the Notice to Proceed for the following price as indicated on the Bid Form.

BID FORM
TOWN OF BERLIN, MARYLAND
WESTMINSTER, ABBEY, AND UPSHUR
STORMWATER MANAGEMENT UPGRADES

ITEM NO.	ITEM DESCRIPTION	QTY	UNIT	COST PER UNIT (\$)	TOTAL ITEM COST (\$)
1	MOBILIZATION, DEMOBILIZATION, ANCILLARY ITEMS	1	LS		
2	EROSION & SEDIMENT CONTROLS AND SITE RESTORATION	1	LS		
3	1.5" MILL AND SURFACE OVERLAY	710	SY		
4	TRENCH PAVEMENT RESTORATION	125	SY		
5	PRECAST OUTFALL STRUCTURES	2	EA		
6	72" DOGHOUSE STRUCTURE (MH-10)	1	EA		
7	PRECAST CONCRETE CONFLICT BOX	1	EA		
8	TOWN OF BERLIN PRECAST WR INLET	3	EA		
9	SWM-1 EXCAVATION AND HAULING	850	CY		
10	SWM-1 SUBMERGED GRAVEL WETLANDS	1	LS		
11	SWM-2 EXCAVATION AND HAULING	2,300	CY		
12	SWM-2 SUBMERGED GRAVEL WETLANDS	1	LS		
13	PRECAST 19"X30" ELLIPTICAL RCP	121	LF		
14	PRECAST 29"X45" ELLIPTICAL RCP	152	LF		
15	6" WATERMAIN DEFLECTION	4	EA		
16	6" C909 PVC WATERMAIN AND VALVE	155	LF		
17	TOWN OF BERLIN CURB AND GUTTER	300	LF		
18	4' TALL VINYL CHAINLINK PERIMETER FENCE WITH GATES	820	LF		
19	STORMWATER BYPASS OPERATIONS / CLEARWATER DIVERSION	3	EA/MO		
20	DEMOLITION AND OFFSITE REMOVAL	1	LS		
21	36" HDPE PIPE	60	LF		
TOTAL BASE BID:					
BID ALTERNATE NO. 1					
ITEM NO	ALTERNATIVE BID ITEM DESCRIPTION	ESTIMATED QTY	UNIT	COST PER UNIT (\$)	TOTAL ITEM COST (\$)
1	ABBNEY LANE – 36" HDPE PIPE AND STRUCTURES	1	LS		
TOTAL BID FOR BID ALTERNATIVE NO. 1 ITEMS =					
BID ALTERNATE NO. 2					
1	SUBMERGED GRAVEL WETLAND PLANTINGS	1	LS		
TOTAL BID FOR BID ALTERNATIVE NO. 2 ITEMS =					

TOTAL BASE BID (Bid Items 1 – 21) PRICE IN WORDS:

TOTAL BASE BID WITH ALTERNATIVE No. 1 BID (Bid Items 1-21 and Alternative No. 1)
PRICE IN WORDS:

TOTAL BASE BID WITH ALTERNATIVE No. 2 BID (Bid Items 1-21 and Alternative No. 2)
PRICE IN WORDS:

TOTAL BASE BID WITH ALTERNATIVE No. 1 AND No. 2 BID (Bid Items 1-21.
Alternative No. 1, AND Alternative No. 2) PRICE IN WORDS:

5. The following documents are attached to and made a condition of this Bid:

- a. Required bid Security in the form of bond or cashier's check.
- b. A tabulation of Subcontractors, Suppliers, and other persons and organizations required to be identified in this Bid.
- c. Bidder's Qualification Statement with supporting data.

6. Communications concerning this Bid shall be addressed:

Mary Bohlen – Town Administrator

Town of Berlin
10 William Street
Berlin, Maryland
(410) 641-4144

7. The terms used in this Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

SUBMITTED ON _____, 202__.

If Bidder is:

An Individual

By _____(SEAL)
(Individual's Name)

doing business at

Business Address: _____

Phone Number: _____

A Partnership

By _____(SEAL)
(Firm Name)

(General Partner)

Business Address: _____

Phone Number: _____

A Corporation

By _____(SEAL)
(Corporation Name)

(State of Incorporation)

By _____
(Name of Person Authorized to Sign)

(Title)

(Corporate Seal)

Attest _____(SEAL)
(Secretary)

Business Address: _____

Phone Number: _____

A Joint Venture

By _____
(Name)

(Address)

By _____
(Name)

(Address)

(Each joint venture must sign. The manner of signing for each individual, partnership, and corporation that is a party of the joint venture should be in the manner indicated above.)

Notice of Award

Date: _____

Project: **Westminster, Abbey, and Upshur Stormwater Management Upgrades**

Owner: Town of Berlin

Owner's Contract No.:

Contract:

Engineer's Project No.: 61470410

Bidder:

Bidder's Address: *[send Notice of Award Certified Mail, Return Receipt Requested]*

You are notified that your Bid dated _____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for the "Westminster, Abbey, and Upshur Stormwater Management Upgrades" project.

[Indicate total Work, alternates, or sections of Work awarded.]

The Contract Price of your Contract is

_____ Dollars (\$_____).

[Insert appropriate data if unit prices are used. Change language for cost-plus contracts.]

_____ copies of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

_____ sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within [15] days of the date you receive this Notice of Award.

1. Deliver to the Owner [Town of Berlin] fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Article 20), General Conditions (Paragraph 5.01), and Supplementary Conditions (Paragraph SC-5.01).
3. Other conditions precedent:

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

Owner

By: _____
Authorized Signature

Title

Copy to Engineer

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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 Laws and Regulations.

SUGGESTED FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

This Suggested Form of Agreement has been prepared for use with the Standard General Conditions of the Construction Contract (EJCDC C-700, 2007 Edition). Their provisions are interrelated, and a change in one may necessitate a change in the other. The language contained in the Suggested Instructions to Bidders (EJCDC C-200, 2007 Edition) is also carefully interrelated with the language of this Agreement. Their usage is discussed in the Narrative Guide to the 2007 EJCDC Construction Documents (EJCDC C-001, 2007 Edition).

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1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

Associated General Contractors of America
2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308
(703) 548-3118
www.agc.org

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INTRODUCTION

This Suggested Form of Agreement between Owner and Contractor for Construction Contract (Stipulated Price) ("Agreement") has been prepared for use with the Suggested Instructions to Bidders for Construction Contracts ("Instructions to Bidders") (EJCDC C-200, 2007 Edition); the Suggested Bid Form for Construction Contracts ("Bid Form") (EJCDC C-410, 2007 Edition); and the Standard General Conditions of the Construction Contract ("General Conditions") (EJCDC C-700, 2007 Edition). Their provisions are interrelated, and a change in one may necessitate a change in the others. See also the Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition), and the Narrative Guide to the 2007 EJCDC Construction Documents (EJCDC C-001, 2007 Edition).

This Agreement form assumes use of a Project Manual that contains the following documentary information for a construction project:

- Bidding Requirements, which include the advertisement or invitation to bid, the Instructions to Bidders, and the Bid Form that is suggested or prescribed, all of which provide information and guidance for all Bidders; and
- Contract Documents, which include the Agreement, performance and payment bonds, the General Conditions, the Supplementary Conditions, the Drawings, and the Specifications.

The Bidding Requirements are not Contract Documents because much of their substance pertains to the relationships prior to the award of the Contract and has little effect or impact thereafter, and because many contracts are awarded without going through the bidding process. In some cases, however, the actual Bid may be attached as an exhibit to the Agreement to avoid extensive rekeying. (The definitions of terms used in this Agreement, including "Bidding Documents," "Bidding Requirements," and "Contract Documents," are set forth Article 1 of the General Conditions.)

Suggested provisions are accompanied by "Notes to User" to assist in preparing the Agreement. The provisions have been coordinated with the other forms produced by EJCDC. Much of the language should be usable on most projects, but modifications and additional provisions will often be necessary. When modifying the suggested language or writing additional provisions, the user must check the other documents thoroughly for conflicts and coordination of terms and make appropriate revisions in all affected documents.

All parties involved in construction projects benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location: doing so frequently leads to confusion and unanticipated legal consequences. When preparing documents for a construction project, careful attention should be given to the guidance provided in the Uniform Location of Subject Matter (EJCDC N-122).

EJCDC has designated Section 00520 for this Agreement. If this convention is used, the first page of the Agreement would be numbered 00520-1. If CSI's MasterFormat 04™ is being used for the Project Manual, consult MasterFormat 04 for the appropriate section number and number the pages accordingly.

For brevity, paragraphs of the Instructions to Bidders are referenced with the prefix "I," those of the Bid Form are referenced with the prefix "BF," and those of this Agreement are referenced with the prefix "A."

NOTE: EJCDC publications may be purchased from any of the organizations listed on the page immediately following the cover page of this document.

**SUGGESTED FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)**

THIS AGREEMENT is by and between _____ The Town of Berlin _____ (“Owner”) and

_____ (“Contractor”).

Owner and Contractor hereby agree as follows:

WORK

Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

WESTMINSTER, ABBEY, AND UPSHUR
STORMWATER MANAGEMENT UPGRADES

THE PROJECT

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

The work to be performed hereunder includes the furnishing of all labor, materials, transportation, tools, supplies, equipment, and appurtenances necessary for the complete, and in-place, satisfactory construction and testing of all work shown on the Drawings and required by the Contract for the WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES project.

ENGINEER

The Project has been designed by EA Engineering, Science, and Technology, Inc., PBC (Engineer), which is to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

CONTRACT TIMES

Time of the Essence

- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Days to Achieve Substantial Completion and Final Payment*

- A. The Work will be substantially completed within 90 calendar days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 120 calendar days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss 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 \$1,000.00 for each day that expires after the time specified in Paragraph 4.02 above 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 \$1,000.00 for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A below:

- A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the first Thursday of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based

on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

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 Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions.
 - a. 90 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
 - b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 – INTEREST

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the prime rate in New York City as published by the *Wall Street Journal*.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."
- E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:
 - 1. This Agreement (pages 1 to 8, inclusive).
 - 2. Performance bond (pages 1 to 3, inclusive).
 - 3. Payment bond (pages 1 to 4, inclusive).
 - 4. Proposal Bond (pages 1 to 2, inclusive).
 - 5. General Conditions (pages 1 to 70, inclusive).

6. Supplementary Conditions (pages 1 to 4, inclusive).
7. Specifications as listed in the table of contents of the Project Manual.
8. Drawings consisting of 21 sheets with the Drawings listed on the Table of Contents.
9. Addenda (numbers 1 to 2, inclusive).
10. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages 1 to 6, inclusive).
11. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed (pages 1 to 1, inclusive).
 - b. Work Change Directives.
 - c. Change Orders.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another 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.

10.03 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal

representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 - 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

This Agreement will be effective on September 13, 2023.

OWNER:

By: _____

Title: _____

Attest: _____

Title: _____

Address for giving notices:

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

CONTRACTOR

By: _____

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

Title: _____

Address for giving notices:

License No.: _____

(Where applicable)

Agent for service of process:

Notice to Proceed

Date: _____

Project: Westminster, Abbey, and Upshur Stormwater Management Upgrades

Owner: Town of Berlin

Owner's Contract No.:

Contract:

Engineer's Project No.: 61470410

Contractor:

Contractor's Address: *[send Certified Mail, Return Receipt Requested]*

You are notified that the Contract Times under the above Contract will commence to run on _____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the date of Substantial Completion is _____, and the date of readiness for final payment is _____ [(or) the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____].

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

_____ *[add other requirements]*.

Owner

Given by:

Authorized Signature

Title

Date

Copy to Engineer

Contractor's Application for Payment

Owner: _____ Engineer: _____ Contractor: _____ Project: _____ Contract: _____	Owner's Project No.: _____ Engineer's Project No.: _____ Contractor's Project No.: _____																																				
Application No.: _____ Application Date: _____																																					
Application Period: From _____ to _____																																					
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 70%;">1. Original Contract Price</td><td style="width: 10%; text-align: center;">\$</td><td style="width: 20%; text-align: right;">-</td></tr><tr><td>2. Net change by Change Orders</td><td style="text-align: center;">\$</td><td style="text-align: right;">-</td></tr><tr><td>3. Current Contract Price (Line 1 + Line 2)</td><td style="text-align: center;">\$</td><td style="text-align: right;">-</td></tr><tr><td>4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)</td><td style="text-align: center;">\$</td><td style="text-align: right;">-</td></tr><tr><td>5. Retainage</td><td></td><td></td></tr><tr><td> a. _____ X \$ _____ Work Completed</td><td style="text-align: center;">\$</td><td style="text-align: right;">-</td></tr><tr><td> b. _____ X \$ _____ Stored Materials</td><td style="text-align: center;">\$</td><td style="text-align: right;">-</td></tr><tr><td> c. Total Retainage (Line 5.a + Line 5.b)</td><td style="text-align: center;">\$</td><td style="text-align: right;">-</td></tr><tr><td>6. Amount eligible to date (Line 4 - Line 5.c)</td><td style="text-align: center;">\$</td><td style="text-align: right;">-</td></tr><tr><td>7. Less previous payments (Line 6 from prior application)</td><td></td><td></td></tr><tr><td>8. Amount due this application</td><td style="text-align: center;">\$</td><td style="text-align: right;">-</td></tr><tr><td>9. Balance to finish, including retainage (Line 3 - Line 4)</td><td style="text-align: center;">\$</td><td style="text-align: right;">-</td></tr></table>		1. Original Contract Price	\$	-	2. Net change by Change Orders	\$	-	3. Current Contract Price (Line 1 + Line 2)	\$	-	4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)	\$	-	5. Retainage			a. _____ X \$ _____ Work Completed	\$	-	b. _____ X \$ _____ Stored Materials	\$	-	c. Total Retainage (Line 5.a + Line 5.b)	\$	-	6. Amount eligible to date (Line 4 - Line 5.c)	\$	-	7. Less previous payments (Line 6 from prior application)			8. Amount due this application	\$	-	9. Balance to finish, including retainage (Line 3 - Line 4)	\$	-
1. Original Contract Price	\$	-																																			
2. Net change by Change Orders	\$	-																																			
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c. Total Retainage (Line 5.a + Line 5.b)	\$	-																																			
6. Amount eligible to date (Line 4 - Line 5.c)	\$	-																																			
7. Less previous payments (Line 6 from prior application)																																					
8. Amount due this application	\$	-																																			
9. Balance to finish, including retainage (Line 3 - Line 4)	\$	-																																			
Contractor's Certification The undersigned Contractor certifies, to the best of its knowledge, the following: (1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment; (2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and (3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.																																					
Contractor: _____																																					
Signature: _____ Date: _____																																					
Recommended by Engineer By: _____ Title: _____ Date: _____	Approved by Owner By: _____ Title: _____ Date: _____																																				
Approved by Funding Agency By: _____ Title: _____ Date: _____	By: _____ Title: _____ Date: _____																																				

Progress Estimate - Lump Sum Work

Contractor's Application for Payment

Owner: _____ Engineer: _____ Contractor: _____ Project: _____ Contract: _____						Owner's Project No.: _____ Engineer's Project No.: _____ Contractor's Project No.: _____		
Application No.: _____		Application Period: From _____ to _____		Application Date: _____				
A	B	C	D	E	F	G	H	I
Item No.	Description	Scheduled Value (\$)	Work Completed		Materials Currently Stored (not in D or E) (\$)	Work Completed and Materials Stored to Date (D + E + F) (\$)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) (\$)
			(D + E) From Previous Application (\$)	This Period (\$)				
Original Contract								
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Original Contract Totals		\$ -	\$ -	\$ -	\$ -	\$ -		\$ -

Progress Estimate - Lump Sum Work

Contractor's Application for Payment

Owner: _____						Owner's Project No.: _____		
Engineer: _____						Engineer's Project No.: _____		
Contractor: _____						Contractor's Project No.: _____		
Project: _____								
Contract: _____								
Application No.: _____		Application Period: From _____ to _____		Application Date: _____				
A	B	C	D	E	F	G	H	I
Item No.	Description	Scheduled Value (\$)	Work Completed		Materials Currently Stored (not in D or E) (\$)	Work Completed and Materials Stored to Date (D + E + F) (\$)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) (\$)
			(D + E) From Previous Application (\$)	This Period (\$)				
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Change Order Totals		\$ -	\$ -	\$ -	\$ -	\$ -		\$ -
Original Contract and Change Orders								
Project Totals		\$ -	\$ -	\$ -	\$ -	\$ -		\$ -

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner:		Owner's Project No.:	
Engineer:		Engineer's Project No.:	
Contractor:		Contractor's Project No.:	
Project:			
Contract:			

Application No.:		Application Period:		From		to		Application Date:			
A	B	C	D	E	F	G	H	I	J	K	L
Bid Item No.	Description	Contract Information				Work Completed		Materials Currently Stored (not in G) (\$)	Work Completed and Materials Stored to Date (H + I) (\$)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) (\$)
		Item Quantity	Units	Unit Price (\$)	Value of Bid Item (C X E) (\$)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) (\$)				
Original Contract											
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Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: _____ Engineer: _____ Contractor: _____ Project: _____ Contract: _____												Owner's Project No.: _____ Engineer's Project No.: _____ Contractor's Project No.: _____	
Application No.: _____ Application Period: From _____ to _____ Application Date: _____													
A	B	C	D	E	F	G	H	I	J	K	L		
Bid Item No.	Description	Contract Information				Work Completed		Materials Currently Stored (not in G) (\$)	Work Completed and Materials Stored to Date (H + I) (\$)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) (\$)		
		Item Quantity	Units	Unit Price (\$)	Value of Bid Item (C X E) (\$)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) (\$)						
Change Orders													
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Change Order Totals					\$ -		\$ -	\$ -	\$ -		\$ -		
Original Contract and Change Orders													
Project Totals					\$ -		\$ -	\$ -	\$ -		\$ -		

Stored Materials Summary

Contractor's Application for Payment

Owner: _____						Owner's Project No.: _____							
Engineer: _____						Engineer's Project No.: _____							
Contractor: _____						Contractor's Project No.: _____							
Project: _____													
Contract: _____													
Application No.: _____		Application Period: From _____ to _____				Application Date: _____							
A	B	C	D	E	F	G	H	I	J	K	L	M	
Item No. (Lump Sum Tab) or Bid Item No. (Unit Price Tab)	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Description of Materials or Equipment Stored	Storage Location	Application No. When Materials Placed in Storage	Materials Stored			Incorporated in Work			Materials Remaining in Storage (I-L) (\$)	
						Previous Amount Stored (\$)	Amount Stored this Period (\$)	Amount Stored to Date (G+H) (\$)	Amount Previously Incorporated in the Work (\$)	Amount Incorporated in the Work this Period (\$)	Total Amount Incorporated in the Work (J+K) (\$)		
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Totals						\$	-	\$	-	\$	-	\$	-

Change Order

No. _____

Date of Issuance: _____ Effective Date: _____

Project: Westminster, Abbey, and Upshur Stormwater Management Upgrades	Owner: Town of Berlin	Owner's Contract No.:
Contract:		Date of Contract:
Contractor:		Engineer's Project No.: 61470410

The Contract Documents are modified as follows upon execution of this Change Order:

Description:

Attachments (list documents supporting change):

CHANGE IN CONTRACT PRICE:

Original Contract Price:

\$ _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:

\$ _____

Contract Price prior to this Change Order:

\$ _____

[Increase] [Decrease] of this Change Order:

\$ _____

Contract Price incorporating this Change

\$ _____

CHANGE IN CONTRACT TIMES:

Original Contract Times: ☐ Working ☐ Calendar days

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:

Substantial completion (days): _____

Ready for final payment (days): _____

Contract Times prior to this Change Order:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

[Increase] [Decrease] of this Change Order:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

Contract Times with all approved Change Orders:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

RECOMMENDED:

By: _____

Engineer (Authorized Signature)

Date: _____

ACCEPTED:

By: _____

Owner (Authorized Signature)

Date: _____

ACCEPTED:

By: _____

Contractor (Authorized Signature)

Date: _____

Approved by Funding Agency (if applicable):

Date: _____

Change Order Instructions

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

Certificate of Substantial Completion

Project: Westminster, Abbey, and Upshur Stormwater Management Upgrades

Owner: Town of Berlin

Owner's Contract No.:

Contract:

Engineer's Project No.: 61470410

This [tentative] [definitive] Certificate of Substantial Completion applies to:

☐ All Work under the Contract Documents: ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

☐ Amended Responsibilities ☐ Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer

Date

Accepted by Contractor

Date

Accepted by Owner

Date

Section E

Specifications

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DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01 10 00	SUMMARY OF WORK
SECTION 01 20 00	MEASUREMENT AND PAYMENT
SECTION 01 33 00	SUBMITTALS
SECTION 01 70 00	EXECUTION AND CLOSEOUT REQUIREMENTS

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SECTION 01 10 00

SUMMARY OF WORK

PART 1 – GENERAL

1.1 LOCATION

The work to be performed hereunder is located in the Town of Berlin, Maryland, at the following area:

- Along Westminster Drive, Abbey Lane and Upshur Lane

1.2 SCOPE

- A. The work to be performed hereunder includes the furnishing of all labor, materials, transportation, tools, supplies, equipment, stormwater bypass equipment, and appurtenances necessary for the complete, and in-place, satisfactory demolition, construction, and testing of all work shown on the Contract Document and required by the Contract for the Westminster, Abbey, and Upshur Stormwater Management Upgrades project.
- B. It is the intent of the Contract Documents to describe a complete project and any work that may be reasonably inferred as being required to produce a finished job for the intended purposes, and this work shall be completed whether such incidental or related work is explicitly stated in the Contract Documents.
- C. The project Work generally includes the following:
 - Mobilize and obtain all necessary permits to begin work.
 - Demolish and remove pipe, endwalls, structures, misc items within the existing ponds, riprap, brick, concrete, asphalt, debris, any item specifically not mentioned, and unsatisfactory soils offsite.
 - Excavate existing stormwater management ponds to limits and elevations indicated within the contract documents and haul spoils material offsite.
 - Furnish and install all components of the proposed submerged gravel wetlands.
 - Install storm drainage pipe.
 - Install precast concrete structures.
 - Install new 6" C909 PVC watermain and valve.
 - Provide 6" watermain utility deflection(s).

- Backfill with suitable soils and aggregate as required. Testing of backfill materials in 12-inch lifts per requirements.
- Install 4' tall vinyl coated fence around each stormwater management ponds with gates and all appurtenances.
- Place a CR-6, aggregate, base asphalt, and surface asphalt above trench to location and thickness as indicated on the Contract Drawings.
- Asphalt pavement mill and overlay for the intersection of Westminster Dr. and Abbey Lane roadways as indicated on the Contract Drawings.
- Install curbing.
- Provide testing services for concrete, asphalt, CR-6 Aggregate, and soils by certified experienced testing firm.
- Install and maintain erosion and sediment controls.
- Topsoil, seed, and mulch all disturbed areas with the appropriate seed. Utilize turf reinforcement matting as required.
- Repair/Replace/Replenish all property objects in kind. (Driveways, light posts, landscaping, signs, etc.)
- Perform erosion and sediment control maintenance and remove controls as approved in writing by local authority.
- Perform bypass stormwater pumping in the event of rain.
- Providing traffic control for local residents
- Perform localized grading to upstream swales, channels, and lands to ensure positive drainage into the constructed facilities, pipes, and/or channels.
- Bid Alternative No. 1 includes the removal of existing 24-inch HDPE storm drain pipe along Abbey Lane and replacement with 36-inch HDPE storm drain pipe and associated storm drainage structures as shown in Figure No. 1 Titled "Proposed Storm Drain Plan Bid Alternative 1" found in Section F. Base Bid doghouse manhole structure (MH-10) to be replaced with MDOT SHA precast concrete manhole.
- Bid Alternate No. 2 includes furnishing and installing the Submerged Gravel Wetland Plantings as specified on Drawing C-103.

D. The CONTRACTOR shall provide and install materials and labor to construct the Westminster, Abbey, and Upshur Stormwater Management Upgrades and furnish and install all appurtenant items as shown in or required by the Contract Documents.

- E. All materials or equipment at grade or within the subgrade shall be removed and disposed of by the CONTRACTOR. The OWNER shall have right of salvage for all equipment removed; however, if the OWNER does not claim this equipment, it shall be disposed of at the CONTRACTOR'S expense.

1.3 BOUNDARIES OF WORK

- A. The OWNER shall provide land for the work specified in these Contract Documents and shall provide suitable provisions for ingress and egress, and the CONTRACTOR shall not enter on or occupy with men, tools, equipment, or material any ground outside the property of the OWNER without the written consent of the OWNER of such ground. Other contractors and employees or agents of the OWNER may, for all necessary purposes, enter upon the work and premises used by the CONTRACTOR, and the CONTRACTOR shall conduct his work so as not to impede unnecessarily any work being done by others on or adjacent to the site.
- B. A staging area, stockpile areas, and laydown yard shall be obtained by the CONTRACTOR and shall be the CONTRACTOR'S responsibility.

1.4 WATER SUPPLY

- A. The OWNER will provide, at no charge to the CONTRACTOR, a reasonable amount of water for construction purposes.
- B. The CONTRACTOR shall notify the ENGINEER at least two (2) working days prior to his need for construction water. The CONTRACTOR shall not take water from the OWNER'S or any resident's system without written approval of the ENGINEER, OWNER, and resident.

1.5 PERMITS, INSPECTIONS, TESTS

- A. The CONTRACTOR will acquire all permits, inspections, and tests necessary for the proper execution of the work in accordance with all federal, state, and local rules, regulations, and codes. Copies of all permits and utility locations shall be presented to the OWNER upon receipt and shall be posted, as required, at the project site.
- B. The CONTRACTOR shall notify the ENGINEER two (2) working days prior to all inspections and tests and shall furnish certificates of test results and approvals to the ENGINEER upon receipt

1.6 CONTINUITY OF SERVICES

- A. The CONTRACTOR shall make every provision necessary to maintain the flow and operation of the closed storm drainage system to its outfall at the culvert crossing under William Street. The CONTRACTOR shall minimize interruptions to water flows to an

absolute minimum and provide necessary damming, pump-around equipment, and downstream erosion and sediment control measures as needed.

- B. The CONTRACTOR shall have completed all necessary preparatory work and shall have adequate personnel available to keep any bypass periods to a minimum. All equipment and materials needed to complete the work shall be onsite prior to the commencement of the scheduled daily activity.

1.7 MATERIAL AND WORKMANSHIP WARRANTY

The CONTRACTOR shall warrant that all workmanship, material, and equipment furnished and installed by CONTRACTOR shall be free of defects for a period of two (2) years after acceptance of the work. Should such defects appear, the CONTRACTOR shall repair or replace such defects at no cost to the OWNER.

1.8 INSTRUCTION OF OWNER'S REPRESENTATIVES

- A. Instruct designated OWNER'S representative in proper operation and care of systems and equipment. Repeat instructions as required.
- B. The CONTRACTOR shall provide, in suitable binders, three (3) copies of printed specifications, instructions, and diagrams covering operation and maintenance of each item of equipment and controls supplied. All drawings are to be site-specific, and customized for this project.
- C. The CONTRACTOR shall thoroughly and completely instruct the OWNER or his/her representative in the operation and maintenance of all equipment and systems installed under this Contract to the satisfaction of the ENGINEER.

1.9 COORDINATION WITH OTHER CONTRACTORS, UTILITIES, AND GOVERNMENT AGENCIES

There will be construction activities by other contractors, utilities, and government agencies at the project site. The CONTRACTOR will be required to coordinate and cooperate with others in carrying out his work.

1.10 REFERENCED SPECIFICATIONS

- A. The requirements of the ACI, ASA, API, ASME ASTM, AWS, AWWA, CFR, COMAR, EPA, MDE, MSS, UL and other specifications shall mean the latest edition thereof, and shall apply to all of the latest edition thereof, and shall apply to all of the applicable work to be performed, except as modified or revised by the Contract Documents, which shall govern.
- B. The requirements of referenced specifications shall be as binding upon the performance of the work as if they were fully written out herein.

1.11 FIELD ADJUSTMENTS

- A. The alignment and placement of the work shall be subject to adjustments in the field as directed by the ENGINEER.
- B. Calibration of instruments and sensors shall be subject to adjustments in the field as directed by the ENGINEER. All instruments shall be accurately and completely calibrated by the CONTRACTOR.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

++ END OF SECTION ++

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SECTION 01 20 00

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope of Work

1. The items listed in this Section refer to and are the same pay items listed on the Bid Form. They constitute all of the pay items for the completion of the Work. Compensation for all such services and materials shall be included in the prices stipulated for the lump sum and unit price pay items listed herein. Items of Work not specifically included in this Section for measurement and payment as described herein will not be measured for payment, but will be considered incidental to the Contract with the associated costs borne solely by the CONTRACTOR.
2. Schedule of Values
 - a. The Schedule of Values is a list of line items, corresponding to each aspect of the Work, establishing in detail the value or cost of each major part of the Work, and is submitted to the ENGINEER for acceptance.
 - b. Upon request of the ENGINEER, support values with data that substantiate their correctness.
 - c. The preliminary Schedule of Values is submitted to the ENGINEER for initial review. The CONTRACTOR shall incorporate the ENGINEER'S comments into the Schedule of Values and provide a re-submittal to the ENGINEER. The ENGINEER may require corrections and re-submittal of the Schedule of Values until it is acceptable.
 - d. The Schedule of Values and the Progress Schedule updates specified in Section 01 33 00, Submittals, shall be used as the basis for preparing each Application for Payment. The Schedule of Values may be used as a basis for negotiating the price of changes in the Work.
 - e. Unit price payment items with their associated quantity shall be included in the Schedule of Values. Provide in the Schedule of Values a detailed breakdown of the unit prices when required by the ENGINEER.

1.2 SUBMITTALS

A. Schedule of Values

1. The CONTRACTOR shall submit to the ENGINEER for acceptance a Schedule of Values that allocates cost to each item of the Work.
2. The Schedule of Values shall include an itemized list of Work for each major part of the Contract, for each payment item as listed in the Bid Form.
3. This schedule, when approved by the ENGINEER, shall be used as the basis for the CONTRACTOR'S Applications for Progress Payments.
4. Submit the required number of copies of the Schedule of Values to the ENGINEER at or before the Pre-Construction Meeting. The first Application for Payment will not be processed without a Schedule of Values approved by the ENGINEER.
5. When required by the ENGINEER, promptly submit an updated Schedule of Values to include cost breakdowns for changes in the Work, including Change Orders.

1.3 MEASUREMENT

Measurement shall be made in accordance with the Bid Form items and as described in the following sections.

A. Estimate of Quantities

1. The estimated quantities for unit price pay items, as listed in the Bid Form, are approximate only and are included solely for the purpose of comparison of Bids. The ENGINEER does not expressly or by implication agree that the nature of the materials encountered below the surface of the ground or the actual quantities of material encountered or required will correspond therewith, and reserves the right to increase or decrease any quantity or to eliminate any quantity as the ENGINEER may deem necessary in accordance with the Contract Documents. The CONTRACTOR shall not be entitled to any adjustment in a unit bid price as a result of any change in an estimated quantity and agrees to accept the aforesaid unit bid prices as complete and total compensation for any additions or deductions caused by changes or alterations in the Work directed by the TOWN. Increased or decreased Work involving Change Orders will be paid for as stipulated in the Contract Documents.
2. Payment for unit price select fill quantities shall be computed by field measurements and confirmed by the ENGINEER's field personnel.

1.4 PAYMENT

- A. Payments to the CONTRACTOR shall be in accordance with Paragraph GC.14 of the General Conditions and the Agreement.
- B. Lump sum price items shall be paid for the actual percentage of Work completed as identified in the approved Schedule of Values as required in Paragraph 1.5.
- C. Unit price items shall be paid in accordance with Paragraph GC.14.c of the General Conditions and the Agreement.
- D. Payment for the Work shall be made in accordance with the Bid Form items as described in the following sections.
- E. Payment Items: The items listed in the Contract Documents refer to the pay items listed on the Bid Form. They constitute all of the pay items for the completion of the Work. Compensation for all such services and materials shall be included in the prices stipulated for the unit price and lump sum pay items listed on the Bid Form.
 - 1. Each lump sum and unit bid price will be deemed to include an amount considered by the CONTRACTOR to be adequate to cover the CONTRACTOR'S overhead and profit for each separately identified item.
 - 2. No progress payments will be made by the ENGINEER until the Construction Schedule and the Schedule of Values have been submitted to and approved by the ENGINEER.
 - 3. The CONTRACTOR shall accept in compensation, as herein provided, full payment for furnishing all materials, labor, tools, equipment, and incidentals necessary to the completed Work and for performing all Work contemplated and embraced by the Contract, also for all loss or damage arising from weather or other unforeseen conditions which may be encountered during the execution of the Work and until its final acceptance by the ENGINEER, and for all risks of every description connected with the prosecution of the Work, except as provided herein, also for all expenses incurred as a result of the suspension of the Work as herein authorized.
 - 4. The payment of any partial estimate or of any retained percentage, except by and under the approved final invoice, in no way shall affect the obligation of the CONTRACTOR to repair or renew any defective parts of the construction or to be responsible for all damage due to such defects.
- F. Eliminated Items: Should any items contained in the Schedule of Values be found unnecessary for the proper completion of the Work contracted, the ENGINEER may eliminate such items from the Contract, and such action shall in no way invalidate the Contract. No allowance will be made for payment of items so eliminated.

G. Progress Payments:

1. Percentage of Work Complete—At the end of each pay period, the CONTRACTOR'S Superintendent or other authorized representative of the CONTRACTOR shall meet with the ENGINEER and determine and agree upon the percentage of the project completed during the pay period.
2. Application for Payment—The CONTRACTOR will then prepare and submit an Application for Payment to the ENGINEER. The ENGINEER will evaluate the Application for Payment, determine the amounts owed, and issue a Recommendation of Payment in such amounts as provided in the Contract Documents. Progress payments shall be made monthly as the Work progresses. All progress invoices and payments shall be subject to correction in the final invoice and payment. The progress payment will be based on invoices prepared by the CONTRACTOR and approved by the ENGINEER for the value of the Work performed, and materials complete in place in accordance with the Contract. Retainage shall be as specified in the Contract Documents. The payment schedule shall be in accordance with the Contract Documents.

- H. Final Payment: The CONTRACTOR shall make and the ENGINEER shall approve, as soon as practicable after the completion of the project, a final invoice for the amount of Work performed under the Contract and establish the value of such Work. Final payment shall be made in accordance with the Contract Documents.

1.5 MEASUREMENT AND PAYMENT OF BASE BID ITEMS

A. Base Bid Items

1. Item No. 1 – Mobilization, Demobilization, and Ancillary Items:
 - a. This item shall include all items necessary to prepare the CONTRACTOR to be onsite for the project commencement, owner(s) notifications, site protection, safety fencing, survey, permits, staging areas, as well as all items necessary for the CONTRACTOR to leave at project completion. Measurement and payment for this item will be on a lump sum price basis.
2. Item No. 2 – Erosion & Sediment Controls and Site Restoration
 - a. This item shall include erosion and sediment control items as described in the Contract Specifications which includes, but is not limited to a stabilized construction entrance, inlet protections, filter bag, silt fence, sump pit, maintenance of controls, topsoil and seeding, turn reinforced matting, hay, site restoration of all disturbed areas, and other necessary controls that may be required. Item will not be considered complete until project completion, approval from the regulatory agency, and appropriate removal of controls is

performed. Measurement and payment for this item will be on a lump sum price basis.

3. Item No. 3 –1.5” Mill and Surface Overlay

- a. This item shall include all equipment, labor, and materials to furnish and install asphalt milling and placement of (9.5mm Superpave) surface asphalt overlay to the limits indicated on the contract documents, compaction, testing, milling, removal of millings, tack, and all other items required for a complete, safe, and satisfactory installation. Measurement and payment will be on a per square yard basis.

4. Item No. 4 - Trench Pavement Restoration

- a. This item shall include all equipment, labor, and materials to furnish and install a full depth trench pavement section in all roadway areas. Trench restoration within the existing paved areas shall be 2.0-inch thick (9.5mm Superpave) Surface Asphalt, 3.0-inch thick (19.5mm Superpave) thick Base Asphalt, and 6-inch-thick compacted CR-6 graded aggregate base, testing, milling, tack, and all other items required for a complete, safe, and satisfactory installation. Measurement and payment will be on a per square yard basis.

5. Item No. 5 – Precast Outfall Structures

- a. This item shall include all equipment, labor, and materials to furnish and install the Precast Concrete outfall structure, trash rack, testing, dewatering, subgrade preparation, excavation, trucking, backfilling, compaction, parging, steps, flow channels, frame and grates, and all other items required for a complete, safe, and satisfactory installation. Measurement and payment will be on a per each basis.

6. Item No. 6 – 72” Doghouse Structure (MH-10)

- a. This item shall include all equipment, labor, and materials to furnish and install a 72” Precast Concrete Doghouse Manhole, testing, dewatering, subgrade preparation, excavation, trucking, steps, backfilling, compaction, parging, flow channels, frame and grates, and all other items required for a complete, safe, and satisfactory installation. Measurement and payment will be on a per each basis.

7. Item No. 7 – Precast Concrete Conflict Box

- a. This item shall include all equipment, labor, and materials to furnish and install a Precast Concrete Junction Vault, ductile iron sewer pipe, sewer fitting, testing, dewatering, subgrade preparation, excavation, trucking,

backfilling, compaction, parging, flow channels, frame and lid, and all other items required for a complete, safe, and satisfactory installation. Measurement and payment will be on a per each basis.

8. Item No. 8 – Town of Berlin Precast WR Inlet
 - a. This item shall include all equipment, labor, and materials to furnish and install the Town of Berlin standard WR inlet, testing, dewatering, subgrade preparation, excavation, trucking, backfilling, compaction, steps, parging, flow channels, frame and grates, and all other items required for a complete, safe, and satisfactory installation. Measurement and payment will be on a per each basis.
9. Item No. 9 – SWM-1 Excavation and Hauling
 - a. This item shall include all equipment, labor, and materials necessary for the excavation and hauling off of all soils material to the limits and elevations identified on the contract documents and all other items required for a complete, safe, and satisfactory project. Measurement and payment for this item will be on a cubic yard price basis.
10. Item No. 10 – SWM-1 Submerged Gravel Wetlands
 - a. This item shall include all equipment, labor, and materials necessary for the installation of 8” of planting soils, 4” of bedding sand, 4” of pea gravel, 32” #57 stone gravel, 6” underdrains, observation wells, and all other items required for a complete, safe, and satisfactory project. Measurement and payment for this item will be on a lump sum price basis.
11. Item No. 11 – SWM-2 Excavation and Hauling
 - a. This item shall include all equipment, labor, and materials necessary for the excavation and hauling off of all soils material to the limits and elevations identified on the contract documents and all other items required for a complete, safe, and satisfactory project. Measurement and payment for this item will be on a cubic yard price basis.
12. Item No. 12 – SWM-2 Submerged Gravel Wetlands
 - a. This item shall include all equipment, labor, and materials necessary for the installation of 8” of planting soils, 4” of bedding sand, 4” of pea gravel, 24” #57 stone gravel, 6” underdrains, observation wells, and all other items required for a complete, safe, and satisfactory project. Measurement and payment for this item will be on a lump sum price basis.

13. Item No. 13 – Precast Class IV 19” x 30” Elliptical RCP (Town of Berlin Supplied Pipe)
- a. This item shall include all equipment, labor, and materials to the proposed precast Class IV 19-inch by 30-inch elliptical reinforced concrete pipe, excavation, subgrade preparation, dewatering, backfill, compaction, testing, and all other items required for a safe and satisfactory installation. The Town of Berlin will supply ERCP pipe. Contractor is responsible for the purchase of new gaskets. Measurement and payment for this item will be on a per linear foot price basis.
14. Item No. 14 – Precast 29” x 45” Elliptical RCP (Town of Berlin Supplied Pipe)
- a. This item shall include all equipment, labor, and materials to install the proposed precast Class IV 19-inch by 30-inch elliptical reinforced concrete pipe, excavation, subgrade preparation, dewatering, backfill, compaction, testing, and all other items required for a safe and satisfactory installation. The Town of Berlin will supply ERCP pipe. Contractor is responsible for the purchase of new gaskets. Measurement and payment for this item will be on a per linear foot price basis.
15. Item No. 15 – 6” Watermain Deflection
- a. This item consists of all materials, labor, and equipment to complete work activities to lower, relocate, or reposition water utilities from conflict with the proposed storm drain. The work shall include, but not be limited to, furnishing, and placing clean select fill to include delivery, placement, excavation, encasement, backfill, testing, compaction, warning tape, aggregate, fittings, wide range high pressure adaptors, and all other items required for a complete, safe, and satisfactory installation. Coordinate with the Town of Berlin to schedule a shutdown of the water system. The contractor shall test pit and verify pipe material and size. Measurement and payment for this item will be on a per each basis.
16. Item No. 16 – 6” C909 PVC watermain and Valve
- a. This item shall include all equipment, labor, and materials to furnish and install all items necessary to install a 6” PVC C909 watermain piping, fittings, and a 6” valve, including coordinating with the Town for isolation, tapping, fittings, excavation, wide range high pressure adaptors, warning tape, testing, backfilling, compaction, and all other items required for a complete, safe, and satisfactory installation. The contractor shall test pit and verify pipe material and size. Measurement and payment for this item shall be on a per linear foot basis.

17. Item No. 17 – Town of Berlin Curb and Gutter
- a. This item shall include all equipment, labor, and materials to furnish and install all items necessary for construction of various types of vertical curb, curb and gutter, depressed curb, and depressed curb and gutter, compaction testing, concrete testing, placement back to original line and grade, concrete finishing, subgrade preparation, rebar reinforcement, formwork and all other items required for a complete, safe, and satisfactory installation. Measurement and payment for this item will be on a per linear foot price basis.
18. Item No. 18 – 4' Tall Vinyl Coated Chain Link Fence with Gates
- a. This item shall include all equipment and materials necessary to furnish and install the black vinyl coated fencing, gate, and a lock fitted for the Town of Berlin Master Key to the limits indicated on the Contract Drawings. This item also includes all the items associated with the installation of a maintenance access gate. Measurement and payment for this item will be on a per linear foot basis.
19. Item No. 19 – Bypass Stormwater pumping / Clearwater diversion
- a. This item shall include all equipment, labor, and materials to perform bypass stormwater pumping from the upgradient storm drain inflow to a stable conveyance point downstream, bypassing the active work zone. Additionally, this item shall include the equipment, fuel, labor, and materials to perform a clearwater diversion around the active work zone. Measurement and payment will be on a per each per month basis.
20. Item No. 20 – Demolition and Offsite Disposal
- a. This item shall include all equipment, labor, and materials necessary for the demolition and removal of existing items identified on the contract documents including, sewer pipe, water pipe, storm drain pipe, precast structures, items and debris within the ponds, riprap, brick structures, curb and gutter, concrete, asphalt, unsuitable soils and all other items required for a complete, safe, and satisfactory project. Measurement and payment for this item will be on a lump sum price basis.

21. Item No. 21 – 36” HDPE Pipe

- a. This item shall include all equipment, labor, and materials necessary to furnish and install proposed 36-inch high density polyethylene pipe inclusive of pipe, excavation, subgrade preparation, dewatering, backfill, compaction, testing, and all other items required for a safe and satisfactory installation. Measurement and payment for this item will be on a per linear foot price basis.

B. Bid Alternates:

1. Bid Alternate No. 1 – Abbey Lane - 36” HDPE Pipe and Structures

- a. This item shall include all equipment, labor, and materials to furnish and install all items necessary for the proposed 36-inch HDPE pipe SHA precast junction box (JB-11), and doghouse SHA precast structure (I-12) per the Figure in Section G of the Specification Manual. Work includes but is not limited to the excavation, subgrade preparation, dewatering, backfill, compaction, testing, trucking, steps, parging, frames and grates, flow channels, and all other items required for a safe and satisfactory installation. Line item also includes ancillary site restoration as a result of pipe installation such as driveway restoration, vegetative stabilization, and in kinds site restoration. Measurement and payment for this item will be on a Lump Sum price basis.

2. Bid Alternate No. 2 – Submerged Gravel Wetland Plantings

- b. This item shall include all equipment, labor, and materials to furnish and install the plantings as specified on Drawing C-103. Measurement and payment for this item will be on a Lump Sum price basis.

C. Measurement and Payment, General

All incidental, minor and miscellaneous items, work and materials for which no specific lump sum or unit price bid item is shown and which are necessary to complete the Work and to maintain and/or repair the Work, shall be done and furnished by the CONTRACTOR without extra charge.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

++ END OF SECTION ++

SECTION 01 33 00

SUBMITTALS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This Section includes general requirements and procedures related to the CONTRACTOR'S responsibilities for preparing and transmitting submittals to the ENGINEER to demonstrate that the performance of the work will be in accordance with the Contract Documents and requirements. Submittals include, but are not limited to, schedules, sewage handling, test results, topographic surveys, CONTRACTOR'S Drawings, samples, manuals, methods of construction, and Record Drawings. Other requirements for submittals are specified under applicable sections of the Specifications.

1.2 SUBMITTAL REQUIREMENTS

- A. CONTRACTOR shall submit a written list of materials and equipment that will be purchased giving name, address, and telephone number of supplier, manufacturer, or processor within ten (10) calendar days after the receipt of Notice to Proceed. No material shall be incorporated into the work until approval of the source has been given by the ENGINEER. Delivery of materials to the contract site prior to approval is made at the CONTRACTOR'S risk and is subject to immediate removal at no cost to the OWNER should it be determined that the source is not acceptable.
- B. Submittals shall be scheduled and coordinated with the ENGINEER and CONTRACTOR'S construction schedule.
- C. A complete submittal schedule and list of required submittals shall be submitted with the first submittal, but not later than ten (10) calendar days after receipt of the Notice to Proceed. The schedule for submission of submittals shall be arranged so that related equipment items are submitted concurrently. The ENGINEER may require changes to the submittal schedule to permit concurrent review of related equipment. Submittals for each Specification Section shall be submitted in their entirety; partial submittals are not acceptable unless specifically requested by the CONTRACTOR with the ENGINEER'S approval of the partial submittal.
- D. Within ten (10) calendar days after the date set forth in the Notice to Proceed for the construction to start, the CONTRACTOR shall prepare and submit for review to the ENGINEER a construction schedule showing the order in which the CONTRACTOR proposes to execute the work and the dates upon which he proposes to start and complete each major work item. The schedule shall show each major work item with usage of the entire contract time provided in the Contract, and shall include the dates for submittals, sample testing, approval of materials and CONTRACTOR'S Shop Drawings, and the procurement of materials and equipment. The schedule shall detail the sequence of

construction required to maintain continuous operation of the existing stormdrain system. The construction schedule shall be in chart form showing contemplated completion percentages and arranged to record actual completion percentages at stated intervals. The schedule will outline in detail the proposed equipment, manpower, and production rates necessary to achieve the schedule. The CONTRACTOR shall update the schedule every week with any and all changes, including but not limited to changes in equipment, manpower, and completion dates being annotated.

- E. The ENGINEER may require that the CONTRACTOR furnish additional information and data as required to justify the basis of the schedule.
- F. The accepted construction schedule shall be kept up-to-date as work progresses, including work added by change order, and shall be submitted to the ENGINEER every week and with the request for payment. If the CONTRACTOR fails to submit the required updated schedule within the time prescribed, the ENGINEER may withhold approval of progress payment estimates until such time as the CONTRACTOR submits the required current updated schedule.
- G. The construction schedule shall generally determine the order in which the work is to proceed. However, the ENGINEER may request and authorize minor changes to this schedule whenever such changes are of definite advantage to or necessary for the operations of the OWNER.

1.3 CONTRACTOR'S SHOP DRAWINGS

- A. The CONTRACTOR'S Shop Drawings shall be neat in appearance, legible, and explicit to enable proper review and to ensure compliance with the Contract Documents. They shall be complete and detailed to show fabrication methods and shall include, but not be limited to, assembly and installation details, wiring and control diagrams, catalog data, pamphlets and descriptive literature, and performance and test data. They shall be accompanied by calculations, reports, or other sufficient information to provide a comprehensive description of the structure, machine, or system provided and its intended manner of use. If the CONTRACTOR'S Shop Drawings deviate from the Contract Documents, the CONTRACTOR shall advise the ENGINEER in writing with the submittal, and state deviations and the reasons for the deviations with the Contract Documents.
- B. No portion of the work requiring a CONTRACTOR'S Shop Drawing submittal shall be started nor shall any materials be fabricated, delivered to the site, or installed prior to approval by the ENGINEER. Fabrication performed, materials purchased, or onsite construction accomplished that does not conform to the approved CONTRACTOR'S Shop Drawings shall be at the CONTRACTOR'S risk. The OWNER will not be liable for any expense or delay due to corrections or remedies to accomplish conformity.
- C. The review and approval of CONTRACTOR'S Shop Drawings by the ENGINEER shall not relieve the CONTRACTOR from his responsibility with regard to the fulfillment of

the terms of the Contract. All risks of error and omission are assumed by the CONTRACTOR, and therefore the ENGINEER will have no responsibility.

- D. Contract work, materials, fabrication, and installation shall conform to the approved CONTRACTOR'S Shop Drawings.
- E. Shop Drawings shall show types, sizes, accessories, and layouts, and shall include plans, elevations, sectional views, components, assembly and installation details, and all other information required to illustrate how applicable portions of the Contract requirements will be fabricated and installed. In the case of fixed mechanical and electrical equipment, layout drawings drawn to scale shall be submitted to show required clearances for operation, maintenance, and replacement of parts. This will include manufacturer's certified performance curves, catalog data sheets, pamphlets, descriptive literature, installation, and recommended application as required. Shop Drawings for closely related items such as a pump and its motor shall be submitted together. Additional Shop Drawings and information required for electrical and mechanical equipment will be listed in appropriate Specification Sections. All equipment in a given Specification Section shall be submitted together.
- F. For equipment required to operate and be integrated into a larger system or network, submit schematics, wiring diagrams, control strategies, software application program details, and other information that fully illustrates how this equipment will operate successfully as part of the larger system or network.
- G. Manufacturer's catalog, product, and equipment data shall be certified and shall include materials type, performance characteristics, voltage, phase, capacity, and similar information. Wiring diagrams will be provided when applicable. Indicate catalog, model, and serial numbers representing specified equipment. Provide manufacturer's catalog or part number for all equipment. Provide complete component information for all equipment.
- H. Submit installation drawings that depict CONTRACTOR-designed items. Contractor Drawings shall indicate methods of construction, including mechanical equipment layout piping drawings and equipment assembly drawings. Requirements for the drawings will be listed in the appropriate Specification Sections. Drawings shall be accompanied by structural calculations for the concrete structures or other information to completely explain the structure, machine, or system described and its intended use. Review and approval of such Shop Drawings by the ENGINEER shall not relieve the CONTRACTOR from his responsibility with regards to the fulfillment of the terms of the Contract. All risks of error are assumed by the CONTRACTOR.
- I. When so specified or directed by the ENGINEER, submit proposed method of construction for specific portions of the work for review and approval. This submittal shall include a detailed written description of all phases of the construction operation to fully explain to the ENGINEER the proposed method of construction. If required by the Specifications, submit installation drawings to supplement the description. Review and

approval by the ENGINEER will be in accordance with the approval process herein and shall not relieve the CONTRACTOR from his responsibility with regard to fulfillment of the terms of the Contract. All risks associated with the proposed method remain the CONTRACTOR'S responsibility, and therefore the ENGINEER shall have no responsibility. After review and approval, if, in the opinion of the CONTRACTOR, modifications are necessary, submit such modifications in detail, including reasons for the modifications. Modifications shall not be implemented without review and approval by the ENGINEER.

- J. Each CONTRACTOR'S Shop Drawing submitted by the CONTRACTOR shall have affixed to it the following certification statement signed by the CONTRACTOR:

"Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers, and pertinent data, and I have checked and coordinated each item with other applicable approved drawings and all contract requirements."

- K. With the first submittal, submit a CONTRACTOR'S Shop Drawing submittal schedule listing as nearly as practical, by Specification Section number, all submittals required and the approximate date the submittal will be made. All submittals for approval shall have the following identification data, as applicable, contained thereon or permanently adhere thereto:

1. OWNER'S Name
2. Project name and location
3. Product identification
4. Drawing title, drawing number, revision number, and date of drawing revision
5. Subcontractor's, vendor's, and/or manufacturer's name, address, and telephone number
6. CONTRACTOR'S certification statement.

- L. For the original submittal and each subsequent resubmittal that may be required, submit six legible prints each of all shop and working drawings, and six copies of catalog data, method of construction, and manufacturer's installation recommendation to the ENGINEER for approval. Three copies of all CONTRACTOR'S Shop Drawings will be returned to the CONTRACTOR.

- M. Each submittal shall be made in accordance with the CONTRACTOR'S Drawings submission schedule. Allow twenty (20) calendar days for checking and appropriate action by the ENGINEER. CONTRACTOR'S Drawings will be returned stamped with one of the following classifications:

1. APPROVED—No corrections, no marks.
2. APPROVED AS NOTED—A few minor corrections. All items may be fabricated as marked without further resubmission. Resubmit a corrected copy to the ENGINEER.
3. REVISE AND RESUBMIT—Minor corrections. Resubmit Drawings as per original submissions with corrections noted. Allow 20 calendar days for checking and appropriate action by the ENGINEER.
4. REJECTED—Requires corrections or is otherwise not in accordance with the Contract Documents. No items shall be fabricated. Allow 20 calendar days for checking and appropriate action by the ENGINEER.

1.4 RECORD DRAWINGS (AS-BUILT DRAWINGS)

- A. The CONTRACTOR shall maintain and keep one record copy of all Contract Documents at the site in good order and annotated to show all revisions made during construction. Such annotations shall be kept current and shall be available to be inspected by the ENGINEER at any time. Failure to maintain current Record Drawings will be cause to delay progress payments. Record Drawings shall be available to the ENGINEER at all times during the life of the Contract. All drawings shall be made a part of the Record Drawings and shall include the following:
 1. Contract Drawings—Annotate or redraft, as required, to show all revisions, substitutions, variations, omissions, and discrepancies made or discovered during construction concerning location and depth of utilities, piping, conduits, manholes, pumps, valves, vaults, liner, and other equipment. Revisions shall be made and shown on all drawing views with actual dimensions established to permanent points.
 2. Installation Drawings—Same as Contract Drawings above when Installation Drawings are required. Include, for example, actual layouts of conduit runs between various items of electrical equipment for power, control, and instrumentation; wire sizes, numbers, and functions; configuration of conduits; piping layouts; and liner layout and drainage net layout. Sections and details shall be added, as required, for clarity. Drawings of switch-gear, motors, control centers, and other equipment shall be revised to show actual installations.
- B. At the completion of the Contract, or at the ENGINEER'S request and before final payment is made, furnish the ENGINEER one set of drawings, of a quality that allows reproductions, of the final Record Drawings (as-builts) reflecting all revisions herein described.
- C. The CONTRACTOR shall be responsible for coordination and cooperation with OWNER'S personnel and shall not permanently seal or bolt any equipment covers or

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SECTION 01 70 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 – GENERAL

1.1 DESCRIPTION

This Section includes requirements for cleanup, restabilization, and restoration, as required to prevent accidents to personnel, and OWNER employees, to protect all work in place, restabilize and restore all disturbed areas, remove all evidence of construction activities, and effect completion of the Contract in an orderly manner.

1.2 CLEANUP

- A. Construction cleanup shall proceed as construction progresses and shall consist of the removal of all mud, oil, grease, soil, gravel, trash, scrap, debris, and excess materials that are unsightly or may cause the tripping or sliding of workmen, ladders, or equipment. Remove water from floor areas where electrical power tools are to be used and prevent stains on concrete which will be exposed in the finished work. All cleaning materials and equipment used shall be selected and employed with care to avoid scratching, marring, defacing, staining, or discoloring the surfaces cleaned.
- B. Immediately prior to the CONTRACTOR'S written request for a final inspection of the Contract Work or any portion thereof, perform final cleanup.
- C. In addition to the normal "broom clean" requirements, the exposed surfaces of the following materials shall be cleaned as listed herein:
 - Painted surfaces—Remove marks, stains, and dirt.
 - Exposed slabs—Wash, scrape, and scrub, using a detergent, as necessary, to remove bond breaker, dirt, and discolorations.
 - Asphalt paving—Remove mud, dirt, and trash; and hose down as required.
 - Other surfaces—Remove all blemishes, leave clean, uniform, and dust free.
 - Premises and site—Removal all trash, debris, surplus excavated material.
- D. No items shall remain on or be discarded on this site, or any other OWNER'S site. Items and excess materials that are to be discarded shall be removed at the CONTRACTOR'S expense. Leave premises orderly and "broom clean."

1.3 RESTORATION AND RESTABILIZATION

- A. All areas disturbed by the CONTRACTOR'S operation shall be restored and restabilized as specified herein. This shall include, but not be limited to, staging and excavation areas, construction strips, access to roads, and all areas within the limit of work.
- B. Final restoration and restabilization shall proceed in accordance with the construction schedule. This shall include seeding and sodding areas disturbed during the construction of the pumping station, disassembly and removal of all temporary construction facilities constructed by the CONTRACTOR, and leaving the site in an orderly and restored condition as required by the Contract Documents.
- C. Preserve existing site features, (such as signs, markers, guard rails, and fences), and maintain in their existing locations and condition unless written permission is obtained from the ENGINEER for their removal and restoration or replacement. Remove existing site features that conflict with construction operations and store in a manner to keep them clean and in their existing condition. Restore to their locations and existing conditions before removal, or install to new locations as directed. Repair or replace damaged items when directed, at no cost to the OWNER.
- D. Gravel surfaces and access road shoulders shall be restored as near as practicable to their condition prior to being disturbed. Do not reuse shoulder material if contaminated by foreign material. In such place, replace with new material of same quality and gradation. Materials and methods of construction shall be in accordance with specification requirements and with applicable permits secured for this Contract.

1.4 DISPOSAL OF WASTE AND EXCESS MATERIALS

- A. Construction waste and excess construction materials shall be disposed of at the CONTRACTOR'S expense.
- B. Waste and excess material disposed of in an unauthorized area shall be removed by the CONTRACTOR and the area shall be restored as near as practicable to its condition before disturbance, at no cost to the OWNER.

1.5 REMOVAL OF CONDEMNED MATERIAL

Material delivered to the Contract Site, which has been determined by the ENGINEER to be unsuitable or not in accordance with the Contract Documents, shall be removed from the work site and disposed of at no cost to the OWNER.

PART 2 – PRODUCTS

2.1 MATERIALS FOR RESTORATION

2.1.1 Topsoil

Onsite topsoil or topsoil brought from offsite and which meets the requirements of Maryland State Highway Administration Section 920.01.02. Topsoil shall only be provided for the permanent improved areas and shall be placed in 6-inch (minimum) layers.

2.1.2 Seed for Restoration

- A. Unless otherwise specified herein, seed shall be certified by the Maryland Department of Agriculture and shall conform to requirements of Maryland Seed Law and Regulations.
- B. Provide seed mix in accordance with the *2011 Maryland Standards and Specifications for Erosion and Sediment Control*. Sowing of seed shall be conducted during the periods in accordance with the *2011 Maryland Standards and Specifications for Erosion and Sediment Control*. Seeding shall not be done outside of these dates without prior approval of the ENGINEER.

2.1.3 Fertilizer for Restoration

- A. The CONTRACTOR will submit soil samples to an approved soils testing laboratory for fertilizer recommendations. Recommendations shall be submitted to and approved by the ENGINEER before implementation.
- B. Fertilizer shall be uniform in composition, free flowing and delivered to the site fully labeled according to applicable State fertilizer laws and shall bear the name, tradename or trademark, and warranty of the producer. Fertilizer shall be in accordance with the *2011 Maryland Standards and Specifications for Erosion and Sediment Control*.

2.1.4 Lime for Restoration

Lime shall be ground limestone containing at least 50 percent total oxides, calcium oxide plus magnesium oxide. Limestone shall be ground to fineness such that at least 50 percent will pass through a 100-mesh sieve and 98 to 100 percent will pass through a 20-mesh sieve. Lime shall be applied as recommended by soil test results.

2.1.5 Mulch for Restoration

- A. Mulch for protection of seeding in restored areas shall conform to the following requirements:
 - 1. Straw shall be clean, weed free, unrotted, applied at a rate of not less than 70 to 90 pounds per 1,000 square feet, 1.5 to 2.0 tons per acre, and shall be anchored

with one of the following methods: Mulching anchoring tool for flat slopes, mulch nettings, cut back and emulsified asphalt applied 5 gallons per 1,000 square feet, Curasol AH applied 5 gallons per 1,000 square feet, Petroset applied per manufacturer's recommendations, RMH Plus Tackifier applied per manufacturer's recommendations, or other equivalent binding solutions. Increase application rate on slopes 8 feet or more high as recommended by the manufacturer.

2. Straw erosion control blanket shall be placed in all channel beds that are to be grass lined. Erosion control blankets shall be Type SC150 as manufactured by North American Green, Evansville, Indiana, or equal. Also, all slopes greater than or equal to three horizontal to 1 vertical shall have type SC150 erosion blanket or equal.

- B. Mulch utilized as temporary protection and stabilization shall conform to the above materials requirements. Rate of application shall be directed by the ENGINEER.

PART 3 – EXECUTION

3.1 PERMANENT SEEDING

- A. Place 4 inches of topsoil on all areas defined as permanent improved areas. Harrow, disc, or otherwise loosen topsoil to a depth of 4 inches.
- B. Remove objectionable material such as stones (2 inches or larger), clods, brush, roots, and trash from the top 4 inches of soil.
- C. Apply fertilizer and lime at the rates recommended by soil test results and as approved by the ENGINEER. Thoroughly mix into the top 4 inches. Scarify the area and rake until the surface is leveled to provide a maximum of 2 inches in variation, and the soil is friable and a uniform fine texture.
- D. Apply seed mixture uniformly with mechanical power-driven seeders, mechanical cyclone hand seeders, or hydroseeding equipment. Slurry for hydroseeder may contain seed and fertilizer only. Disc seed 1 inch into soil in drainage ditch areas. Do not rake, roll, or drag the seedbed in all other areas if hydroseeder is used.
- E. Apply mulch at the rates specified herein, to all other areas.

3.2 TIME RESTRICTIONS

- A. When permanent seeding is specified or directed and seeding is not allowed because of time restrictions specified, utilize one or more of the following methods to prevent erosion and sedimentation until such time as permanent seeding or sodding is allowed:
 - Place and anchor straw mulch

- Apply temporary seeding
 - Prepare soil as for permanent seeding and then mulch as specified; overseed during next seasonal seeding period
 - Provide other erosion control measures acceptable to the ENGINEER.
- B. Remove straw or wood chips used as temporary mulch or work into subsoil at a minimum depth of 6 inches prior to initiation of permanent seeding application.

3.3 MAINTENANCE OF SEEDED AREAS

- A. Maintain seeded areas until accepted in writing by the ENGINEER.
- B. Water seeded areas as necessary to maintain adequate moisture in the upper 4 inches of soil and keep mowed to a height of 2 to 3 inches. Do not remove more than one-third of the grass leaf during initial mowing.
- C. Inspect seeded areas for failures due to poor vegetative growth, traffic, or equipment damage, weather damage, or erosion. Make necessary repairs promptly.
- D. Provide replacements during the specified planting seasons for areas where repairs are deemed to be necessary by the Inspector at no cost to the OWNER. This shall include repairs and replacements due to erosional or weather-related damage.
- E. If stand of turf is inadequate as determined by the ENGINEER, overseed and fertilize using half of the rates originally applied, or reseed. If stand is more than 60 percent damaged, as determined by the ENGINEER, reestablish following original fertilizer, seed bed preparation, and seeding recommendations.

3.4 FINAL WALK-THROUGH

Upon receiving the CONTRACTOR'S written request for substantial completion inspection, the ENGINEER will perform a walk-through of the site area with the CONTRACTOR'S and the OWNER'S representative(s). All punchlist items identified by the walk-through shall be repaired or replaced, as required to the satisfaction of the ENGINEER. Final payment will not be made until all of the punchlist items are resolved to the satisfaction of the ENGINEER.

+ + END OF SECTION + +

material surfaces until after as-built surveys have been made, and shall assist OWNER'S personnel as required in ascertaining necessary location information.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

++ END OF SECTION ++

DIVISION 2 – DEMOLITION AND STRUCTURAL MOVING

SECTION 02 11 00	CLEARING AND GRUBBING
SECTION 02 25 00	TRENCH EXCAVATION, BACKFILL, AND COMPACTION
SECTION 02 41 16	DEMOLITION
SECTION 02 74 10	ASPHALT PAVING
SECTION 02 80 00	RESTORATION

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SECTION 02 11 00

CLEARING AND GRUBBING

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope

1. CONTRACTOR shall furnish all labor, materials, equipment, and incidentals required to perform all clearing and grubbing as shown and specified.

1.2 QUALITY ASSURANCE

A. Codes and Standards

1. State and County laws and code requirements shall govern the hauling and disposal of trees, shrubs, stumps, roots, rubbish, debris, and other matter.

1.3 JOB CONDITIONS

A. Protection:

1. Roads, adjacent property, and other works and structures shall be protected throughout the entire project. CONTRACTOR shall return to original condition, satisfactory to the OWNER, damaged facilities caused by the CONTRACTOR'S operations.
2. Trees, shrubs, and grassed areas which are to remain shall be protected by fences, barricades, wrapping, or other methods as shown, specified, or approved by the ENGINEER. Equipment, stockpiles, etc. shall not be permitted within tree branch spread. Trees shall not be removed without approval of the ENGINEER unless shown or specified.

1.4 GUARANTEE

- A. CONTRACTOR shall guarantee that work performed under this Section will not permanently damage trees, shrubs, turf, or plants designated to remain, or other adjacent work or facilities. If damage resulting from CONTRACTOR'S operations appears during the construction period up to the point of substantial completion of the project, the CONTRACTOR shall replace damaged items at no expense to the OWNER.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

3.1 CLEARING AND GRUBBING

- A. Limits of clearing shall be all areas identified for excavation and within the limits of disturbance except as otherwise directed. Damage outside these limits caused by the CONTRACTOR'S operations shall be corrected immediately at the CONTRACTOR'S expense.
- B. Except as noted below, the CONTRACTOR shall remove from the site and satisfactorily dispose of all trees, vegetation, shrubs, stumps, roots, brush, masonry, rubbish, scrap, debris, pavement, curbs, fences, and miscellaneous other structures not covered under other Sections as shown, specified, or otherwise required to permit construction of the new work. Trash and debris material shall be taken to the transfer station for removal and/or stockpiled onsite with direction from the Owner. Soil materials shall be stockpiled within the designated area for removal by the Owner
- C. No cleared or grubbed material may be used in backfills or structural embankments, except as noted.
- D. Control of air pollution caused by dust, dirt, and the CONTRACTOR shall comply with ALL governing regulations.

+ + END OF SECTION + +

SECTION 02 25 00

TRENCH EXCAVATION, BACKFILL, AND COMPACTION

PART 1 – GENERAL

1.1 DESCRIPTION

Trench excavation, backfill, and compaction shall include, but not necessarily be limited to, the excavation, backfill, and compaction of trenches for pipelines, manholes, inlets, and other structures in accordance with the Contract Documents.

1.2 QUALITY ASSURANCE

All materials removed from trench excavations and used for backfill will be subject to testing by an approved geotechnical engineer to determine the material's suitability for use as backfill. Additional density testing may be required by the ENGINEER. All materials testing shall be provided at no cost to the Owner.

PART 2 – PRODUCTS

2.1 MATERIALS FURNISHED BY THE OWNER

The OWNER will not furnish any materials for trench backfill other than those materials which are available from the trench excavation limits as shown on the Standard Details and the Contract Documents.

2.2 DETAILED MATERIAL REQUIREMENTS

- A. Material for backfills may be from onsite excavations (if of proper quality) or from borrow sources. The material shall be free from organic material, sludge, grit, trash, muck, roots, logs, stumps, excess moisture or frozen material, and other deleterious substances. Except as otherwise specified or approved, the material shall not contain rocks or lumps larger than 4 inches in greatest dimension. The material shall not contain mica in quantities, which in the judgment of the OWNER is sufficient to affect compaction characteristics. Materials having a maximum dry density of less than 100 pounds per cubic foot (AASHTO T 180) shall not be used unless specifically approved in writing by the OWNER. Cinders, ashes, rubble, and construction debris shall not be used in the work. The use of any soil additive that in the judgment of the Owner may adversely affect the proposed utility is strictly prohibited.
- B. Use and Ownership of Excavated Material
 - 1. All suitable material excavated from utility trenches shall be used, as far as practicable, for backfill in trenches if meeting classification defined in these Specifications.

2. The CONTRACTOR shall properly store, stockpile, and protect all materials that are to be reused in the work. The CONTRACTOR shall replace, at his own expense, material that was suitable when excavated, which has subsequently become unsuitable because of careless, neglectful, wasteful, or unprotected storage. The CONTRACTOR shall have no property right in any material taken from any excavation and no excavated material shall be wasted or otherwise removed from the project site without permission of the OWNER. All unsuitable and surplus suitable material, as determined by the OWNER, shall be removed from the site and disposed of offsite by and at the expense of the CONTRACTOR in accordance with all applicable federal, state, and local regulations.
- C. If insufficient suitable soils are available from excavation on the Contract Project, the CONTRACTOR shall submit for approval by the OWNER, borrow excavation sites from which such soils as may be required to complete the construction of excavation backfill on the Contract Project. The CONTRACTOR shall make suitability tests as directed by the OWNER. Borrow material shall be supplied and placed at the contract unit price.
- D. Excavation backfills on rights-of-way, improved easements, or supporting pavements or surface loads shall be constructed of material classified by the Unified Soil Classification System as GW, GP, GM, SW, or SP. Soils containing more than 20 percent round rock (pea gravel) shall not be acceptable.
- E. Excavation backfills not supporting surface loads or pavements and in unimproved easements shall be constructed of materials listed above or GC, SM, SC, ML, or CL.
- F. Backfill for pipe and structure installation, bedding, and trench backfill shall be existing excavated material if meeting above classification, or other as approved by the OWNER.

PART 3 – EXECUTION

3.1 SEDIMENT CONTROL

The CONTRACTOR shall install all required sediment control devices in accordance with the drawings, permits, and all applicable Federal, State and local regulations.

3.2 TRAFFIC CONTROL

The CONTRACTOR shall furnish all labor, tools, equipment, and materials required for the maintenance of traffic during construction.

3.3 TRENCH EXCAVATION

A. General

1. Excavation for the installation of utilities shall be unclassified and shall consist of the excavation, removal, and/or disposition of all material encountered to the lines, grades, and sections shown on the Contract Drawings and/or the Standard Details, as specified, or as directed by the OWNER.
2. Unless otherwise indicated, excavation shall be by open cut.
3. Trenches may be excavated and backfilled either by hand or by machinery. The CONTRACTOR shall have no claims, nor will extra compensation be allowed, for hand excavation or backfill, which may be required by these Specifications or by the OWNER for protection of existing utilities or structures.

B. Protection of Property and Structures

1. The CONTRACTOR shall, at the CONTRACTOR'S own expense, sustain in place and protect from direct or indirect injury all existing facilities in the vicinity of the excavation, whether above or below the ground, or that may appear in the trench. The CONTRACTOR shall be responsible for the implementation of protective measures associated with the presence or proximity of pipes, poles, tracks, walls, buildings, property markers, and other structures and property of every kind and description in or over his trenches or in the vicinity of his work whether above or below the surface of the ground. The CONTRACTOR shall repair or replace damaged facilities at his expense.

C. Utility Adjustments

1. All adjustments to utilities other than those owned by the OWNER shall be performed by the utility owner.

D. Obstructions

1. It shall be the responsibility of the CONTRACTOR to notify MISS UTILITY, all municipal and OWNER utilities, all utility line owners, and any other parties affected prior to the beginning of work. It is the CONTRACTOR'S responsibility to reference and maintain the location markings during the construction of the project. In the event that a utility location needs to be re-established by the OWNER, the cost to provide this shall be borne by the CONTRACTOR.

E. Removing Obstructions

1. Should the unforeseen position of any pipe, conduit, or other structure above or below ground be such as, in the opinion of the OWNER, to require its removal,

realignment, or change due to the work to be done under the Contract, the work of removal, realignment, or change will be done as a change in the work, or will be done by the owner of the obstructions without cost to the CONTRACTOR; however, the CONTRACTOR shall uncover and support the structures in the limits of the trench at the CONTRACTOR'S own expense before such removal, and before and after such realignment or change. Whether the obstruction is shown on the Contract Drawings or not, the CONTRACTOR shall not be entitled to any claim for damage or extra compensation on account of the presence of said structure or on account of any delay in the removal or rearrangement of the same; however, if said structure is not shown on the Plans, time extension will be allowed if deemed to be warranted by the OWNER.

2. In the event that obstructions would delay the work of pipe installation, the CONTRACTOR may, with OWNER approval, be permitted to leave a gap in the work and return to fill the gap after the obstructions have been removed. The installation shall be completed by laying full pipe lengths and appropriate closure pieces.
3. The CONTRACTOR shall not interfere with any persons, firms, or corporations, or with the OWNER in protecting, removing, changing, or replacing pipes, conduits, poles, or other structures.
4. In the event that the OWNER has entered into any agreement with an affected utility owner or owners which will have an effect on the operations or financial responsibilities of the CONTRACTOR, the requirements of these agreements will be included in the Special Provisions of the Contract.

F. Trench Width and Depth

1. Trenches shall be excavated to the necessary width and depth as may be shown on the Plans or Standard Details, as specified in the Special Conditions, or as directed. The trench subgrade shall be such as to provide a uniform and continuous bearing and support for the pipe on solid undisturbed earth for the full length of each pipe, except for that portion at the bell hole. Any part of the bottom of the trench excavated below subgrade shall be backfilled with approved material and compacted in accordance with Contract Documents, at no expense to the OWNER.
2. Subgrade, in the case of pipe lines, shall be 6 inches below the underside of the pipe barrel, where the pipe is laid on a granular bedding. Where the pipe is laid on a natural foundation, subgrade shall be 4 inches below the underside of the pipe barrel.
3. The sides of the trenches shall be practically plumb and under no circumstances will they be permitted to be sloped except with the written approval of the OWNER. Should the CONTRACTOR elect to slope or cut back the sides of the

trench, no additional payment will be made for extra excavation, backfill, restoration, or contingent items beyond the limits indicated on the Standard Details.

4. Bell holes shall be excavated in the bottom of the trench to ensure that pipe has continuous bearing.
5. Where sheeting or trench boxes are used, the maximum width shall be as noted in the Standard Details.

G. Length of Open Trench

1. The CONTRACTOR shall keep the backfill operation to the top of trench for offsite and existing areas and to road subgrade in areas of new construction, within 100 feet of excavation and pipe laying operations. The OWNER reserves the right to require the backfilling of open trenches over completed pipe lines if, in the CONTRACTOR'S judgment, such action is necessary, and the CONTRACTOR shall thereby have no claim for extra compensation, even though to accomplish said backfilling, the CONTRACTOR is compelled temporarily to stop excavation or other work at any place.
2. All trenches shall be closed at the end of each work day.
3. The excavation of all trenches shall be fully completed at least one full pipe length in advance of pipe installation, unless otherwise authorized.

H. Responsibility for Condition of Excavation

1. The CONTRACTOR shall be responsible for the condition of all excavations made by the CONTRACTOR.

I. Trench Support

1. The support of the trench shall be the sole responsibility of the CONTRACTOR.
2. The CONTRACTOR shall support the sides and ends of all excavations wherever necessary with braces, sheeting, shoring or stringers, trench boxes, or other acceptable excavation support systems. All trench support systems shall be installed by men skilled in such work and shall be so arranged that it may be withdrawn as backfilling proceeds, without injury to the utility or structure constructed or to any roadbed, adjacent structure, or property.
3. All timbering in excavations, trench boxes, or excavation support systems shall be withdrawn as the backfilling is being done, except where and to such extent as the OWNER shall order in writing that said timbering or excavation support system be left in place or where the OWNER permits the trench support to be left in place

at the CONTRACTOR'S expense and upon his request. The CONTRACTOR shall cut off any sheeting left in place 2 feet below finished grade and shall remove the material cut off without compensation therefore.

4. Wherever necessary, in running sand, or soft ground, or for the protection of any structure or property, sheeting shall be driven without extra compensation to such a depth below the bottom of the trench as may be required or directed. Where directed by the OWNER to leave sheeting in place, payment will be made under the appropriate contingent item.
5. All work shall be performed in accordance with the latest applicable federal, state, and local safety and health regulations.

J. Drainage and Dewatering

1. The CONTRACTOR shall grade the site as necessary to prevent surface water from ponding or from flowing into the trench or other utility excavations, and shall provide all necessary temporary surface drainage and keep the same operating to the satisfaction of the OWNER until permanent drainage or finished grading and permanent surface stabilization has been completed.
2. It shall be the CONTRACTOR'S responsibility to adequately control water that may be present in the excavation. The CONTRACTOR shall provide for the disposal of water removed from excavations in such a manner not to cause damage to public or private property or to any portion of the work completed or in progress or cause any impediment to the use of any area by the public; nor shall the CONTRACTOR discharge any flushing or groundwater or any material of any nature into the existing sanitary sewer system during the construction of the facilities. All water shall be discharged through an approved sediment control device. The costs of dewatering trench excavations will not be paid for directly, but will be included in prices bid for other related items.

K. Excavation Below Subgrade

1. The CONTRACTOR shall, without additional compensation, before any pipe or appurtenance is installed, fill all unauthorized depressions or irregularities in the bottom of the trench or tunnel with aggregate fill.
2. Where the bottom of the trench, at subgrade, is in unstable or unsuitable material, excavation shall be carried to such depth as ordered by the OWNER. The trench bottom shall be restored to subgrade with aggregate fill. Excavation and backfill for removal of unsuitable material will be paid for under the appropriate contingent item.

3.4 BACKFILL

- A. The CONTRACTOR shall backfill all trenches as rapidly as practicable after the installation of the utility therein, or after the excavation has served its purpose. No more than 100 feet of trench may be open at any time except as approved by the OWNER.
- B. Backfill to 18 inches above top of pipe: Suitable material shall be carefully placed around and to a depth of 18 inches over the pipe. These initial lifts shall be carefully placed and hand-tamped in 4-inch layers. Care should be exercised in this operation to ensure that the alignment of the utility is not disturbed.
- C. From 18 inches above top of pipe to top of trench: The remainder of the trench may be backfilled in layers not exceeding the specified compaction lift depths. However, if lift thickness is followed and the specified compaction is not obtained based on the testing during backfilling, the CONTRACTOR shall, at his own expense, remove, replace, and retest as many times as is required to obtain the specified compactions. In backfilling the remainder of the trench, stones of not more than 4 inches in largest dimension which have been taken out in excavating may be mixed with earth in an amount not exceeding 25 percent of the backfill volume. Stones of larger size or in greater quantities shall not be used, unless directed by the OWNER. The CONTRACTOR shall not permit excavations to be used for the disposal of refuse.
- D. In paved areas, the CONTRACTOR shall furnish and backfill the trench as per the requirements of the governing regulatory agency and/or Contract Documents.
- E. Should additional material be required or deemed unsuitable by the geotechnical engineer for backfilling, the CONTRACTOR shall obtain borrow material from offsite sources to complete the trench backfill. If soil removed from the trench is determined to be suitable but too wet for immediate reuse as determined by the geotechnical engineer, the CONTRACTOR may be allowed to replace with approved material at the CONTRACTOR'S own expense.
- F. No layer of soil shall be placed on a frozen surface of a preceding layer or on a frozen subgrade.

3.5 COMPACTION

- A. The CONTRACTOR shall, in unimproved areas outside the public rights-of way, compact each backfill layer in such a manner as to obtain a dense backfill free of voids and not susceptible to undue settlement or depression. Backfilled lifts extending to not less than 1 foot in depth or as approved by the OWNER shall be compacted to at least 90 percent of maximum density at a moisture content within 5 percent of the optimum in accordance with ASTM D1556. Perform density testing per ASTM D 6938 Nuclear Density for soils and aggregate, and ASTM D2950 for bituminous pavement.

- B. Backfill for any improved area beneath aggregates, paving, or concrete specified hereinafter shall be backfilled with suitable material and compacted in lifts not to exceed 8 inches in thickness to at least 95 percent of maximum density at a moisture content within 5 percent of the optimum in accordance with ASTM D1556. All compaction must comply with the aforementioned or the latest edition of the governing applicable road code or permit whichever is most stringent. The CONTRACTOR shall hire an independent testing agency to provide suitable Proctor curves for each type of backfill material used in the project. The CONTRACTOR'S testing agency shall perform density tests at a rate of one test per every 100 feet, for each 8-inch lift of material placed. The CONTRACTOR'S independent testing agency shall be subject to approval by the OWNER. Perform density testing per ASTM D6938 Nuclear Density, ASTM D2950 for bituminous pavement.
- C. Insofar as the specifications for mechanical tamping equipment or methods are concerned, no specific requirements are included in these Specifications other than that the use of any particular type of equipment is subject to the approval of the OWNER and that the OWNER has sole right to judge what equipment is suitable for the uses intended.

3.6 MAINTENANCE OF BACKFILLED TRENCH

- A. All backfilled trenches shall be maintained in an acceptable condition by and at the expense of the CONTRACTOR for a period of 4 months following the date of conditional acceptance of the work. Retainage may be held until the end of this period.
- B. If the CONTRACTOR fails to fill depressions in the backfilled trench within 24 hours after the receipt of notice from the OWNER, the OWNER may refill said depressions and the cost thereof shall be retained from any monies due the CONTRACTOR, under the Contract. In case of emergency, the OWNER may refill any dangerous depression or protect with lights wherever necessary without giving previous notice to the CONTRACTOR, and the cost of so doing shall be retained from any monies that are to become due the CONTRACTOR under the Contract.
- C. The CONTRACTOR shall be responsible for any injury or damage that may result from lack of maintenance of any refilled excavation at any time prior to final acceptance of the Project.

+ + END OF SECTION + +

SECTION 02 41 16

DEMOLITION

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This Section includes the demolition, removal, and disposal and abandonment of the existing structures that are designated on the Contract Documents. The CONTRACTOR shall furnish all labor, materials, and equipment to remove sidewalk, curb and gutter, asphalt millings, piping, concrete structures, and appurtenances that are designated on the Contract Drawings to be removed.
- B. Inlets and manholes are to be removed as shown on the Contract Drawings.
- C. Demolished material and equipment shall become the property and responsibility of the CONTRACTOR, with the exception of specific equipment items which the OWNER chooses to salvage, and those items are to remain the property of the OWNER. The CONTRACTOR shall remove these items to be salvaged from their existing locations and deliver to the OWNER. This salvaged equipment shall be temporarily stored onsite in an area designated by the OWNER and protected until removed by the OWNER. Disposal shall be in accordance with applicable regulations governing disposal of removed materials.
- D. The CONTRACTOR shall provide all labor, material, services, and equipment necessary for the temporary storage, removal, and disposal of all waste resulting from demolition activities.

1.2 SUBMITTALS

- A. Submit a schedule indicating proposed methods and sequence of operations for demolition and removal work. Include starting and ending dates for each activity.
- B. Submit schedule for interruption of utility services. Include a plan to demonstrate the coordination of activities for shutoff, capping, and continuation of utility services.
- C. Submit list of equipment that will be removed or demolished.
- D. Submit list of equipment that will be salvaged and returned to OWNER.
- E. Submit copies of all secured permits required for demolition work.
- F. Submit record updates of Contract Drawings for demolition work indicating removal; locations of underground utility abandonment, removal, and capping; and any below-grade or subgrade structures abandoned in place.

1.3 QUALITY ASSURANCE

- A. Materials and procedures shall be in accordance with the latest revisions of the following codes, standards, and specifications, except where more stringent requirements are specified:
 - 1. International Building Code
 - 2. ASTM International
 - 3. National Electrical Code
 - 4. National Fire Protection Association.
- B. The CONTRACTOR shall obtain all permits required for performing demolition work. The CONTRACTOR shall be responsible for compliance with all federal, state, and local laws and regulations relative to disposal, and for obtaining permits, and payment of fees for removal and disposal of demolished material.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Materials needed or required for temporary protection, such as barricades, fences, enclosures, or similar materials, may be used construction materials of sound condition and reasonably clean. However, the condition of these materials shall meet or exceed the requirements of governing agencies or approving bodies that may be involved with the work.
- B. Equipment, machinery, and apparatus (motorized or otherwise) used to perform demolition work may be used as chosen at the CONTRACTOR'S discretion, but will perform the work within the limits of the Contract requirements.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Prior to performance of actual work, carefully inspect the site and locate those objects, equipment, and structures designated to be demolished and removed.
- B. Locate existing exposed and buried active utilities and determine the requirements for their protection, or their disposition with respect to the demolition work. Locate pipes and conduits.
- C. All work shall be in accordance with Occupational Safety and Health Administration (OSHA) requirements. Sheeting and Shoring will be required. Confined space work will require a work permit in accordance with OSHA regulations.

3.2 SITE CONDITIONS

- A. Execute demolition and dismantling work to ensure the safety for persons and adjacent property against damage by settlement, falling debris, or other causes in connection with this work.
- B. Maintain the integrity of the utilities in the demolition area during the progress of the work. Any utilities damaged by the CONTRACTOR must be repaired by the CONTRACTOR at no additional cost to the OWNER.
- C. Protect all electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities.
- D. Provide protection for pedestrian safety during the process of demolition work, and provide adequate protective measures to protect pedestrian and vehicular traffic and walkways.

3.3 PERFORMANCE

- A. Protection: Exercise care during demolition work to confine demolition operations. The physical means and methods used for protection are at the CONTRACTOR'S option. However, the CONTRACTOR will be completely responsible for replacement and restitution work of whatever nature at no expense to the OWNER.
- B. Debris Removal: All demolition debris shall become the property of the CONTRACTOR and shall be disposed of offsite in accordance with local and State regulations. Remove and transport debris and rubbish in a manner that will prevent spillage on streets or adjacent areas. Clean up spillage from streets and adjacent area.
- C. Burning: Burning will not be permitted without permission of the Fire Department, OWNER, and appropriate authorities.
- D. Sewage/Sludge Disposal: The CONTRACTOR shall be responsible for permitting and removing sewage and sludge from facilities slated for renovation, demolition, or abandonment. The CONTRACTOR shall be responsible for providing all needed pumps and temporary piping, and acquiring all necessary permits. The CONTRACTOR shall be responsible for transport of materials offsite and for securing a suitable disposal site, and paying all fees associated with removal, transport, and disposal of removed materials.
- E. Equipment/Housing: All equipment and debris not claimed by the OWNER as salvage shall become the property of the CONTRACTOR and shall be disposed of offsite in accordance with local and State regulations. The CONTRACTOR shall provide a list of materials to be removed to the OWNER for review. The OWNER will notify the CONTRACTOR as to which items will be retained by the OWNER as salvage.

- F. Concrete shall be removed per the Contract Drawings. Vertical concrete surfaces shall be scored 2 inches in depth from the concrete face with a concrete saw for a level joint to planned elevation, with the remaining depth to be bush hammered for tie-in to new concrete.

++ END OF SECTION ++

SECTION 02 74 10

ASPHALT PAVING

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Provide asphalt pavement according to the materials, workmanship, and other applicable requirements of the Maryland State Highway Administration Standard Specifications for Constructions and Materials. This Section includes the following:
 - 1. Cold milling of existing hot-mix asphalt pavement
 - 2. Hot-mix asphalt patching
 - 3. Hot-mix asphalt paving
 - 4. Pavement-marking paint.

1.2 DEFINITIONS

- A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.
- B. MDOT SHA: Maryland Department of Transportation State Highway Administration.

1.3 SUBMITTALS

1.3.1 Product Data

- A. For each type of product indicated, include technical data and tested physical and performance properties.
 - 1. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work
 - 2. Material Certificates: For each paving material, signed by manufacturers
 - 3. Density test results
 - 4. Lab testing results from field sampling
 - 5. Plant print out during production of all types of mixes.

1.4 PROJECT CONDITIONS

1.4.1 Environmental Limitations

- A. Do not apply asphalt materials if subgrade is wet or excessively damp, or if the following conditions are not met:
 - 1. Prime Coat: Minimum surface temperature of 60 degrees Fahrenheit
 - 2. Tack Coats: Minimum surface temperature of 60 degrees Fahrenheit
 - 3. Slurry Coat: Comply with weather limitations of ASTM D3910
 - 4. 12.5 MM Asphalt Base Course: Minimum surface temperature of 40 degrees Fahrenheit and rising at time of placement
 - 5. 9.5 MM Asphalt Surface Course: Minimum surface temperature of 60 degrees Fahrenheit at time of placement
 - 6. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 55 degrees Fahrenheit for water-based materials, and not exceeding 95 degrees Fahrenheit.

PART 2 – MATERIALS

2.1 AGGREGATES

2.1.1 General

- A. Use materials and gradations that have performed satisfactorily in previous installations.

2.1.2 Coarse Aggregate

- A. See MDOT SHA Specifications.

2.1.3 Fine Aggregate

- A. See MDOT SHA Specifications.

2.2 ASPHALT MATERIALS

2.2.1 Asphalt Binder

- A. See MDOT SHA Specifications.

2.2.2 Asphalt Cement

- A. See MDOT SHA Specifications.

2.2.3 Tack Coat

- A. See MDOT SHA Specifications.

2.3 AUXILIARY MATERIALS

2.3.1 Pavement-Marking Paint

- A. Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, Type II, with drying time of less than 3 minutes.

- 1. Color: White, Yellow, as indicated.

2.4 MIXES

The Contractor shall provide 12.5 MM Super-pave base course, and 9.5 MM Super-pave surface course in accordance with MDOT SHA Specification.

PART 3 – EXECUTION

3.1 COLD MILLING

- A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross-sections indicated.
 - 1. Mill to a depth of 2 inches.
 - 2. Mill to a uniform finished surface free of excessive gouges, grooves, and ridges.
 - 3. Control rate of milling to prevent tearing of existing asphalt course.
 - 4. Repair or replace curbs, manholes, and other construction damaged during cold milling.
 - 5. Excavate and trim unbound-aggregate base course, if encountered, and keep material separate from milled hot-mix asphalt.
 - 6. Transport milled hot-mix asphalt to asphalt recycling facility.
 - 7. Keep milled pavement surface free of loose material and dust.

3.2 PATCHING

3.2.1 Hot-Mix Asphalt Pavement

- A. Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

3.2.2 Portland Cement Concrete Pavement

- A. Break cracked slabs and roll as required to reseal concrete pieces firmly.
 - 1. Pump hot undersealing asphalt under rocking slab until slab is stabilized or, if necessary, crack slab into pieces and roll to reseal pieces firmly.
 - 2. Remove disintegrated or badly cracked pavement. Excavate rectangular or trapezoidal patches, extending into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Recompact existing unbound-aggregate base course to form new subgrade.

3.2.3 Tack Coat

- A. Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gallon per square yard.
 - 1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.2.4 Patching

- A. Fill excavated pavements with 12.5 MM Super-pave base course in required maximum lifts for full thickness of patch and, while still hot, compact flush with adjacent surface. Follow with 9.5 MM Super-pave surface course per plan detail, finished flush with existing pavement.

3.3 HOT-MIX ASPHALT PLACEMENT

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross-section, and thickness when compacted.

1. Place 12.5 MM Super-pave base course in number of lifts and thicknesses indicated in plan detail for type of mix.
 2. Place 9.5 MM Super-pave base course in single lift per plan detail.
 3. Spread mix at minimum temperature of 275 degrees Fahrenheit.
 4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
 5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.
1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of asphalt base course before placing asphalt surface course.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.4 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
1. Clean contact surfaces and apply tack coat to joints.
 2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
 3. Offset transverse joints, in successive courses, a minimum of 24 inches.
 4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for "Resumption of Paving Operations."
 5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
 6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.5 COMPACTION

3.5.1 General

- A. Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

- 1. Complete compaction before mix temperature cools to 185 degrees Fahrenheit.

3.5.2 Breakdown Rolling

- A. Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

3.5.3 Intermediate Rolling

- A. Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

- 1. Average Density: 96 percent of reference laboratory density according to ASTM D6927, but not less than 94 percent nor greater than 100 percent.
 - 2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D2041, but not less than 90 percent nor greater than 96 percent.

3.5.4 Finish Rolling

- A. Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

3.5.5 Edge Shaping

- A. While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

3.5.6 Repairs

- A. Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

3.5.7 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.

3.6 INSTALLATION TOLERANCES

3.6.1 Pavement Thickness

- A. Compact each course to produce the thickness indicated within the following tolerances:
 - 1. Base Course: Plus or minus $\frac{1}{2}$ inch
 - 2. Surface Course: Plus $\frac{1}{4}$ inch, no minus.

3.6.2 Pavement Surface Smoothness

- A. Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
 - 1. Base Course: one-quarter $\frac{1}{4}$ inch
 - 2. Surface Course: $\frac{1}{8}$ inch
 - 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is $\frac{1}{4}$ inch.

3.6.3 Traffic-Calming Devices

- A. Compact and form asphalt to produce the contour indicated and within a tolerance of plus or minus $\frac{1}{8}$ inch of height indicated above pavement surface.

3.7 PAVEMENT MARKING

Do not apply pavement-marking paint until layout, colors, and placement have been verified with the ENGINEER. Allow paving to age for thirty (30) days before starting pavement marking. Sweep and clean surface to eliminate loose material and dust. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mil. Broadcast glass beads uniformly into wet pavement markings at a rate of 6 pounds per gallon.

3.8 DISPOSAL

Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill. Do not allow milled materials to accumulate onsite.

+ + END OF SECTION + +

SECTION 02 80 00

RESTORATION

PART 1 – GENERAL

1.1 DESCRIPTION

Restoration shall include, but not necessarily be limited to all cleanup and disposal of waste materials and the restabilization of disturbed areas including paved areas, non-paved areas, concrete improvements, street signs, mail boxes, fences, trees, shrubs, and other improvements whether or not shown in the Contract Documents.

1.2 QUALITY ASSURANCE

The OWNER will inspect all materials before, during and after installation to ensure compliance with the Contract Documents.

PART 2 – PRODUCTS

2.1 GENERAL

Materials shall be furnished in accordance with the Contract Documents and the current edition of the Approved List of Suppliers and Materials for Water and Sewer Main Construction.

2.2 MATERIALS FURNISHED BY THE OWNER

The OWNER will not furnish any materials for restoration other than those acceptable materials which are available from the trench excavation limits.

PART 3 – EXECUTION

3.1 GENERAL

After the completion of backfilling, all materials not used therein shall be removed and disposed of in such a manner and at such point or points as shall be approved or directed by the OWNER, and all roads, sidewalks, and other places on the line of the work shall be left free of debris, clean, and in good order. Said cleaning-up shall be done by the CONTRACTOR without extra compensation, and if the CONTRACTOR shall fail to do such work within 24 hours after receipt of notice, the OWNER may arrange to have the cleaning-up done by others, and the cost shall be retained out of the monies due or to become due to the CONTRACTOR under the Contract. In case of emergency, the OWNER may restore or remove and dispose of materials wherever necessary without giving previous notice to the CONTRACTOR, and the cost of doing so shall be retained from any monies due to become due the CONTRACTOR under the Contract.

3.2 PAVED AREAS

- A. Immediately upon completion of the trench backfill and compaction as previously specified, the CONTRACTOR shall provide graded aggregate subbase, temporary bituminous surfacing material as per the Contract Documents and/or direction of the governing regulatory agency.
- B. Weather permitting, the CONTRACTOR shall remove and dispose of the temporary surfacing materials, cut-back the edge of the existing pavement as per the Contract Documents, and permanently patch-pave the area as specified in the Contract Documents and/or governing agency direction. This shall be done within thirty (30) calendar days after backfilling and compacting the trench as described in the paragraph above or within the time period specified by the governing agency.

3.3 CONCRETE IMPROVEMENTS

Sidewalks, curbs, combination curb and gutter, drive aprons, and other concrete improvements removed, soiled, or damaged by the CONTRACTOR'S activities shall be cleaned or replaced by the CONTRACTOR in kind, or as directed by the OWNER and/or Contract Documents without extra compensation.

3.4 NON-PAVED AREAS

- A. Immediately upon completion of the trench backfill and compaction as previously specified, the CONTRACTOR shall temporarily stabilize the area in accordance with the Contract Documents.
- B. Weather permitting, within fourteen (14) days after the completion of trench backfill and compaction, the CONTRACTOR shall permanently stabilize the area with seeding and mulching or sodding, as noted in the Contract Documents.

3.5 STREET SIGNS, MAIL BOXES, FENCES, SHRUBS, TREES, AND OTHER IMPROVEMENTS

- A. Existing street signs and traffic control devices stored or relocated by the CONTRACTOR will be reset by the CONTRACTOR after construction in the area is complete and the work approved by the OWNER.
- B. In case of emergency, the OWNER may reset street signs and traffic control devices wherever necessary without giving previous notice to the CONTRACTOR, and the cost of doing so shall be retained from any monies due or to become due the CONTRACTOR under the Contract.
- C. Mail boxes shall be carefully removed by the CONTRACTOR to the extent required to permit construction operations and as directed by the Postal Service. It shall be the CONTRACTOR'S responsibility to temporarily reset mail boxes during construction to

maintain service until the boxes are permanently reset in their original locations or at locations designated by the Postal Service. The CONTRACTOR shall comply with all Postal Service regulations regarding the location and height of all mail boxes disturbed by the CONTRACTOR'S activities.

- D. Existing fences, paper boxes, signs, property markers, and other similar items shall be carefully removed by the CONTRACTOR to the extent required to permit construction operations and as directed by the OWNER. The CONTRACTOR shall safely store all items during the time that they are down and when possible, re-erect them in the original locations or at locations designated by the OWNER.
- E. Shrubs, hedges, and other plantings shall be transplanted with sufficient earth to ensure that no damage to their major root system occurs. After transplanting has been accomplished, it shall be the CONTRACTOR'S responsibility to water all plants until their growth is established.

+ + END OF SECTION + +

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DIVISION 3 – CONCRETE

SECTION 03 05 16 PRECAST CONCRETE STRUCTURES
SECTION 03 10 00 CONCRETE FORMS AND ACCESSORIES
SECTION 03 30 00 CAST-IN-PLACE CONCRETE

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SECTION 03 05 16

PRECAST CONCRETE STRUCTURES

PART 1 – GENERAL

1.1 DESCRIPTION

This Section includes requirements for providing precast structures.

1.2 QUALITY ASSURANCE

- A. Precast concrete shall be supplied by a qualified firm with a minimum of two (2) years of continuous operation experience.
- B. The OWNER'S REPRESENTATIVE may inspect and test all precast structures, fittings, and joint material after delivery to the site or at the factory. The manufacturer or supplier shall furnish materials for the tests and labor as required to assist the OWNER'S REPRESENTATIVE with the tests. The OWNER'S REPRESENTATIVE may perform, on a continual basis, plant certification and in-process inspections.
- C. The manufacturer or supplier shall provide to the OWNER'S REPRESENTATIVE, prior to delivery of precast structures, a Certificate of Compliance with the CONTRACTOR'S name, section sizes, footage, or number of pieces required to fill the order.
- D. Only the OWNER'S REPRESENTATIVE approved precast concrete structures shall be shipped to the Contract Site.

1.3 SUBMITTALS

- A. Submit the following CONTRACTOR'S Drawings in accordance with Section 01 33 00, Submittals:
 - 1. Shop drawings showing complete details, pertinent calculations including buoyancy calculations, design loads, materials, strengths, sizes and thicknesses, joint and connection design, and details for all precast structures.
- B. Installation Methods for Precast Sections
 - 1. This submittal may be waived when the manufacturer has his recommended methods on file with the OWNER'S REPRESENTATIVE.

C. Test Reports

1. In accordance with Section 01 33 00, Submittals, submit manufacturer's certified test reports specified in reference ASTM standards for vaults, inlets, and box culverts.
2. When requested the manufacturer shall provide signed engineering calculations.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Precast structures are considered suitable for handling to transport to the Contract Site after the concrete has cured to minimum strength of 80 percent of the design strength.
- B. Delivery of precast structures shall be coordinated with installation or shall be unloaded with proper equipment along the line of work, outside trench limits near as practicable to point of final placement. They shall be stored off the ground on wood blocks, pallets, or other appropriate means away from brush, poison oak or ivy, and in an accessible area for inspection. Excavated or other material shall not be placed over or against the stored precast structures.
- C. Precast structures and appurtenances shall be unloaded and handled with crane, backhoe, or equipment of adequate capacity, equipped with appropriate slings and lifting devices to protect the material from damage.
- D. If damage occurs and is deemed repairable, it shall be repaired as directed by the OWNER'S REPRESENTATIVE in accordance with approved manufacturer's recommendations. If damage is not repairable in the opinion of the OWNER'S REPRESENTATIVE, such items of material will be rejected and shall be removed and replaced at the CONTRACTOR'S expense.

PART 2 – PRODUCTS

2.1 PRECAST CONCRETE STRUCTURES

- A. Precast concrete structures shall meet requirements and configurations as indicated on the Drawings. Precast concrete vaults shall meet the requirements of ASTM C858 for Underground Precast Concrete Utility Structures and AASHTO and DOT requirements.
- B. Each precast concrete vault section shall be clearly marked on the inside with the following information: ASTM designation, structure or inlet size, date of manufacture, contract station location, and name or trademark of manufacturer. Slabs shall be marked on the top and bottom surfaces.
- C. Concrete shall be designed to obtain a strength of 4,500 pounds per square inch in twenty-eight (28) days.

2.2 PIPE PENETRATION SLEEVES

- A. Pipe penetration sleeves shall be located as indicated on the Drawings. Sleeves shall be cast into the inlet, vault, and/or manhole at manufacture and shall produce a positive watertight connection.
- B. Connectors shall be in conformance with ASTM C923 for Resilient Connectors between Reinforced Concrete Manhole Structures and Pipes. Connectors may be Z-Lok model manufactured by A-LOK Products, Inc., or equal.

2.3 BEDDING

Granular bedding shall be as specified in Section 31 05 15, Earthwork.

2.4 SOURCE QUALITY CONTROL

Concrete compressive strength shall be determined from compressive tests made on concrete cylinders. Unless otherwise specified, the manufacturer shall retain an independent testing facility approved by the OWNER'S REPRESENTATIVE for the purpose of molding, capping, and testing concrete cylinders in accordance with appropriate ASTM requirements. The OWNER'S REPRESENTATIVE reserves the right to require core samples of finished products when the OWNER'S REPRESENTATIVE deems it necessary. When requested, the manufacturer or supplier shall provide the OWNER'S REPRESENTATIVE compressive test specimens for testing. This is in addition to the above requirements and does not relieve the manufacturer or supplier of the responsibility of monitoring the quality of the concrete as specified.

PART 3 – EXECUTION

3.1 PRECAST CONCRETE STRUCTURES

- A. Place axis of precast structures directly over the centerline of the pipes unless otherwise specified.
- B. Structure sections shall be installed in accordance with the structure manufacturer's written assembly instructions.

++ END OF SECTION ++

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SECTION 03 10 00

CONCRETE FORMING AND ACCESSORIES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The work to be furnished under this Section includes, but is not limited to the designing, furnishing, fabricating, erecting, and bracing required for the various concrete work on the site.

1.2 SUBMITTALS

- A. The CONTRACTOR shall prepare and submit for approval complete detailed plans of all formwork to be constructed. Submittals shall be in accordance with Section 01 33 00 SUBMITTAL PROCEDURES of these Specifications. He shall not proceed with formwork construction until his plans have been approved. This requirement may be waived for minor foundations (less than one [1.0] cubic yard) only upon receipt of written approval from the ENGINEER. However, approval of these plans or lack thereof shall not relieve the CONTRACTOR of complete responsibility for the safety and adequacy of all formwork.

1.3 DESIGN CRITERIA

- A. Forms shall be designed in accordance with American Concrete Institute (ACI) 347 and such that the forms can be removed without injuring the concrete. The design and engineering of the formwork shall be the responsibility of the CONTRACTOR.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Forms for concrete work shall conform to ACI Standard 318 and shall be constructed of wood, steel, or other approved materials. Surfaces of forms shall be free from irregularities, dents and sags. Lumber used in forms shall be dressed to a uniform thickness, evenly matched and free from loose knots and other imperfections that would produce defects in the finished concrete surfaces. The CONTRACTOR may elect to employ prefabricated forms, upon prior approval as to both type and material, for concrete walls and structures. In either case a plain smooth surface of the desired contour must be obtained. For surfaces to be given a rubbed finish the material shall be heavy plywood unless otherwise specifically approved. For curved or special surfaces the above requirements may be modified.
- B. Form surfaces in contact with concrete shall be treated with an effective bond-breaking form coating, in accordance with Section 3.4 of ACI 347. Forms shall be designed to

permit easy removal. Prying against the face of the concrete will not be allowed. Only wooden wedges shall be used.

- C. Plywood forming shall be B-B Plyform Class 1 Exterior, as manufactured and specified by the American Plywood Association.
- D. Form ties, spreaders, and other form accessories shall be commercial brands of standard manufacture. Form ties and accessories shall be of such design that upon removal of forms, no metal shall be less than one and a half (1-1/2) inch from the surface of concrete. All tie holes shall be filled entirely.

PART 3 – EXECUTION

3.1 FABRICATION AND ERECTION

- A. The form material shall be placed so a smooth surface free from irregularities is obtained. Sheets of material shall be placed so that joints are in regular and true horizontal and vertical lines. Full sized plywood sheets shall be used except where a single smaller piece will cover an entire area. Where form lining is used it will be used in pieces as large as possible. All joints shall be solidly backed, butted tight together and sealed with white lead paste or other approved crack fillers. All holes shall be filled as well as depressions or hammer marks so that the completed surface is as smooth as possible. When steel forms are used the panels shall be as large as practical and of sufficient gage to prevent surface irregularities. Panels shall be assembled in uniform patterns and firmly locked and braced together to form a smooth surface. Bent or irregular panels will not be used. Round fiber column forms shall be furnished full height and shall be fitted with circular wooden templates at top and bottom and with wooden collars at intermediate points. Fiber forms shall be removed no later than ten (10) days after pouring.
- B. All lumber shall be free from knotholes, loose knots, cracks, splits, warps, or other defects impairing the strength or the appearance of the finished structure.
- C. The forms shall be built true to line and braced in a substantial and unyielding manner. They shall be mortar tight and shall be thoroughly soaked with water to close cracks due to shrinkage.
- D. Dimensions affecting the construction of subsequent portions of the work shall be carefully checked after the forms are erected and before any concrete is placed. The interior surfaces of the forms shall be adequately oiled, greased, or soaped to ensure nonadhesion of mortar. Form plywood and/or lumber which is used a second time shall be free from bulge, warp or damage and shall be thoroughly cleaned. The forms shall be inspected immediately preceding the placing of concrete and any defects shall be remedied and all dirt, sawdust, shavings, or other debris within the forms shall be removed.

- E. Blocks and bracing shall be removed with the forms and in no case shall any portion of the wood forms be left in the concrete. Special attention shall be paid to the ties and bracing and when forms appear to be insufficiently braced or unsatisfactorily built, before or during construction, the work will be ordered stopped until the defects have been corrected. The forms shall be so constructed that the finished concrete shall be of the form and dimensions shown on the plans and true to line and grade.
- F. Securely install in the formwork required inserts, anchors, sleeves, and other items specified under other sections or as shown on the Contract Drawings. Wherever practicable, securely fasten embedded items to reinforcing steel.
- G. Set edge forms and screed to produce the indicated elevations and contours, and secure to prevent displacement during placing and consolidation of concrete.
- H. Construct formwork so as to result in concrete surfaces conforming to the tolerances specified herein.
- I. Concrete Tolerances
 - 1. Variations from the plumb:
 - In any 10 ft of length.....1/4 in.
 - Maximum for entire length1 in.
 - 2. Variation from the level or from the grades indicated on the drawings.
 - In any 10 ft of length.....1/4 in.
 - In any bay or in any 20 ft of length.....3/8 in.
 - Maximum for entire length3/4 in.
 - 3. Variation of linear building lines from
 - Established position in plan1/2in.
 - 4. Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls.
 - Minus1/4 in.
 - Plus.....1/4 in.

5. Footings:

- a. Variation in dimensions in plan, when formed.

Minus1/2 in.

Plus.....2 in.

- b. Variation in dimensions in plan against unformed excavation.

Minus1/2 in.

Plus.....3 in.

3.2 REMOVAL OF FORMS, FALSEWORK, AND CENTERING

- A. Unless earlier removal is approved by the ENGINEER, maintain forms, falsework and centering in place until the concrete has attained the minimum of forty (40) percent of specified design strength.
- B. Do not disturb or remove forms until the concrete has hardened sufficiently to permit form removal with complete safety.
- C. Do not remove shoring until the member has acquired sufficient strength to support its own weight, the load upon it, and the added load of construction.
- D. Do not strip floor slabs in less than two (2) days.
- E. Do not strip vertical concrete in less than seven (7) days.

++ END OF SECTION ++

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.1 DESCRIPTION

1.1.1 Scope

- A. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified and required to furnish and install cast-in-place concrete and related materials.

1.1.2 Coordination

- A. Review installation procedures under other sections and coordinate the installation of items that must be installed in the concrete.

1.2 QUALITY ASSURANCE

1.2.1 Reference Standards

- A. Comply with the applicable provisions and recommendations of the following, except as otherwise shown or specified.
 - 1. American Concrete Institute (ACI) 301, Specifications for Structural Concrete for Building (includes ASTM Standards referred to herein except ASTM A 36).
 - 2. ACI 347, Recommended Practice for Concrete Formwork.
 - 3. ACI 304, Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
 - 4. ASTM A 36, Structural Steel.
 - 5. Maryland Department of Transportation Specification Section 918, Cement Concrete Mixture.

1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. All materials used for concrete must be kept clean and free from all foreign matter during transportation and handling and kept separate until measured and placed in the mixer. Bins or platforms having hard clean surface shall be provided for storage. Suitable means shall be taken during hauling, piling and handling to ensure that segregation of the coarse and fine aggregate particles does not occur and the grading is not affected.

- B. Deliver concrete reinforcement materials to the site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

PART 2 – PRODUCTS

2.1 CONCRETE MATERIALS

2.1.1 Portland Cement

- A. ASTM C 150, Type II.

2.1.2 Aggregates

- A. ASTM C 33.
 - 1. Fine Aggregate: Clean, sharp, natural sand free from loam, clay, lumps or other deleterious substances. Dune sand, bank run sand and manufactured sand are not acceptable.
 - 2. Coarse Aggregate: ASTM C 33 Clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter, as follows:
 - a. Crushed stone, process from natural rock or stone,
 - b. Washed gravel, either natural or crushed. Use of slag and pit or bank run gravel is not permitted.
 - 3. Coarse Aggregate Size: Size to be ASTM C 33, Nos. 57 or 67, unless permitted otherwise by ENGINEER.
 - 4. Water: Clean, potable.
 - 5. Air-Entraining Admixture: ASTM C 260.
 - 6. Water-Reducing Admixture: ASTM C 494. Only use admixtures which have been tested and accepted in mix designs.

2.2 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A 615, Grade 60.

PART 3 – EXECUTION

3.1 INSPECTION

- A. CONTRACTOR shall examine the conditions under which concrete is to be placed, and notify ENGINEER in writing of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

3.2 FORMWORK

- A. Construction so that concrete members and structures are correct size, shape, alignment, elevation and position, complying with ACI 347.
- B. Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Retighten forms during and after concrete placement if required to eliminate leaks.

3.3 REINFORCEMENT, JOINTS, AND EMBEDDED ITEMS

- A. Comply with the applicable recommendations of specified codes and standards, and Concrete Reinforcing Steel Institute (CRSI), Manual of Standard Practice, for details and methods of reinforcement placement and supports.
- B. Clean reinforcement to remove loose rust and mill scale, earth, ice and other materials which reduce or destroy bond with concrete.
- C. Position, support, and secure reinforcement against displacement during formwork construction or concrete placement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.
 - 1. Place reinforcement to obtain the minimum concrete coverages as shown and as specified in ACI 318. Arrange, space, and securely tie bars and bar supports together with sixteen (16) gage wire to hold reinforcement accurately in position during concrete placement operations. Set with ties so that twisted ends are directed away from exposed concrete surfaces.
 - 2. Reinforcing steel shall not be secured to forms with wire, nails or other ferrous metal. Metal supports subject to corrosion shall not touch formed or exposed concrete surfaces.
- D. Concrete shall not be placed until the reinforcing steel is inspected and permission for placing concrete is granted by ENGINEER. All concrete placed in violation of this provision will be rejected.

- E. Installation of Embedded Items: Set and building into the Work anchorage devices and embedded items required for other Work that is attached to, or supported by cast-in-place concrete.

3.4 CONCRETE AND PLACEMENT

A. Proportioning and Design of Mix:

1. Minimum compressive strength at 28 days: 4,000 psi.
2. Maximum water cement ratio by weight: 0.50.
3. Minimum cement content: 560 pounds per cubic yard.
4. Normal weight: 145 pounds per cubic foot.
5. Use air-entraining admixture in all concrete: provide not less than four (4) percent or more than eight (8) percent entrained air for concrete exposed to freezing and thawing, and from two (2) percent to four (4) percent for other concrete.
6. Calcium Chloride: Do not use calcium chloride in concrete, unless otherwise authorized in writing by ENGINEER. Do not use admixtures containing calcium chloride.
7. Slump Limits: At point of placement, not less than two (2) inches and not more than five (5) inches.

- B. Job-Site Mixing: Use drum type batch machine mixer, mixing not less than one and a half (1-1/2) minutes for one (1) cubic yard or smaller capacity. Increase mixing time at least fifteen (15) seconds for each additional cubic yard or fraction thereof.

- C. Ready-Mixed Concrete: ASTM C 94.

- D. Concrete Placement: Comply with ACI 304, placing concrete in a continuous operation within planned joints or sections. Do not begin placement until work of other trades affecting concrete is completed.

- E. Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping, so that concrete is worked around reinforcement and other embedded items and into all parts of forms.

- F. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement, and curing.

1. In cold weather comply with ACI 306.

2. In hot weather comply with ACI 305.

3.5 QUALITY OF CONCRETE WORK

- A. Make all concrete solid, compact and smooth, and free of laitance, cracks and cold joints.
- B. Cut out and properly replace to the extent ordered by ENGINEER, or repair to the satisfaction of ENGINEER, surfaces which contain cracks or voids, are unduly rough, or are in any way defective. Patches or plastering will not be acceptable.
- C. Repair, removal, and replacement of defective concrete as ordered by ENGINEER shall be at no additional cost to OWNER.

3.6 CURING

- A. Curing: Begin initial curing as soon as free water has disappeared from exposed surfaces. Keep continuously moist for not less than seventy-two (72) hours. Continue curing use of moisture-retaining cover or membrane-forming curing compound. Cure formed surfaces by moist curing until forms are removed. Provide protections as required to prevent damage to exposed concrete surfaces.

3.7 FINISHES

- A. Exposed to View Surfaces: Provide a smooth finish for exposed. Remove fins and projections, patch defective areas with cement grout, and rub smooth.

+ + END OF SECTION + +

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DIVISION 31 – EARTHWORK

SECTION 31 05 15	EARTHWORK
SECTION 31 05 16	AGGREGATES
SECTION 31 25 00	EROSION AND SEDIMENT CONTROL

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SECTION 31 05 15

EARTHWORK

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This Section includes requirements for excavation, placement, and compaction of structural fill, finish grading, proper survey control, continuous stormwater and groundwater management, and related items associated with manholes, vaults, pump station installation, utility trench backfill operations, and structural fill construction required for the subgrade, subbase, roads, channels, etc., as directed by the ENGINEER, and in accordance with the Contract Documents.
- B. The CONTRACTOR shall provide all labor, materials, and equipment necessary to maintain vehicular and pedestrian traffic throughout the project duration.

1.2 DEFINITIONS

- A. Definitions include:
 - 1. Common borrow, utility trench backfill, and structural fill materials are clean, inorganic, naturally occurring soils with suitable physical properties used for their respective intended purposes which are obtained and transported from an offsite borrow source provided by the CONTRACTOR.
 - 2. The geotechnical testing laboratory (GTL) is the CONTRACTOR'S independent soils testing laboratory, approved by the ENGINEER, which shall perform the required pre-construction and frequency testing specified herein on samples supplied by and at the expense of the CONTRACTOR.
 - 3. The CONTRACTOR's Quality Control (QC) ENGINEER is a qualified geotechnical engineer or engineering technician certified by an accredited association in the type of material to be tested or verified, and approved by the ENGINEER, who shall continuously monitor the earthwork operations discussed herein, including inspection of thin-lift fill/backfill construction at the expense of the CONTRACTOR. The QC ENGINEER shall submit to the ENGINEER daily QC Logs which accurately document the earthwork activities which were monitored and inspected as specified herein.

1.3 FIELD QUALITY ASSURANCE

A. Field Requirements

1. Placement and compaction of utility trench backfill and structural fill materials and performance of associated earthworks will be subject to continuous inspection by the CONTRACTOR's QC ENGINEER.
2. As the approved utility trench, backfill, and structural fill materials are placed and compacted, the QC ENGINEER shall continuously monitor the lift thickness and compacted condition of said materials to verify compliance with the requirements specified herein. The QC ENGINEER shall perform in-place field density tests of each compacted lift in accordance with the following approved methods:
 - a. ASTM D1556 (Density of Soil In-Place by the Sand Cone Method)
 - b. ASTM D3017 and D2922 (Moisture Content and Density of Soil and Soil-Aggregate in Place by Nuclear Methods).
3. Following the placement and compaction of each lift of utility trench backfill, or structural fill, said lift shall be tested to determine the in-place compacted dry density and moisture content before subsequent lifts are placed. For each placed lift, one field moisture-density test shall be performed by the QC ENGINEER for each 25 linear feet of utility trench backfill or for every 1,000 square feet of structural fill material placed and compacted. At least one field moisture-density test shall be performed for each lift of utility trench backfill/structural fill placed and compacted. The in-field moisture-density testing frequency shall increase if deemed necessary by the ENGINEER.
4. The CONTRACTOR shall provide all horizontal and vertical controls necessary for fill placement as well as associated grid layout and staking using benchmarks and monuments, if any, shown on the Drawings.

B. Material Testing for Offsite Borrow Sources

1. The CONTRACTOR shall request of the ENGINEER and arrange for an inspection of each proposed borrow source prior to the commencement of earthwork operations. During said inspection, the CONTRACTOR shall provide any equipment necessary to excavate test pits throughout the limits of the proposed source so as to provide the ENGINEER with a thorough inspection of the type(s) and uniformity of material(s) throughout the proposed source. Upon the ENGINEER's visual inspection of a proposed borrow source, but prior to acceptance and excavation of said materials, the CONTRACTOR is required to submit representative samples of the proposed materials to the qualified GTL, as defined in Section 1.2, for completion of the preconstruction tests outlined in Table 31 05 15-1. During, excavation or delivery of approved material,

construction frequency tests shall be performed as also outlined in Table 31 05 15-1.

TABLE 31 05 15-1
Utility Backfill and Structural Fill Testing Program

Laboratory Test	ASTM Test Method	No. of Pre-Construction Tests Per Proposed Borrow Material	Frequency of One Test per Volume Delivered to Site (cubic yards) for each Approved Borrow Material
Natural Moisture Content	D2216-80	3	500
Particle Size Analysis (sieve and hydrometer)	D421,422	3	500
Atterberg Limits	D423,424	3	500
Standard Proctor Compaction	D698	2	500

2. If clean, granular, cohesionless soils (i.e., minimal to zero fines) are selected by the CONTRACTOR for roadway construction, these materials may not exhibit the characteristic “bell-shaped” behavior typical of more moisture-sensitive soils when tested according to ASTM D-1557. In this instance, “Relative Density” (DR) shall be used to control the compaction of these soils. In this regard, the following laboratory tests shall be completed on the proposed fill soils:

- a. ASTM D4253: Maximum Index Density (KDmax) (of cohesionless, free-draining soils) using a vibratory table.
- b. ASTM D4254: Minimum Index Density (KDmin) (of cohesionless, free-draining soils) and calculation of relative density.

3. Subsequent to completion of these tests, the definition of “relative density” presented below shall be used to determine the minimum-required field dry density (Kdf) of the soil necessary to achieve a DR value of 75 percent:

$$D_R = \frac{\gamma_{Dmax} (\gamma_{Df} - \gamma_{Dmin})}{\gamma_{Df} (\gamma_{Dmax} - \gamma_{Dmin})}$$

4. All clean, granular cohesionless soil shall then be compacted to this minimum required field dry density value. The minimum and maximum index density tests shall be performed at the frequency specified for the Standard Proctor compaction test (ASTM D698) as required on Table 31 05 15-1.
5. The assigned number of preconstruction or construction frequency tests may be increased by the ENGINEER should the uniformity of the materials encountered significantly change throughout the limits of the borrow source. Additional geotechnical testing required by the ENGINEER based on the visual inspection of

the proposed source shall be performed by the GTL at the expense of the CONTRACTOR.

6. The CONTRACTOR shall submit to the ENGINEER certified test reports containing results of the required preconstruction laboratory testing program for the utility trench backfill and structural fill borrow source material. Only upon receiving written approval of the proposed borrow material, based upon results of the certified test reports, from the ENGINEER shall the CONTRACTOR commence the excavation or delivery of the approved materials for their intended purpose.

1.4 SUBMITTALS

Certified Test Reports: Submit certified test reports of preconstruction and construction frequency testing from the GTL for the ENGINEER'S review and approval in accordance with Section 01 33 00, Submittals, before delivery or use of proposed borrow materials.

PART 2 – PRODUCTS

2.1 UTILITY TRENCH BACKFILL, AND STRUCTURAL FILL MATERIAL

- A. Common borrow utility/trench backfill and structural fill materials used for earthworks construction shall meet the following requirements:
 1. Material shall be environmentally clean and free of refuse, debris, organic matter, frozen material, and miscellaneous or deleterious materials.
 2. Material classifies as SM, SP, and SM-SP according to the Unified Soil Classification System.
 3. Liquid limit shall not exceed 45 and plasticity index shall not exceed 30.
 4. Material shall not contain stones larger than 2 inches (utility trench backfill) or 4 inches (structural fill) in the greatest dimension.
 5. Material shall have a maximum dry density not less than 105 pounds per cubic foot as determined by ASTM D698.
- B. It is the CONTRACTOR'S responsibility to segregate unsuitable material from all borrow sources.
- C. The CONTRACTOR shall submit representative samples from each proposed borrow source to the GTL for the required laboratory tests as specified in this Specification at no additional cost to the OWNER. The use of soils that do not fall within these classifications must be approved for use by the ENGINEER. Acceptance of the material

from any particular borrow location shall not be construed as approval of the entire location but only insofar as the material continues to meet the specification requirements.

2.2 SOIL FOR ACCESS ROAD FROM OFFSITE SOURCE

All soils for roadway construction shall be "Select Borrow" in accordance with Maryland Department of Transportation (DOT) Standard Specification for Construction and Material Section 916.01, October 1993 Edition.

2.3 BEDDING FOR PIPE AND PIPE STRUCTURES

All bedding materials shall be environmentally clean and consist of sand or silty sand. Slag will not be permitted for use as bedding material.

2.4 GRADED AGGREGATE SUBBASE (G.A.S.B.)

Graded Aggregate Subbase shall be in accordance with Maryland DOT standard specifications for construction materials Section 901.01, October 1993 edition.

PART 3 – EXECUTION

3.1 EXCAVATION

- A. General: Excavation shall be carried out to the lines and grades indicated on the Drawings or as otherwise indicated by the ENGINEER. The CONTRACTOR shall utilize equipment necessary to excavate existing materials for the duration of construction. Design modifications shall be documented and presented in a written report and submitted to the ENGINEER for review.
- B. Excavation of Unsuitable Material
 - 1. The CONTRACTOR shall excavate existing unsuitable materials as indicated by the ENGINEER, and properly dispose of said materials at locations approved by the OWNER and ENGINEER. The excavation process shall continue until suitable bearing subsoils are encountered as determined by the ENGINEER.
 - 2. The unsuitable material stockpile shall be placed in accordance with Section 31 05 15, Earthwork. The completed unsuitable material stockpile shall be seeded and mulched as specified in Section 32 92 00, Lawns and Grasses.
- C. Unauthorized Excavation: Where unauthorized excavations are made below elevations or outside limits indicated on the Contract Drawings or specified by the ENGINEER, the CONTRACTOR shall restore the excavation(s) to proper elevations with approved fill materials placed and compacted using controlled thin-lift techniques as specified herein, and as directed by the ENGINEER, at no cost to the OWNER.

D. Sheeting, Shoring, and Bracing

1. Method, design, and adequacy of any required sheeting, shoring, and bracing shall meet the requirements of 29 Code of Federal Regulations Part 1926 and are the responsibility of the CONTRACTOR. All damage related to or caused by the excavation shall be repaired at the expense of the CONTRACTOR. The design and method of the sheeting, shoring, and bracing shall provide means for its removal as backfill progresses.
2. Provide sheeting and shoring as required to ensure safe working conditions, maintain required excavation dimensions for proper construction, and prevent accidents, cave-ins, and damage to adjacent structures, facilities, and surfaces. Sheeting, shoring, and bracing shall be placed so as not to interfere with the construction work and shall be entirely independent of all footings and structures.
3. Remove sheeting, shoring, bracing, and all wood forms, concurrently with backfilling operations. Such removal shall be accomplished in a manner that precludes settlement of the backfill, cave-in of the excavation sides, and prevents damage to adjacent surfaces. Voids left or caused by the removal shall be promptly filled.

E. Trench Excavation

1. Excavate trenches to the width and depth dimensions indicated on the Contract Drawings. Provide uniform, continuous support for pipe or structure on required bedding. In general, the trench bottom shall be excavated to conform with the shape and dimensions of the proposed pipe or structure. If the shape of the trench cannot be preserved or the trench varies from the shape of the structures, the space between the desired trench dimensions and the bottom of the excavation, as made, shall be filled with backfill. Allowance shall be made for the placement of bedding, where specified. Materials deemed unsuitable by the ENGINEER at the bottom of the trench shall be removed and replaced with compacted backfill. Depth and width of removal shall be as directed by the ENGINEER. Damage caused to existing facilities by the CONTRACTOR'S operations shall be repaired or replaced at no expense to the OWNER.
2. Unless otherwise authorized by the ENGINEER, trench excavation shall proceed no more than 100 feet in advance of the placement and compaction of backfill materials. The ENGINEER may require backfilling and subsequent re-excavation on trenches left open for an unreasonable amount of time in advance of pipe installation at no expense to the OWNER. Trenches left open overnight, or during periods when the CONTRACTOR'S forces are not present, shall be so protected or enclosed and marked so as to cause no danger to the public or others.
3. Sides of trenches in improved public ways and adjacent to the other utilities or structures shall be practically plumb. Where permitted by the ENGINEER, sides

of trenches in other areas may be sloped from a point 1 foot above the top of the pipe to grade. Such slopes shall be at no additional cost to the OWNER. Slopes shall be cut so as not to allow displacement of material or present a danger to personnel. Sides of trenches from a point 1 foot above the top of the pipe to the bottom of the trench shall be practically plumb. Pipe bell holes shall be excavated in the bottom of the trench wherever necessary to permit the proper assembling of joints.

3.2 STRUCTURAL FILL AND UTILITY TRENCH BACKFILL OPERATIONS

A. General

1. Excavations shall be backfilled with the excavated soils provided that said soils meet the requirements of structural fill and utility trench backfill material specified herein and are approved for use by the ENGINEER. Excavated soils may not be used as pipe bedding or utilized under any paved area.
2. Backfill around a structure or pipe shall be brought up evenly on all sides so that no unbalanced pressure will be imposed on the structure or pipe.
3. Do not place, spread, or compact acceptable fill material while it is frozen or thawing, or place upon frozen or thawing ground or during unfavorable weather conditions. When the work is interrupted by rain, fill operations shall not be resumed until field tests indicate that the moisture content and density of the fill are within the limits specified. A compacted layer that has been frozen shall be reworked, recompacted, and approved in accordance with the requirements specified herein after thawing before the next lift is placed thereon.
4. Thoroughly mix each lift before compaction to ensure uniform distribution of water content. Distribute rocks of permissible sizes throughout the fill material.

B. Placing of Structural Fill Material

1. Areas where structural fill is to be placed shall be free of root matter and topsoil. Following this activity, the area within the limits of fill placement shall be proof-rolled on-grade using a heavy-duty, smooth steel-drum roller with vibratory capability or other suitable compaction equipment. A minimum of four passes of the roller shall be completed over the entire area prepared for structural fill placement. Following completion of this activity, the entire area will be visually inspected and hand-probed by the ENGINEER. Should any loose or otherwise unstable surficial materials be detected by the visual inspection/hand-probing activities, these areas shall be recompacted using the roller or appropriate compaction equipment with as many passes as are necessary to densify these materials to the satisfaction of the ENGINEER. If these materials cannot be densified sufficiently by the additional proofrolling, they shall be undercut until stable materials are encountered. The resulting undercut subgrade shall then be proofrolled on-grade until sufficiently stable, as determined by the ENGINEER.

(If the undercut zones are of minimal area extent, hand-operated compaction equipment may be necessary to densify these areas.)

2. Where fills are placed on hillsides or slopes of three horizontal to one vertical (3:1) or flatter, the surface shall be scarified before placing fill. Place fill material on grades no steeper than 3:1 in uniform lifts, with each lift not exceeding 8 inches in uncompacted thickness. Spread each lift uniformly and evenly. Perform compaction using equipment and methods necessary to achieve the specified degree of compaction. Compact each layer to at least 95 percent of the maximum dry density as determined by the Standard Proctor compaction test (ASTM D698).
3. Before placement and compaction of a lift of compacted fill as described below on a slope steeper than 3:1, the existing slope at this lift location shall be “notched” as directed by the ENGINEER to provide effective interlocking of the existing soils with the newly placed fill. Approved structural fill materials should subsequently be placed at this lift location in thin horizontal (across slope) lifts, with each lift not exceeding a loose thickness of 8 inches. Each lift shall be compacted to at least 95 percent of the maximum dry density as determined by the Standard Proctor compaction test (ASTM D698). Each completed lift of compacted material shall be tested with an appropriate number of in-place density tests as specified in Subsection 1.3.A. If sufficient compaction has not been achieved on any portion of a completed lift, the CONTRACTOR shall recompact this lift until sufficient in-place dry density is achieved at no additional cost to the OWNER.
4. Prior to commencing compaction, fills shall be brought to within 1 to 2 percent (clayey soils) and 3 to 4 percent (sandy soils) of their specified optimum moisture content per ASTM D698 by either aerating the material if it is too wet or spraying the material with water if it is too dry. Field testing of compacted lifts shall be performed according to Subsection 1.3.A. If clean, granular, cohesionless soils are used, the approved cohesionless fill materials shall subsequently be placed in thin horizontal lifts, with each lift not exceeding a loose thickness of 8 inches. Each lift shall be compacted to at least the field dry density (KDf) value necessary to achieve a “Relative Density” (DR) of at least 75 percent.
5. Continue filling operation until the fill has been brought up to the finished slopes and grades shown on the Contract Drawings, making proper allowances for thickness of subbase, topsoil, pavement slabs, etc.
6. Place fill so that the surface will be sloped to drain at all times so as to prevent excessive moisture accumulation from rain water.

C. Placing Utility Trench Backfill

1. Placing and compacting utility trench backfill shall conform to requirements specified herein for structural fills except for the following:
 - a. Place and compact bedding in accordance with the Contract Drawings. Place and compact granular bedding to a minimum thickness of 6 inches under precast and cast-in-place structures.
 - b. For polyvinyl chloride and reinforced concrete pipe, granular bedding shall be placed and compacted under and around the pipe to 1 foot above the pipe.
 - c. For all other pipes, compact the backfill a minimum of 1 foot above the top of pipe with hand-operated equipment in maximum 6-inch loose lifts. In lieu of this, the CONTRACTOR may elect to continue the granular bedding to 1 foot above the top of the pipe.
 - d. All trench backfill shall be placed in maximum 6-inch loose lifts.
 - e. Utilize such compaction equipment that will not damage pipe and pipe joints. Pipe and pipe joints damaged by the CONTRACTOR'S operations shall be removed and replaced at no cost to the OWNER.

3.3 FINISH GRADING

- A. Perform grading operations so that the excavation will be well-drained at all times. Maintain drainage ditches and keep them open and free from soil, debris, and leaves until final acceptance of the work. Finish all grading on neat, regular lines conforming to the sections, lines, grades, and contours shown on the Contract Drawings, or if not shown, in accordance with the criteria set forth herein. Perform the grading work in proper sequence with all other associated operations.
- B. Grade all areas disturbed during the work of the Contract. At trench locations, excavated and fill areas, and adjacent transition areas, grade so that finished surfaces are at the proposed grades. The acceptable tolerance shall be +0 ft, -0.1 ft, from required grade.

3.4 MATERIAL STORAGE

Haul to and deposit excavated unsuitable material as described in Subsection 3.1.B. Stockpile any topsoil in the location shown on the Contract Drawings and in a manner that will not erode and cause sedimentation.

3.5 DEWATERING AND DRAINAGE

- A. The CONTRACTOR shall anticipate encountering groundwater, perched water, and runoff during excavation and subsequent fill placement activities and during the installation of corner sumps. The presence or absence of water shall not entitle the CONTRACTOR to additional compensation.
- B. When water is encountered in excavations, provide and maintain a dewatering system(s) of sufficient capacity to remove water while the excavation is advanced and backfilled. Methods of dewatering the excavations shall be at the CONTRACTOR'S discretion. Continuous investigations and checks shall be made by the CONTRACTOR to ensure that the dewatering system employed is functioning properly and is not causing damage or settlement to adjacent surfaces or structures. The system shall be modified as required, and damage caused by the system shall be the responsibility of the CONTRACTOR to repair or restore.
- C. Provide necessary temporary surface drainage and keep same operating to the satisfaction of the ENGINEER until permanent drainage or finish grading has been completed. Do not allow damming or ponding of water in runoff channels.

++ END OF SECTION ++

SECTION 31 05 16

AGGREGATES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope of Work

1. The work includes, but is not limited to, furnishing all materials, tools, equipment, labor, and supervision for aggregates used. Materials specified in this Specification Section shall be installed as shown on the Contract Drawings and as noted in Table 31 05 16-1.

TABLE 31 05 16-1
Location of Specified Materials

Specified Material	Location
Granular Fill	Pipe Bedding, Structure Bedding
Crusher Run (CR-6)	Roadway base
Riprap – R4	Gabion Baskets
No. 57 Aggregate	Stormwater Facilities
Pea Gravel	Stormwater Facilities

B. Related Work Specified Elsewhere

1. Section 01 70 00: Execution and Closeout Requirements
2. Section 02 80 00: Restoration
3. Section 31 05 15: Earthwork.

1.2 REFERENCES

2017 Maryland Department of Transportation Standard Specifications for Construction Materials.

1.3 SUBMITTALS

1.3.1 Delivery Tickets

- A. When requested by the ENGINEER, the CONTRACTOR shall submit a delivery ticket for offsite materials or a load count for onsite materials. The delivery ticket for offsite materials shall include, for each load of approved material:

1. Name and location of supplier
2. Type and amount of material delivered.

1.3.2 Certified Test Reports

- A. The CONTRACTOR shall submit to the ENGINEER required certified reports for each proposed borrow material. If the test results show that the material is not consistent in its physical properties, the ENGINEER will require the CONTRACTOR to retest the material or to identify another borrow material. The CONTRACTOR shall submit the reports before delivery of any materials to the site. Borrow material exhibiting required physical properties will be approved by the ENGINEER.
- B. The CONTRACTOR shall also submit to the ENGINEER certified reports, prepared by the Geotechnical Testing Laboratory (GTL), which present the results of construction frequency and field permeability tests. These reports shall be submitted within 14 days of the date that the respective samples were collected in the field.
- C. Certified Test Reports are required for material sourced from offsite and onsite locations.

1.4 QUALITY ASSURANCE

1.4.1 General

- A. The CONTRACTOR shall test materials as set forth in the applicable reference specifications and as required herein. Unless otherwise indicated, all testing shall be performed by the GTL, approved by the ENGINEER, with samples furnished by and at the expense of the CONTRACTOR. Testing is required of both onsite and offsite materials used to meet the Contract Specifications.

1.4.2 Pre-Construction Testing

- A. Prior to delivery of any aggregate material, the CONTRACTOR shall notify the ENGINEER in writing of the location of proposed aggregate borrow source(s). The ENGINEER will visit and inspect each proposed borrow source. During said inspection, the CONTRACTOR shall provide any equipment necessary to excavate test pits throughout the limits of the proposed source to assure the ENGINEER of the material's uniformity. Upon visual acceptance by the ENGINEER, material from each borrow source shall be obtained by the CONTRACTOR and transported to the GTL to confirm that the proposed materials are in conformance with these Specifications. The laboratory testing program shall be performed by the GTL at the expense of the CONTRACTOR, as listed in Table 31 05 16-1. In addition, testing shall be performed by the CONTRACTOR as directed by the ENGINEER when visual observations by the ENGINEER of construction performance indicate a potential problem or significant deviation from required material properties.
- B. Field Density and Thickness Testing: The ENGINEER may examine each delivered load of material prior to placement. Any material containing organics, trash, or excessive fines or moisture, at the discretion of the ENGINEER, will be classified as unsuitable and

shall not be used for construction. The CONTRACTOR shall remove and properly dispose of all rejected material at no additional cost to the OWNER.

- C. The CONTRACTOR shall measure placement thickness periodically throughout each day of construction to verify that the design thickness required on the Contract Drawings is met. The CONTRACTOR shall maintain a written log of these field measurements and their locations and provide them to the ENGINEER on a daily basis and to the OWNER at project close-out. The ENGINEER may make independent measurements of thicknesses, as necessary.
- D. The ENGINEER may inspect and test any component of the aggregate placement at any time. Unless otherwise indicated, testing shall be performed by the GTL with materials furnished by the CONTRACTOR at the expense of the CONTRACTOR.

1.5 PRODUCT DELIVERY, HANDLING, AND STORAGE

- A. Rock materials from onsite crushing operations shall be stored in the Contractor Staging Area designated on Contract Drawings, for future use by the OWNER, in accordance with Specification Section 31 05 15, Earthwork. Screened and blasted rock stored in this location shall not be mixed with backfill or embankment materials.

PART 2 – PRODUCTS

2.1 PIPE AND STRUCTURE GRANULAR FILL BEDDING

- A. The CONTRACTOR shall use clean well-graded mechanically washed, No. 57 stone, free from organic matter, roots, debris, vegetation, wood, sod, frozen soil lumps, and other deleterious materials, that conforms to Maryland State Highway Administration Specifications.
- B. Material shall be free of limestone and have less than 2 percent fines.

2.2 CRUSHER RUN

- A. Crusher run material shall conform to the gradations for CR-6 in accordance with the Maryland State Highway Administrations Specification for Aggregates and the physical property requirement for CR-6.

2.3 Riprap - R4

- A. 100% of the stone shall be smaller than 12” in diameter, 15% to 50% shall be smaller than 6” in diameter, and 0% to 15% be smaller than 3” in diameter.
- B. The thickness of the rip-rap will be no less than fourteen (14) inches when placed in ground.

2.5 No. 57 Aggregate

- A. No. 57 Aggregate that is to be installed within the stormwater facilities shall meet AASHTO M-43.

2.5 Pea Gravel

Washed clean pea gravel ASTM-D-448 No. 8 or No. 9 (1/8" to 3/8").

PART 3 – EXECUTION

3.1 INSTALLATION OF AGGREGATE

- A. Installation and type of aggregate shall be in accordance with the Contract Drawings.
- B. Installation of crusher run for roadway shall be in accordance with the Contract Drawings and Specification Section 02 80 00, Restoration.

3.2 AS-BUILT SURVEY

- A. Survey shall be in accordance with Specification Section 01 70 00, Execution and Closeout Requirements.

++ END OF SECTION ++

SECTION 31 25 00

EROSION AND SEDIMENT CONTROL

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The work covered by this Section consists of furnishing all materials, equipment, tools, and labor to construct erosion and sediment control systems.
- B. The work to be performed includes, but is not limited to silt fence, stabilized construction entrances, and site surface drainage conveyances as specified herein and as shown on the Contract Drawings.
- C. All erosion and sediment control devices shall be inspected daily by the CONTRACTOR and maintained continuously throughout the duration of the project by the CONTRACTOR. The CONTRACTOR is required to provide the ENGINEER with a Daily Inspection Form for Erosion and Sediment Controls that documents the condition of the erosion and sediment control devices and documents repairs and maintenance that are completed that day. The CONTRACTOR is required to indicate on the Daily Inspection Form for Erosion and Sediment Controls any observations of erosion and sediment controls that require maintenance, repair, or replacement, as well as indicate the CONTRACTOR'S recommendations for erosion and sediment controls that require maintenance, repair, or replacement. The OWNER may conduct independent periodic inspections. This process will enable the CONTRACTOR to obtain approval from the ENGINEER prior to conducting any required maintenance, repairs, or replacements of erosion and sediment controls. The CONTRACTOR will not be compensated for maintenance, repairs, or replacement of erosion and sediment controls unless Daily Inspection Forms for Erosion and Sediment Controls are provided to the ENGINEER and the ENGINEER provides prior authorization of such maintenance, repairs, or replacement of erosion and sediment controls.
- D. The CONTRACTOR shall water seeded areas immediately upon placement of both temporary and permanent seeding. The CONTRACTOR shall provide sufficient watering of grass throughout the duration of the project.

1.2 REFERENCES

- A. Maryland Standards and Specifications for Soil Erosion and Sediment Control, 2011 edition.

1.3 QUALITY ASSURANCE

- A. The CONTRACTOR shall provide the necessary straw bales, silt fence, and/or other temporary erosion control measures to contain all of the CONTRACTOR'S work activities, and as shown on the Contract Drawings or as directed by the ENGINEER.
- B. Erosion control measures as shown on the Contract Drawings shall be established at the beginning of construction and maintained during the entire period of construction. Onsite areas that are subject to severe erosion, and offsite areas that are especially vulnerable to damage from erosion and/or sedimentation are to be identified and receive special attention in a manner approved by the ENGINEER.
- C. All land-disturbing activities are to be planned and conducted to minimize the size of the area to be exposed at any one time and the length of exposure. In any case, the area to be exposed at any one time shall not be greater than the construction phase in which work is being conducted, as delineated on the Contract Drawings.
- D. Surface water runoff originating upgrade of exposed areas shall be controlled to reduce erosion and sediment loss during the period of exposure.
- E. When the increase in peak velocity of stormwater runoff resulting from a land-disturbing activity is sufficient to cause accelerated erosion of the receiving stream, the CONTRACTOR shall provide measures to control both the velocity and the rate of release so as to minimize accelerated erosion and increased sedimentation of the stream. Such measures shall be approved by the ENGINEER. All land-disturbing activities are to be planned and conducted to prevent offsite sedimentation damage.
- F. Vegetative Stabilization: Seeding, both temporary and permanent, shall be in accordance with the specifications on the Erosion and Sediment Control Drawings and Maryland Department of the Environment specifications.
- G. Erosion and sediment control systems shall be maintained in functional and satisfactory condition by the CONTRACTOR until all the disturbed areas are stabilized and approval is given by the ENGINEER.
- H. Erosion and sediment control systems shall only be removed by the CONTRACTOR when the site has been fully stabilized and approved by the ENGINEER.

1.4 SUBMITTALS

- A. The CONTRACTOR shall submit to the ENGINEER the following items in accordance with Section 01 33 00, Submittals, or other related sections herein these special provisions:
 - 1. Product data and source for all materials to be used 10 calendar days prior to placement.

2. Submit daily/rain event checklists, Erosion and Sediment Control inspection forms, and Daily Construction Reports.

PART 2 – PRODUCTS

2.1 EROSION AND SEDIMENT CONTROL MATERIALS

- A. Silt Fence: The CONTRACTOR shall supply silt fence to control surface water runoff and sediment. Silt fence material shall meet or exceed the criteria specified on the Contract Drawings. The CONTRACTOR shall submit manufacturer's product data to the ENGINEER for approval.
- B. Stabilized Construction Entrances: Stone for stabilized construction entrances shall meet the requirements of AASHTO M 43, No. 2.

PART 3 – EXECUTION

3.1 TRANSPORTATION, HANDLING, AND STORAGE

- A. Materials shall be handled and stored in such a manner as to prevent damage to the material. Materials shall not be dropped or dragged over the ground. Any materials damage shall be replaced at no expense to the OWNER.

3.2 EROSION AND SEDIMENT CONTROL STRUCTURES

- A. Silt Fence
 1. Installation: The CONTRACTOR shall install silt fence in accordance with specifications and installation instructions provided by the manufacturer or on the Contract Drawings, or as directed by the ENGINEER. The proposed silt fence shall be staked out and approved by the ENGINEER prior to installation. Authority of precedence shall be as follows: ENGINEER'S direction, Contract Drawings, Specifications, and manufacturer's installation instructions.
 2. Maintenance: Silt fencing shall be inspected daily and maintained continuously throughout the duration of the project. The CONTRACTOR is required to provide immediate replacement of tears in the fabric, strengthening of posts where movement is observed, and cleaning of excessive silt accumulation. Fabric torn shall be replaced without any delay. Silt shall be removed when it has accumulated to a level that is 20 percent of the height of the silt fence, or approximately 3 inches high from the ground surface. Silt shall be removed, hauled, and disposed of offsite.

3. The CONTRACTOR shall use portable sediment tank(s) or dirt bag(s) while dewatering the storage area behind the silt fence. The CONTRACTOR may use other methods for dewatering as approved by the ENGINEER.
 4. Removal: Upon full stabilization of the areas the ENGINEER may require the CONTRACTOR to remove certain lengths of the silt fence. In such cases the CONTRACTOR shall remove all materials and dispose of them in an appropriate manner. All the disturbed areas by this operation shall be stabilized satisfactorily.
 5. All work shall meet with the ENGINEER'S approval.
- B. Temporary erosion control measures will be used to correct conditions that develop during construction that were not foreseen during design stage, that are needed prior to installation of permanent control features or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project. The ENGINEER will limit the area of clearing and grubbing, and capping operations in progress, commensurate with the CONTRACTOR'S capability and progress in keeping with the finish grading, mulching, seeding, and other such permanent control measures current in accordance with the accepted schedule.
1. In the event that temporary erosion control measures are required due to the negligence, carelessness, or failure of the CONTRACTOR to install permanent controls as a part of the work as scheduled, and ordered by the ENGINEER for these reasons, such work shall be performed by the CONTRACTOR at the CONTRACTOR'S own expense.
 2. The erosion control features installed by the CONTRACTOR shall be acceptably maintained by the CONTRACTOR during the construction period.
- C. Permanent seeding shall be done in accordance with the requirements of the Specifications provided in the Contract Drawings and Maryland Department of the Environment requirements. The CONTRACTOR shall water seeded areas immediately upon placement of permanent seeding. The CONTRACTOR shall provide sufficient watering of grass throughout the duration of the project.
1. The CONTRACTOR shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the ENGINEER. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The CONTRACTOR shall mow and water as directed, and otherwise maintain seeded areas in satisfactory condition until final inspection and acceptance of the work. It will be required that the CONTRACTOR establishes a good stand of grass of uniform color and density to the satisfaction of the ENGINEER. If at the time when the Contract has been otherwise completed it is not possible to make an adequate determination of the color, density, and uniformity of such stand of grass, payment for the unaccepted

portions of the areas will be withheld until such time as the above requirements have been met.

- D. Removal and Disposal of Sediment and/or Debris: The CONTRACTOR shall remove, upon direction by the ENGINEER, all accumulated sediment and/or debris that has accumulated behind or within any of the erosion and sediment control devices. The CONTRACTOR shall dispose of offsite.
- E. The CONTRACTOR shall inspect all erosion and sediment control devices daily and immediately following all precipitation events and submit to the ENGINEER the following workday written documentation that identifies any erosion and sediment control device that is in need of repair or in which sediment or debris has accumulated.

++ END OF SECTION ++

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DIVISION 32 – EXTERIOR IMPROVEMENTS

SECTION 32 92 00 LAWNS AND GRASSES

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SECTION 32 92 00

LAWNS AND GRASSES

PART 1 – GENERAL

1.1 DESCRIPTION

This section includes requirements for seeding and mulching as required for restoration and restabilization of any and all disturbed areas, stockpiles, and as directed by the ENGINEER, in accordance with the Contract Documents.

1.2 SUBMITTALS

- A. Submit certificates of compliance before delivery of materials as specified in Section 01 33 00, Submittals, for the following items:
 - 1. Seed
 - 2. Sod
 - 3. Fertilizer
 - 4. Lime
 - 5. Mulch.

PART 2 – PRODUCTS

2.1 TOPSOIL

Existing topsoil which is stripped from the Ocean Pines Pump Station “B” area may be stockpiled for reuse.

2.2 SEED

- A. Unless otherwise specified herein, seed shall be certified by the Maryland Department of Agriculture and shall conform to requirements of Maryland Seed Law and Regulations.
- B. Provide the following for all areas:
 - 1. Mix
 - a. SHA Mix No. 1 applied at a rate of 2 pounds per 1,000 square feet
 - b. Sow mixture between 3 March and 1 May and between 1 August and 31 October.

2.3 FERTILIZER

- A. The CONTRACTOR will submit soil samples to an approved soils testing laboratory for fertilizer recommendations. Recommendations shall be submitted to and approved by the ENGINEER before implementation.
- B. Fertilizer shall be uniform in composition, free flowing, and delivered to the site fully labeled according to applicable state fertilizer laws and shall bear the name, tradename or trademark, and warranty of the producer.

2.4 LIME

Lime shall be ground limestone containing at least 50 percent total oxides, calcium oxide plus magnesium oxide. Limestone shall be ground to fineness such that at least 50 percent will pass through a 100-mesh sieve and 98 percent will pass through a 20-mesh sieve.

2.5 MULCH

- A. Mulch for protection of all seeding shall conform to the following requirements:
 - 1. Straw shall be clean, weed free, unrotted, applied at a rate of not less than 70 to 90 pounds per 1,000 square feet, 1.5 to 2.0 tons per acre, and shall be anchored with one of the following methods: mulching anchoring tool for flat slopes, mulch nettings, cut back and emulsified asphalt applied 5 gallons per 1,000 square feet, Curasol AH applied 5 gallons per 1,000 square feet, Petroset applied per manufacturer's recommendations, RMH Plus Tackifier applied per manufacturer's recommendations, or other equivalent binding solutions. Increase application rate on slopes 8 feet or more high as recommended by the manufacturer.
 - 2. Straw erosion control blanket shall be placed in all channel beds that are grass lined, as shown on the Contract Drawings. Erosion control blankets shall be Type SC150 as manufactured by North American Green, Evansville, Indiana, or equal. Also, all slopes greater than or equal to three horizontal to one vertical shall have Type SC150 erosion blanket or equal.
 - 3. Wood chips, coverage to be 1.5 inches deep.
 - 4. Mulch utilized as temporary protection and stabilization shall conform to the above materials requirements. Rate of application shall be directed by the ENGINEER. Stone mulch will be permitted at the option of the CONTRACTOR.

PART 3 – EXECUTION

3.1 PERMANENT SEEDING

- A. Place 4 inches of topsoil on all areas not receiving asphalt pavement, crushed stone, or designated as access roads. Harrow, disc, or otherwise loosen subsoil to a depth of 4 inches.
- B. Remove objectionable material such as stones, 2 inches or larger, clods, brush, roots, and trash from the top 4 inches of soil.
- C. Apply fertilizer and lime at the rates specified herein. Thoroughly mix into the top 4 inches. Scarify the area and rake until the surface is leveled to provide a maximum of 2 inches in variation, and the soil is friable and a uniform fine texture.
- D. Immediately prior to seeding apply additional fertilizer at the rates specified herein, and work into the top 2 inches of the soil.
- E. Apply seed mixture uniformly with mechanical power-driven seeders, mechanical cyclone hand seeders, or hydroseeding equipment. Slurry for the hydroseeder may contain seed and fertilizer only. Disc seed 1 inch into soil in drainage ditch areas. Apply jute matting to areas shown on the Contract Drawings. Do not rake, roll, or drag the seedbed in all other areas if a hydroseeder is used.

3.2 TIME RESTRICTIONS

Apply mulch at the rates specified herein, to all areas.

3.3 TIME RESTRICTIONS

- A. When permanent seeding is specified or directed and seeding is not allowed because of time restrictions specified, utilize one or more of the following methods to prevent erosion and sedimentation until such time as permanent seeding or sodding is allowed:
 - 1. Place and anchor straw mulch or wood chips.
 - 2. Apply temporary seeding.
 - 3. Prepare soil as for permanent seeding and then mulch as specified; overseed during next seasonal seeding period.
 - 4. Provide other erosion control measures acceptable to the ENGINEER.
- B. Remove straw or wood chips used as temporary mulch or work into subsoil at a minimum depth of 6 inches prior to initiation of permanent seeding application.

3.4 MAINTENANCE OF SEEDED OR SODDED AREAS

- A. Maintain seeded areas until accepted in writing by the ENGINEER.
- B. Water seeded, sodded, and tree planting areas as necessary to maintain adequate moisture in the upper 4 inches of soil and keep grass mowed to a height of 2 to 3 inches. Do not remove more than one-third of the grass leaf during initial mowing.
- C. Inspect areas for failures and necessary repairs due to poor vegetative growth, traffic, equipment damage, weather damage, or erosion.
- D. Provide replacements during the specified planting seasons for areas where repairs are deemed to be necessary by the Inspector at no cost to the OWNER. This shall include repairs and replacements due to erosional or weather-related damage.
- E. If stand of turf is inadequate as determined by the ENGINEER, overseed and fertilize using half of the rates originally applied, or resod. If stand is more than 60 percent damaged, as determined by the ENGINEER, reestablish following original lime, fertilizer, seed bed preparation, and seeding recommendations.

++ END OF SECTION ++

DIVISION 33 – UTILITIES

SECTION 33 31 00 PIPING AND APPURTENANCES

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SECTION 33 31 00

PIPING AND APPURTENANCES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope of Work

1. This section includes requirements for supply, delivery, installation and testing of piping materials and appurtenances as specified in the Contract Documents. Materials noted in this Specification shall be installed as shown on the Contract Drawings and as noted in Table 33 31 00-1.

TABLE 33 31 00-1
Location of Specified Materials

First Group					
SERVICE	PIPE		FITTINGS		TYPE JOINTS
	<u>Material</u>	<u>Spec. Ref.</u>	<u>Material</u>	<u>Spec. Ref.</u>	
Watermain	PVC	ASTM F1483 / AWWA C909	Ductile Iron	ANSI/AWWA C151/A21.51	Gasketed
Storm Drain Piping	Elliptical Reinforced Concrete Pipe	ASTM C-76	N/A	N/A	Gasketed
	Corrugated High-Density Polyethylene (HDPE), smooth interior, annular exterior corrugations	AASHTO M252 Type S for 4-inch through 10-inch pipe; AASHTO M294 Type S or ASTM F2306 for 12-inch through 60-inch pipe	High- Density Polyethylene (HDPE)	AASHTO M252, AASHTO M294, or ASTM F2306	Watertight bell-and- spigot; Gasketed

2. The work includes furnishing all materials, supplies, supervision, equipment, and construction machinery that may be necessary to construct the project as described in these Specifications.
3. The CONTRACTOR is responsible for verifying the horizontal and vertical location of all existing utilities located within the project limits.

1.2 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced too in the text by basic designation only.

1. ASTM C443: Joints for Concrete Pipe and Manholes, using Rubber Gaskets.
2. ASTM C-76: Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
3. ASTM D2321: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
4. ASTM D3350: Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
5. ASTM F2306: Standard Specification for Annular Corrugated Profile-Wall Polyethylene Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications.
6. ASTM F2648: Standard Specification for Annular Corrugated Profile-Wall Polyethylene Pipe and Fittings for Land Drainage Applications.
7. AASHTO M252: Standard Specification for Corrugated Polyethylene Drainage Pipe.
8. AASHTO M294: Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter.
9. ASTM D3212: Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
10. ASTM F477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
11. ASTM F2487: Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Corrugated High Density Polyethylene and Polypropylene Pipelines.
12. ASTM F1483: Standard Specification for Oriented Poly(Vinyl Chloride), PVCO, Pressure Pipe.
13. ASTM D3139: Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
14. ANSI/AWWA C104/A21.4: Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.

15. ANSI/AWWA C111/A21.11: Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
16. ANSI/AWWA C151/A21.51: Ductile-Iron Pipe, Centrifugally Cast.
17. ANSI/AWWA C153/A21.53: Ductile-Iron Compact Fittings.
18. AWWA C515: Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service.
19. AWWA C550: Protective Interior Coatings for Valves and Hydrants.
20. AWWA C909: Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe, 4 In. Through 24 In. (100 mm Through 600 mm), for Water, Wastewater, and Reclaimed Water Service.
21. AASHTO M 198: Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
22. ASTM A193: Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
23. ASTM A194: Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.

1.3 SUBMITTALS

1.3.1 Certificate of Compliance

- A. The CONTRACTOR shall submit to the ENGINEER Certificates of Compliance before delivery of materials covered under this Section. Certificates shall include a copy of the manufacturer's certified test reports; job location; the CONTRACTOR'S name; types, classes, strengths, and applicable standards of pipe; pipe manufacturer's name; and, for corrugated HDPE storm drain pipe, pipe type, fitting type, joint type, and joint performance.
- B. Materials shall not be delivered to the site until approved by the ENGINEER.

1.3.2 Certified Test Reports

- A. Certified test reports within the requirements of standards and testing methods specified herein shall be submitted to the ENGINEER for approval prior to material delivery. The pipe manufacturer and CONTRACTOR must satisfy the ENGINEER that the material offered to be furnished and installed will meet the requirements set forth in these

Specifications. The CONTRACTOR shall transmit to the ENGINEER all information provided by the manufacturer or supplier prior to approval for delivery of any such material.

1.3.3 Packing List

- A. A packing list or invoice shall accompany every shipment and shall contain the following information: CONTRACTOR'S name, kind and class of pipe, length, and other pertinent information.

1.4 QUALITY ASSURANCE

- A. Pipe shall be tested prior to shipment to ensure that the physical properties are in accordance with this Specification. Copies of the manufacturer's quality assurance (QA) testing shall be submitted to the ENGINEER.
 - 1. To minimize the number of joints, only standard manufacturer's length of pipe shall be furnished and installed for all mains unless otherwise indicated on the Plans, or as approved by the OWNER.

1.5 DELIVERY, HANDLING, AND STORAGE

- A. Delivery of pipe and related materials shall be coordinated with installation of the materials. Materials shall be unloaded with proper equipment and shall be properly secured. They shall be stored outside of traffic and work areas in a reasonably level, well-drained area away from brush and poison oak or ivy. Individual pieces or bundles shall be stored with safe walking space and clearance between them to allow full view for inspection. Other materials shall not be placed over or against the stored pipe. Pipe shall be stored on a flat surface so that the barrel of the pipe is evenly supported and not piled more than 4 feet high. Bundles and containers shall not be stacked on one another.
- B. Pipe, fittings, and appurtenances shall be unloaded and handled with crane, backhoe, or other equipment of adequate capacity with an appropriate sling to protect the materials from damage. Materials shall be handled in a manner that ensures delivery to installation location in sound, undamaged conditions. Pipe shall be carried to placement location, not dragged.
- C. If damage occurs and is deemed repairable, it shall be repaired as directed by the ENGINEER in accordance with approved manufacturer's recommendations. If damage is not repairable in the opinion of the ENGINEER, such items will be rejected and shall be removed and replaced at the CONTRACTOR'S expense.

PART 2 – PRODUCTS

2.1 PIPE AND FITTINGS

- A. Pipe between structures or between structure and terminus shall be of the same size and material and shall be furnished by the same manufacturer. Each pipe length and fitting shall be clearly marked with the manufacturer's name or trademark, specification designation, and pipe class.

2.1.1 Polyvinyl Chloride (PVC) Pipe

- A. Polyvinyl chloride pipe shall equal or exceed the requirements of ASTM F1483 and AWWA C909. Pipe shall be manufactured in standard lengths not exceeding 20 feet. Pipe shall have outside diameters equivalent to cast-iron pipe (IPS). Pipe shall be rated for a working pressure of at least 150 psi. Pipe shall have integral bell or plain end design and shall be connected by push-on method using elastomeric O-ring gasketed joints meeting ASTM D3139 and ASTM F477. Pipe ends shall be beveled.
- B. Polyvinyl chloride pipe shall be delivered and stockpiled in unit pallets, and stored on a flat surface. No stacking of pallets above 5 feet in height will be allowed. If pipe is stockpiled for more than 30 days prior to installation in the trench, it must be suitably covered with reflective materials to protect the pipe from ultra-violet rays emanating from sunlight. Do not use plastic sheets. Allow for air circulation under covering.
- C. Cracked, crazed or deformed sections of pipe will be unacceptable and will not be permitted for installation. Bowed section of pipe will be unacceptable and installation of pipe which has bowed, whether or not the bow has been corrected, will not be permitted for installation.

2.1.2 Concrete Pipe

- A. Concrete pipe and fittings shall be furnished in accordance with ASTM Designation C-76, reinforced concrete culvert storm drain and sewer pipe.
- B. Pipe shall be manufactured without lifting holes and shall be handled at all times by means of slings or other methods approved prior to the start on construction.
- C. Pipe manufactured shall meet the applicable strength requirements contained in ASTM designation C-76, reinforced concrete culvert, stormdrain, and sewer pipe. Minimum circumferential reinforcement shall be as prescribed in Class III. Where depth of cover is less than 2 feet, Class IV, wall A pipe shall be used. Where depth of cover is less than 15 inches Class IV, wall B pipe shall be used. In roadways, only Class IV pipe will be allowed.

2.1.3 Corrugated High-Density Polyethylene (HDPE) Storm Drain Pipe

- A. Corrugated HDPE storm drain pipe shall be ADS N-12 WT IB pipe, per AASHTO, or approved equal.
- B. Pipe shall be double-wall corrugated HDPE pipe with a smooth interior and annular exterior corrugations.
- C. Pipe shall conform to the following:
 - 1. 4-inch through 10-inch diameter pipe shall conform to AASHTO M252, Type S.
 - 2. 12-inch through 60-inch diameter pipe shall conform to AASHTO M294, Type S, or ASTM F2306.
- D. Manning's "n" value for hydraulic design shall be 0.012.
- E. Pipe shall be joined using gasketed bell-and-spigot joints meeting the requirements of AASHTO M252, AASHTO M294, or ASTM F2306, as applicable. Joints shall be watertight according to ASTM D3212. Gaskets shall meet ASTM F477, shall be installed by the pipe manufacturer, and shall be covered with a removable protective wrap to ensure the gasket is free from debris prior to installation. A joint lubricant available from the pipe manufacturer shall be used on the gasket and bell during assembly. Pipe diameters 12 inches through 60 inches shall have an exterior bell wrap installed by the manufacturer.
- F. Material for pipe production shall be high-density polyethylene conforming to ASTM D3350. Material shall meet the minimum requirements of cell classification 424420C for 4-inch through 10-inch diameters and 435400C for 12-inch through 60-inch diameters, except that carbon black content shall not exceed 4 percent.
- G. For 12-inch through 60-inch pipe, pipe material shall comply with the notched constant ligament-stress test as specified in AASHTO M294 and ASTM F2306, as applicable.
- H. The Contractor shall verify that pipe, fittings, joints, and installation requirements are compatible with the indicated application, cover, loading, hydraulic design, and site conditions.

2.1.4 Ductile Iron Fittings for PVC Pipe

- A. Fittings used with PVC pipe shall be ductile iron, within external standard asphaltic coating approximately 1 mil thick, internal cement lining in accordance with latest revision of ANSI/AWWA C104/A21.4, and be of mechanical joint type with a 350 psi pressure rating conforming to ANSI/AWWA C153/A21.53 and C111/A21.11. Wall thickness shall be equal to Class 56 ductile iron pipe.

- B. The Contractor shall provide all necessary adaptors for connecting PVC pipe to cast iron fittings and valves or other pipelines. Adaptors shall be as recommended by the pipe manufacturer. Adaptors shall be rated for a working pressure of 200 psi.
- C. Restrained joints shall be Mega-Lug.

2.1.5 High-Density Polyethylene (HDPE) Fittings

- A. Fittings for corrugated HDPE storm drain pipe shall conform to AASHTO M252, AASHTO M294, or ASTM F2306, as applicable.
- B. Fittings shall be compatible with the pipe, joint type, joint performance, and installation requirements.
- C. Fitting connections for watertight corrugated HDPE storm drain pipe shall utilize bell-and-spigot connections with gaskets meeting ASTM F477 and shall meet the watertight joint performance requirements of ASTM D3212.

2.1.6 Gate Valves & Boxes

- A. Gate valves shall be resilient seat type, in accordance with AWWA C515. Valves shall have a non-rising stem (NRS) with buried service operator. Valve bodies and bonnets shall be ductile iron epoxy coated on the inside per AWWA C550.
- B. Stem and wedge nuts shall be bronze. Stems shall be sealed by at least two O-rings. Seals shall be replaceable with the valve fully open and while subject to the rated pressure.
- C. Wedge shall be constructed of ductile iron fully encapsulated in synthetic rubber except for guide and wedge nut areas or it shall have a replaceable internally reinforced, contoured molded rubber disc seat ring attached to the face of the wedge with self-locking stainless steel screws. Wedge rubber shall be molded in place and bonded to the ductile iron portion. Wedge shall seat against accurately formed seating surfaces in the valve body.
- D. Waterway shall be smooth and shall have no depressions or cavities in seat area where foreign material can lodge and prevent closure or seating.
- E. Gate valves shall be Mueller A2360 series or equal by American Flow Control.
- F. Provide each gate valve with a 5-1/4 inch diameter Buffalo screw type valve box with "Water" cast in the lids. All boxes for 4, 6, and 8 inch valves shall be equipped with a #6 round base. 10 inch valves shall be used with #8 valve box base. Valve boxes shall be adjustable between 2'-4" and 3'-4" except when deeper settings are required. Valve boxes shall be as manufactured by Bingham and Taylor. Valve box lid shall be MP-VBC-RP7360-B90 as manufactured by Argonics. Lid shall be polyurethane and provide a tight seal with notches for removal, and a magnet for locating.

- G. Provide heavy duty socket valve operating wrenches as follows:
 - For 1 to 10 valves, 1 wrench;
 - For 11 to 30 valves, 2 wrenches;
 - For greater than 30 valves, 3 wrenches.

2.2 DETECTOR TAPE

- A. Detectable warning tape shall be inert, acid- and alkali-resistant, polyethylene, 5 mil minimum thickness, suitable for direct burial, and capable of being detected with inductive methods.
- B. Tape shall be Lineguard Type II Detectable Tape as manufactured by Lineguard, Inc. of Wheaton, Illinois, or approved equal.
- C. Tape shall be a minimum of 2 inches wide unless otherwise indicated on the Contract Drawings.
- D. Tape for storm drain piping shall be green in color and imprinted with the words “CAUTION: STORM DRAIN LINE BELOW.”
- E. Tape for water piping shall be blue in color and imprinted with the words “CAUTION: WATER LINE BELOW.”

PART 3 – EXECUTION

3.1 INSTALLATION OF PIPE

3.1.1 Excavation

- A. Excavate trenches to the width and depth dimensions as indicated on the Contract Drawings. Provide uniform, continuous support for pipe or structure on required pipe bedding. In general, the trench bottom shall be excavated to conform with the shape and dimensions of the proposed pipe or structure. If the shape of the trench cannot be preserved or the trench varies from the shape of the structure, the space between the desired trench dimensions and the bottom of the excavation, as made, shall be filled with granular fill. Allowance shall be made for the placement of pipe bedding, where specified. Damage caused to existing facilities by the CONTRACTOR’S operations shall be repaired or replaced at no additional expense to the OWNER.
- B. Unless otherwise authorized by the ENGINEER, trench excavation shall proceed no more than 100 feet in advance of the placement and compaction of backfill materials. The ENGINEER may require backfilling and subsequent re-excavation on trenches left open for an unreasonable amount of time in advance of pipe installation at no additional expense to the OWNER. Trenches left open overnight, or during periods when the

CONTRACTOR'S forces are not present, shall be so protected or enclosed and marked so as to cause no danger to the public or others.

- C. Sides of trenches adjacent to other utilities or structures shall be practically plumb. Where permitted by the ENGINEER, sides of trenches in other areas may be sloped from a point 1 foot above the top of the pipe to grade. Such slopes shall be at no additional cost to the OWNER. Slopes shall be cut so as not to allow displacement of material or present a danger to personnel. Sides of trenches from a point 1 foot above the top of the pipe to the bottom of the trench shall be practically plumb. Pipe bell holes shall be excavated in the bottom of the trench wherever necessary to permit the proper assembling of joints.
- D. Before pipe installation, excavate sufficient trench in advance so that reasonable changes in line and grade can be made where the location of existing structures vary from that shown on Contract Drawings, and to ensure that no unforeseeable obstructions exist. Work required by failure to take such precautions shall be performed at no additional cost to the OWNER.
- E. Sheet piling and bracing, where required, shall be placed within the trench width as specified, without any over-excavation. Where trench widths are exceeded, redesign with a resultant increase in pipe strength or special installation procedures will be necessary. Cost of this redesign and increased cost of pipe or installation shall be borne by the CONTRACTOR without additional cost to the OWNER.
- F. The pipeline trench excavation shall be dewatered sufficiently to allow pipe joints to be made under dry conditions. No joint shall be made under water.
- G. No pipe shall be laid upon a foundation into which frost has penetrated, or at any time when there is danger of ice formation or frost penetration at the bottom of the excavation. In freezing weather, open trench length shall be kept to a minimum and the excavation promptly backfilled after the pipe has been installed.
- H. Where wet or otherwise unstable soil incapable of properly supporting the pipe, as determined by the ENGINEER, is unexpectedly encountered in the bottom of a trench, such material shall be removed to the depth required and replaced to the proper grade with granular fill, in accordance with Specification Section 31 05 16, Aggregates. When removal of unstable material is due to the fault or neglect of the CONTRACTOR while performing shoring and sheet piling, water removal, or other specified requirements, such removal and replacement shall be performed at no additional cost to the OWNER.

3.1.2 Bedding

- A. Pipe bedding shall be granular fill in accordance with the Contract Drawings and Specification Section 31 05 16, Aggregates. Provide bell holes at each joint to permit proper joint assembly and firm bedding for the entire length of the pipe barrel. Provide encasement and/or concrete thrust blocks where required at pipe bends. Each pipe shall be

bedded on a solid foundation acceptable to the ENGINEER and in accordance with the Contract Documents.

- B. Pipe bedding shall be per the Contract Drawings.
- C. Bedding and embedment for corrugated HDPE storm drain pipe shall be installed in accordance with ASTM D2321, the pipe manufacturer's published installation recommendations, and the Contract Drawings.

3.1.3 Placement

- A. Prior to pipe installation, bring bedding material to grade along the entire length of pipe trench to be installed. Excavate bell hole as required. Install pipe to a true uniform line and grade as indicated with continuous bearing of the barrel on the bedding material. Install pipe working upgrade with the bell or groove pointing upstream. Place each section of pipe in such a manner as to form a close concentric joint with the adjoining section and to prevent sudden offsets in the flow line.
- B. Foreign matter shall be removed from each pipe, fitting, and appurtenance before placement in the trench. Should foreign matter be observed in previously installed pipe, fittings, or appurtenances, work shall cease until foreign matter is removed.
- C. Pipe shall be carefully handled and lowered into the trench. Pipe shall be installed with special care to ensure that each joint meets the specified joint performance requirements, has met the required manufacturer's insertion depth, where applicable, and has no shoulder or unevenness of any kind along the inside of the pipeline. No wedging or blocking will be permitted in installing any pipe unless directed by written order or permission in writing from the ENGINEER or OWNER.
- D. The pipes shall be thoroughly cleaned before being installed and shall be kept clean until acceptance of the completed work. Open ends of pipes and fittings shall be closed with a watertight cap or plug when work is not proceeding.
- E. Place sufficient backfill on each section of installed pipe to hold it firmly in place.
- F. No pipe shall be brought into position until the preceding length has been thoroughly bedded and secured in place. Care shall be used to ensure the specified joint performance, and prevent damage to, or disturbing of, the joints during the refilling process. After pipes have been installed and joints have been made, there shall be no walking on or working over the pipe, except as may be necessary in tamping the backfill material, until the backfill is at least 2 feet over the top of the pipe.
- G. Whenever a pipe requires cutting, to fit into the line or bring it to the required location, the work shall be performed by an approved method that leaves a smooth, square end. Field spigots shall be stop-marked with a felt-tip marker or wax crayon for proper length of assembly insertion.

- H. A calibrated, precise sewer pipe laser shall be used to align pipe to the proper grade. The CONTRACTOR is responsible to continuously monitor the line and grade in each pipe run between structures. It is the CONTRACTOR'S responsibility to maintain proper calibration of the equipment throughout the duration of the project.
- I. Unless otherwise specified by the ENGINEER, the elevation of all structures, shall be within ± 0.1 foot of those shown on the Contract Drawings.

3.1.4 Backfill

- A. After the pipe has been properly bedded, and placed, backfill shall be placed in accordance with Contract Drawings and Specification Section 31 05 15, Earthwork. Material tests for density shall be made as necessary to ensure conformance to this Specification. Where it is necessary, in the opinion of the ENGINEER, that sheeting or portions of bracing used be left in place, the Contract will be adjusted accordingly. Untreated sheeting shall not be left in place beneath structures or pavements.
- B. When compacting by rolling or operating heavy equipment parallel with the pipe, displacement of or injury to the pipe shall be avoided. Compaction of backfill material in the pipe zone shall be performed in a manner that does not damage, distort, or displace the pipe. Movement of construction machinery over a culvert or storm drain at any stage of construction shall be at the CONTRACTOR'S risk. Any damaged pipe shall be repaired or replaced.

3.2 JOINTING

- A. Before any joints are made in the trench, the CONTRACTOR shall demonstrate to the ENGINEER by making a sample joint that methods the CONTRACTOR will employ conform with the Contract Specifications, will achieve the specified joint performance, and that the workmen whom the CONTRACTOR intends to use for this work are familiar with the requirements for making proper joints.

3.3 DETECTOR TAPE

- A. Detector tape shall be installed in accordance with Paragraph 3.5.1.A.4, or as indicated on the Contract Drawings.

3.4 FIELD TESTING

- A. During the test period, gaskets or other jointing material shall be protected from extreme temperatures which might adversely affect the performance of such materials. Performance requirements for joints shall be as specified in this Section and indicated on the Contract Drawings. Watertight joints for reinforced and nonreinforced concrete pipe shall conform to AASHTO M 198 or ASTM C443M (ASTM C443), and watertight joints for HDPE plastic pipe shall conform to ASTM D3212.

- B. Watertight corrugated HDPE storm drain pipe joints shall be field tested in accordance with ASTM F2487.

3.4.1 Water Main Testing

- A. CONTRACTOR shall furnish all equipment, labor, and materials, including water, pumps compressors, stopwatch, gauges, and meters as approved by the ENGINEER for testing. The ENGINEER shall determine the amount of main to be testing at any one time and reserves the right to separate the installation into several test sections. All test must be witnessed by the ENGINEER or OWNER.

3.4.1.1 Water Pressure Testing

- A. Pipe shall be subjected to a hydrostatic pressure of 125 pounds per square inch (psi) for two hours and shall not deviate by greater than 5 psi.

3.4.1.2 Pressurization

- A. Each valved section of the pipe shall be filled with water slowly and the specified test pressure, based on the elevation of the lower point of the line or section under the test and correct to the elevation of the test gage, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the OWNER.

3.4.1.3 Air Removal

- A. Before applying the specified test pressure, air shall be expelled completely from the pipe.

3.4.1.4 Examination

- A. All exposed pipe, fittings, and joints shall be examined carefully during the test. Any damage for defective pipe, fitting, or joint that are discovered following the pressure test shall be repaired or replaced with the same material and the test shall be repeated unit it is satisfactory to the OWNER.

3.5 REPAIR/RETEST

- A. Should test results show displacement, damage, or leakage in excess of the allowable amount, the CONTRACTOR shall repair the displacement and damage and eliminate the leakage. The CONTRACTOR shall retest until specified conditions are met to the satisfaction of the ENGINEER, at no additional cost to the OWNER.

3.5.1 Connection Appurtenances

- A. The CONTRACTOR is responsible for field verifying the location of existing piping or structures to which connections are to be made, and location of other facilities which could be destroyed during earthmoving activities.
1. Link seals, where required on the Contract Drawings, shall be manufactured by Thunderline Corporation or approved equal.
 2. Portland cement concrete for pipe fitting buttresses and anchorages shall be 2,500 psi mix.
 3. Rod for tie rod assemblies shall meet the material requirements of ASTM A 193, Grade B7, and shall be threaded for at least 4 inches on both ends. Rod shall be three-quarter ($\frac{3}{4}$)-inch diameter unless otherwise noted. Nuts shall meet the requirements of ASTM A 194. Manufactured tie rod and accessories shall result in the completed restrained joint assembly having a minimum working pressure rating of 200 psi.
 4. Pipeline detectable tape shall be installed continuously along all water and storm drain piping. The tape shall be installed directly above the pipe and 12 inches from the ground surface. The tape shall be Lineguard Type II Detectable Tape as manufactured by Lineguard, Inc. of Wheaton, Illinois, or equal. The tape shall be a minimum of 2 inches wide and capable of being detected with inductive methods. Tape for water piping shall be blue in color and imprinted with the words "CAUTION: WATER LINE BELOW." Tape for storm drain piping shall be green in color and imprinted with the words "CAUTION: STORM DRAIN LINE BELOW."
 5. Tracer Wire for Non-Metallic Pipelines—Tracer wire shall be THHN/THWN12 gauge solid copper conductor insulated with a high molecular weight polyethylene (HMWPE) coating. Tracer wire shall be installed with sufficient length inside valve boxes and meter pits to allow for connection at ground surface. The wire shall be color coded green per the APWA uniform color code, have "UL" markings and suitable for direct bury applications. All underground splicing shall be split bolt connections with a water proof shrink tubing and underground electrical tape.

++ END OF SECTION ++

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Section F

Drawings

(Bound Separately)

G-001	TITLE SHEET
G-002	ABBREVIATIONS, NOTES, LEGEND, AND SITE DATA
C-101	EXISTING CONDITIONS AND DEMOLITION PLAN
C-102	PROPOSED SITE AND STORMWATER MANAGEMENT PLAN
C-103	PROPOSED PLANTING PLAN
C-201	PROFILES
C-202	PROFILES
C-501	DETAIL SHEET I
C-502	DETAIL SHEET II
C-503	DETAIL SHEET III
C-504	DETAIL SHEET IV
C-701	EROSION AND SEDIMENT CONTROL PLAN
C-702	EROSION AND SEDIMENT CONTROL NOTES
C-703	EROSION AND SEDIMENT CONTROL DETAILS

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Section G

Figure 1 – Proposed Storm Drain Plan Bid Alternate 1

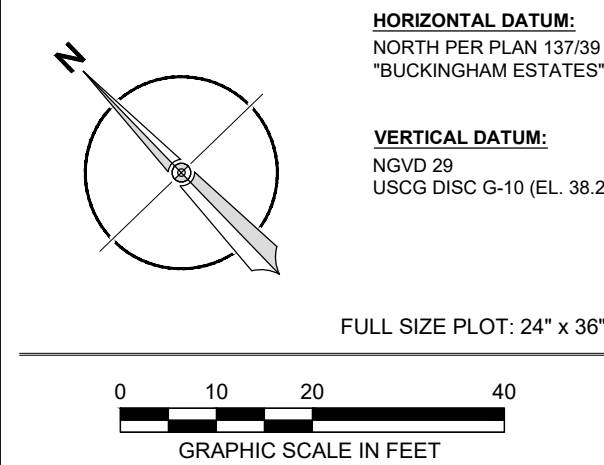
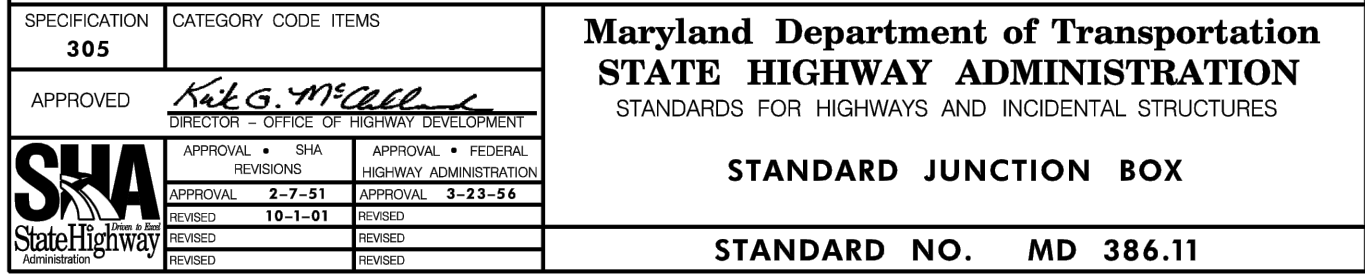
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HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



- 1 CONTRACTOR SHALL PERFORM TEST PIT EXCAVATION AT PROPOSED CROSSING TO DETERMINE EXACT HORIZONTAL AND VERTICAL LOCATION OF THE EXISTING WATER SERVICE LATERAL PRIOR TO COMMENCING STORM DRAIN TRENCHING OPERATIONS. IF A CONFLICT EXISTS OR MINIMUM CLEARANCES CANNOT BE MET, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RELOCATING THE WATER LATERAL TO MAINTAIN A MINIMUM OF 12" VERTICAL SEPARATION BETWEEN THE WATER AND STORM DRAIN PIPES. ALL RELOCATION WORK SHALL BE PERFORMED IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR MUST COORDINATE ANY TEMPORARY OUTAGES DIRECTLY WITH THE PROPERTY OWNER.
- 2 REMOVE AND PROPERLY DISPOSE OF EXISTING 24-INCH HDPE STORM DRAIN PIPE. INSTALL PROPOSED 36-INCH HDPE STORM DRAIN PIPE. COORDINATE STORM DRAIN PIPE INSTALLATION, SEQUENCING, AND TIE-IN ELEVATIONS AT THIS LOCATION WITH THE WORK DEPICTED IN THE BASE BID PLAN SET TITLED TOWN OF BERLIN WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES, SIGNED APRIL 23, 2024.
- 3 REMOVE EXISTING CATCH BASIN AND INSTALL PROPOSED PRECAST CONCRETE JUNCTION BOX (JB-11). CONNECT EXISTING AND PROPOSED PIPES PER PLAN AND PROFILE. SEE JUNCTION BOX DETAIL THIS SHEET.
- 4 REMOVE AND PROPERLY DISPOSE OF EXISTING 24-INCH HDPE STORM DRAIN PIPE. INSTALL PROPOSED 36-INCH HDPE STORM DRAIN PIPE.
- 5 CONTRACTOR SHALL PERFORM TRENCH EXCAVATION, BEDDING INSTALLATION, AND TRENCH BACKFILL/RESTORATION FOR ALL PROPOSED PIPING AND REMOVAL OF EXISTING PIPING PER THE DETAIL ON DRAWING C-501 IN THE BASE BID PLAN SET TITLED TOWN OF BERLIN WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES, SIGNED APRIL 23, 2024.
- 6 REMOVE EXISTING CATCH BASIN AND INSTALL PROPOSED PRECAST CONCRETE DOGHOUSE MANHOLE (I-12) OVER THE EXISTING 24-INCH HDPE AND 13-INCH X 22-INCH ACCSP STORM DRAIN PIPES AND PROPOSED 36-INCH HDPE STORM DRAIN PIPE. MAINTAIN FLOW DURING CONSTRUCTION. SEE DETAIL ON DRAWING C-504 IN THE BASE BID PLAN SET TITLED TOWN OF BERLIN WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES, SIGNED APRIL 23, 2024.
- 7 CONTRACTOR SHALL RESTORE DRIVEWAY IN KIND.
- 8 INSTALLATION OF PROPOSED 29-INCH X 45-INCH HERCP STORM DRAIN PIPE TO BE PERFORMED UNDER THE BASE BID PLAN SET TITLED TOWN OF BERLIN WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES, SIGNED APRIL 23, 2024.
- 9 DEMOLITION AND REMOVAL OF THE EXISTING 18-INCH X 29-INCH ACCSP STORM DRAIN PIPE AT THIS LOCATION IS TO BE PERFORMED AS PART OF THOSESE BID UNDER THE PLAN SET TITLED TOWN OF BERLIN WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES, SIGNED APRIL 23, 2024.
- 10 FINAL ROADWAY RESTORATION (ASPHALT MILL AND OVERLAY) WITHIN THIS AREA IS EXCLUDED FROM BID ALTERNATE 1 AND SHALL BE PERFORMED UNDER THE BASE BID PLAN SET TITLED TOWN OF BERLIN WESTMINSTER, ABBEY, AND UPSHUR STORMWATER MANAGEMENT UPGRADES, SIGNED APRIL 23, 2024.



DATE: APRIL 2028

PROJECT NAME
WESTMINSTER, ABBEY, AND
UPSHUR STORMWATER
MANAGEMENT UPGRADES

PROJECT ADDRESS
TOWN OF BERLIN, MARYLAND

FIGURE TITLE
PROPOSED STORM DRAIN
PLAN BID ALTERNATE 1

FIGURE NO. 1

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