



FINAL BID SET

PROJECT MANUAL
GLEN RIDDLE FARM
WATER TOWER REHABILITATION

WORCESTER COUNTY, MD
DEPARTMENT OF PUBLIC WORKS



AUGUST 2025
BID SET AMENDMENTS MARCH 2026

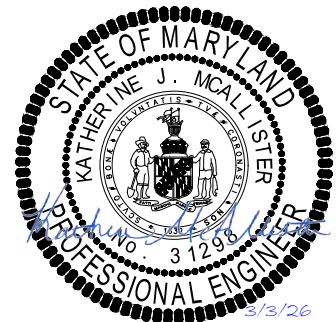
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GLEN RIDDLE FARM WATER TOWER REHABILITATION WORCESTER COUNTY, MARYLAND

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DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

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ARTICLE 1—DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.

ARTICLE 2—BIDDING DOCUMENTS

- 2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.
- 2.03 Bidder may register as a plan holder and obtain complete sets of Bidding Documents, in the number and format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely upon sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.
- 2.04 *Electronic Documents*
- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.
1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf). It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.
- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and

responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

- 3.01 Bidder is to submit C-451 "Qualifications Statement" with its Bid to demonstrate Bidder's qualifications to perform the Work.
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4—PRE-BID CONFERENCE

- 4.01 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.
- 4.02 Information presented at the pre-Bid conference does not alter the Contract Documents. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions at the pre-Bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

ARTICLE 5—SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 *Site and Other Areas*

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

A. *Subsurface and Physical Conditions; Hazardous Environmental Conditions*

- 1. The Supplementary Conditions identify the following regarding existing conditions at the Site:
 - a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.
 - b. Those drawings known to Owner 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.

- c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
- 2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
- 3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Site Visit and Testing by Bidders*

- A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit, the Bidder must not disturb any ongoing operations at the Site.
- B. A Site visit is usually scheduled following the pre-bid conference.
- C. Bidders visiting the Site are required to arrange their own transportation to the Site.
- D. All access to the Site other than during a regularly scheduled Site visit must be coordinated through the Owner. Bidder must conduct the required Site visit during normal working hours.
- E. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions. However, Bidder is responsible for making reasonable inspections of Site conditions in accordance with Article 6.
- F. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.
- G. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

- H. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.04 *Owner's Safety Program*

- A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be noted in the Supplementary Conditions.

5.05 *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

- A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.
- B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

- 7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents. All Bidders shall acknowledge receipt of all Addenda on the Bid Form. Failure to do so may result in Bid rejection.
- 7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing.
- 7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered plan holders. Questions received less than seven days prior to the date for opening of Bids may not be answered.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8—BID SECURITY – (NOT REQUIRED)

- 8.01 ~~A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the~~

~~General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents. Bid security must be at least 5% of the Bidder's maximum Bid price. The Bid Bond included in the Bidding Documents must be completed and submitted with the Bid. All Bids without the properly executed Bid Bond in the format as required herein may be rejected.~~

- 8.02 ~~The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a penal sum bid bond, and to the extent of Owner's damages in the case of a damages form bond. Such forfeiture will be Owner's exclusive remedy if Bidder defaults. The next low Bidder in order of Bid price shall then be considered the lowest responsive Bidder and the Contract will be awarded to him. Should this Bidder default, the next low Bidder shall be considered and so on. In each case, a defaulting Bidder forfeits the Bid security.~~
- 8.03 ~~The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.~~

ARTICLE 9—CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.
- 9.02 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10—SUBSTITUTE AND "OR EQUAL" ITEMS

- 10.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or-equal" or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer within 10 days of the issuance of the Advertisement for Bids or invitation to Bidders. Each such request must comply with the requirements of Paragraphs 7.05 and 7.06 of the General Conditions, and the review of the request will be governed by the principles in those paragraphs. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all registered Bidders. Bidders cannot rely upon approvals made in any other manner. Substitutes and "or-equal" materials and equipment may be proposed by Contractor in

accordance with Paragraphs 7.05 and 7.06 of the General Conditions after the Effective Date of the Contract.

- 10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.01 Bidders must submit to Owner a list of the subcontractors proposed for each type of work identified in the Bid Form. Subcontractors shall be duly licensed in the State of Maryland.
- 11.02 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, 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.
- 11.03 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.
- 11.04 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 7.07A.
- 11.05 Contractor shall provide Owner within thirty (30) days of signing the Agreement, copies of all business or occupational licenses required of Subcontractors that will perform work on the Contract. If a Subcontractor is hired or contracted more than twenty (20) days after Contractor signed the Agreement, the occupational or business licenses of the Subcontractors shall be provided to Owner within ten (10) days of being contracted or hired. These timeframes do not preclude Owner from making an earlier request for a copy of the business or occupational licenses of the Subcontractors in performing an investigation of a Subcontractor under this Article.

ARTICLE 12—PREPARATION OF BID

- 12.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form must be completed in ink or typewritten and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein. Failure to comply may be cause for rejection. No allowances, segregated Bids or assignments will be considered. State all amounts in numerical figures. A Bidder shall make no additional stipulations on the Bid Form to qualify

his Bid by attachments or any other matter. Stipulations or qualifications will be subject to Bid rejection.

- B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."
- 12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.
 - 12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.
 - 12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.
 - 12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.
 - 12.06 A Bid by an individual must show the Bidder's name and official address.
 - 12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venture in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.
 - 12.08 All names must be printed in ink below the signatures.
 - 12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.
 - 12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.
 - 12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.
 - 12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such evidence of certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Lump Sum*

- A. Bidders must submit a Bid on a lump sum basis as set forth in the Bid Form.

13.02 *Base Bid with Alternates*

- A. Bidders must submit a Bid on a lump sum basis for the base Bid and include a separate price for each alternate described in the Bidding Documents and as provided for in the Bid Form. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate.
- B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form.

13.03 *Unit Price*

- A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The “Bid Price” (sometimes referred to as the extended price) for each unit price Bid item will be the product of the “Estimated Quantity,” which Owner or its representative has set forth in the Bid Form, for the item and the corresponding “Bid Unit Price” offered by the Bidder. The total of all unit price Bid items will be the sum of these “Bid Prices;” such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.
- C. Discrepancies between 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.

13.04 *Allowances*

- A. For cash allowances the Bid price must include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 14—SUBMITTAL OF BID

- 14.01 Within each copy of the Bidding Documents, the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 2 of the Bid Form.
- 14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be sealed in a plainly marked package with the Project title, the Bid Opening date and time, and the Bidder's name, address, and Maryland license number. Each Bid shall be completed on the forms provided. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation “BID ENCLOSED.” A mailed Bid must be addressed to the location designated in the Advertisement.
- 14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to

the Bidder unopened. Oral, telegraphic, electronic, or telephonic Bids are invalid and will not receive consideration.

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 15.03 Bids may not be withdrawn within **ninety (90) days** after the Bid Opening.

ARTICLE 16—OPENING OF BIDS

- 16.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 17.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities or minor defects.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.
- 18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.
- 18.05 *Evaluation of Bids*
 - A. In evaluating Bids, Owner will consider whether 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.

- B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
- 18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 18.07 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.
- 18.08 If a Bidder wants to protest a bid award, he/she must submit a formal letter to the Finance Director within fifteen (15) days of contract award.

ARTICLE 19—BONDS AND INSURANCE

- 19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.
- 19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

- 20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within ~~15~~ **20** days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 10 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 21—SALES AND USE TAXES

- 21.01 The Contractor shall be responsible for the payment of any state taxes, if any, assessed in relation to the work, including but not limited to gross receipt taxes. Taxes must not be included in the Bid. Refer to Paragraph SC-7.10 of the Supplementary Conditions for additional information.

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DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

SECTION 00410 – BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

**WORCESTER COUNTY, MARYLAND
ATTN: EDWARD WELCH, PROCUREMENT OFFICER
1 WEST MARKET STREET, ROOM 103
SNOW HILL, MARYLAND 21863**

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

- A. List of Proposed Subcontractors;
- B. List of Proposed Suppliers;
- C. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;
- D. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids; failure to do so may result in rejection of Bid;
- E. Required Bidder Qualification Statement with supporting data;

ARTICLE 3—BASIS OF BID

3.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

- A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price(s):

SCHEDULE A –LUMP SUM PRICES BID

ITEM NO.	DESCRIPTION	UNIT	EST QTY	BID PRICE
A1	Mobilization/General Conditions (not exceeding 5% of Base Bid)	Lump Sum	1	\$
A2	Rehabilitation of the Existing 400,000 Gallon Elevated Water Tower	Lump Sum	1	\$
A3	Design Submittal and Installation of Abrasive Blasting Exterior Containment Plan	Lump Sum	1	\$
A4	Modification to Exterior Overflow Drain Piping, Pipe Support and Splash Pad	Lump Sum	1	\$
A5	Disinfection and Sampling	Lump Sum	1	\$
Subtotal Schedule A				\$

- B. Bidder will complete the Work under Schedule B, when authorized, in accordance with the Contract Documents for the following price(s):

SCHEDULE B – UNIT PRICE CONTINGENT BID ITEMS

ITEM NO.	DESCRIPTION	UNIT	EST QTY	BID UNIT PRICE	ESTIMATED BID PRICE
B1	Miscellaneous Pit Filling	GAL	5	\$	\$
B2	Miscellaneous Pit Welding	HR	8	\$	\$
B3	Miscellaneous Contingent Seam Welding	HR	8	\$	\$
B4	Miscellaneous Steel Patch Plates	EA	5	\$	\$
B5	Miscellaneous Weld Repairs	HR	8	\$	\$
B6	Furnish and Place Miscellaneous Concrete 4,000 psi	CY	10	\$	\$
B7	Excavate and Replace Rip Rap	CY	5	\$	\$
Subtotal Schedule B					\$

3.02 *Total Bid Price (Basis of Award)*

Total Bid Price: Total of Schedule A + B	\$

_____ **Dollars \$(_____)**

3.03 *Add Alternates*

- A. *The following Alternate bid items may or may not be part of the contract. The Owner may decide at their sole discretion to select an Item. Prices bid by Contractor are deemed to be full compensation for all required, labor, products, tools, equipment, transportation, testing, inspection, services, incidentals, administrative procedures, applicable taxes, permit fees, overhead, profit, and other miscellaneous expenses specified or referenced in the Contract Documents. The Owner reserves the right to add or deduct items it deems to be in its own best interest. The low Bidder selected will be determined based on the Total Base Bid above (Schedule A + B). ADD Alternate Items will not be included to select Low Bidder.*

SCHEDULE C – ADD ALTERNATES

ITEM NO.	DESCRIPTION	UNIT	EST QTY	BID PRICE
C1	Alternate #1: Paint Glen Riddle Community Logo as Shown on Plans	Lump Sum	1	\$
C2	Alternate #2: Paint Worcester County Logo as Shown on Plans	Lump Sum	1	\$
C3	Remove and Weld New Floor in its Entirety for Bird Room and Condensate Platform Floors	Lump Sum	1	\$

ARTICLE 4—TIME OF COMPLETION

- 4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, RECEIPT OF ADDENDA, AND ASSIGNMENT OF PROCUREMENT CONTRACT

5.01 *Bid Acceptance Period*

- A. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

- A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder’s Representations*

- A. In submitting this Bid, Bidder represents the following:
1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work, including all American Iron and Steel requirements.
 4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder’s (Contractor’s) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no 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.
8. Bidder 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 Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. 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.
 - d. 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.
5. There has been no violation of copyrights or patent rights in manufacturing, producing, or selling the product or services shipped or ordered as a result of this Bid. The successful Bidder shall, at his own expense, defend any and all actions or suits charging such infringements, and will save Worcester County, and its appointed and elected officials, officers, partners, directors, employees, and agents harmless from any and all liability, loss, or expense occasioned by any such violation.

BIDDER hereby submits this Bid as set forth above:

Bidder:

(typed or printed name of organization)

By:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

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

Attest:

(individual's signature)

Name:

(typed or printed)

Title:

(typed or printed)

Date:

(typed or printed)

Address for giving notices:

Bidder's Contact:

Name:

(typed or printed)

Title:

(typed or printed)

Phone:

Email:

Address:

Bidder's Contractor License No.: (if applicable)

DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

SECTION 00451 - QUALIFICATIONS STATEMENT

ARTICLE 1—GENERAL INFORMATION

1.01 Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.02 Provide information on the Business's organizational structure:

Form of Business:	☐ Sole Proprietorship ☐ Partnership ☐ Corporation		
☐ Limited Liability Company ☐ Joint Venture comprised of the following companies:			
1.			
2.			
3.			
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?		☐ Yes ☐ No ☐ Pending	

1.03 Identify all businesses that own Business in whole or in part (25% or greater), or that are wholly or partly (25% or greater) owned by Business:

Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	

Address:			
Name of business:		Affiliation:	
Address:			

1.04 Provide information regarding the Business's officers, partners, and limits of authority.

Name:		Title:		
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	\$	
Name:		Title:		
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	\$	
Name:		Title:		
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	\$	
Name:		Title:		

ARTICLE 2—LICENSING

2.01 Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

ARTICLE 3—DIVERSE BUSINESS CERTIFICATIONS

3.01 Provide information regarding Business's Diverse Business Certification, if any. Provide evidence of current certification.

Certification	Certifying Agency	Certification Date
☐ Disadvantaged Business Enterprise		
☐ Minority Business Enterprise		
☐ Woman-Owned Business Enterprise		
☐ Small Business Enterprise		
☐ Disabled Business Enterprise		
☐ Veteran-Owned Business Enterprise		
☐ Service-Disabled Veteran-Owned Business		
☐ HUBZone Business (Historically Underutilized) Business		

☐ Other			
☐ None			

ARTICLE 4—SAFETY

4.01 Provide information regarding Business's safety organization and safety performance.

Name of Business's Safety Officer:		
Safety Certifications		
Certification Name	Issuing Agency	Expiration

4.02 Provide Worker's Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

ARTICLE 5—FINANCIAL

5.01 Provide information regarding the Business's financial stability. Provide the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.

Financial Institution:			
Business address:			
Date of Business's most recent financial statement:		☐ Attached	
Date of Business's most recent audited financial statement:		☐ Attached	
Financial indicators from the most recent financial statement			
Contractor's Current Ratio (Current Assets ÷ Current Liabilities)			
Contractor's Quick Ratio ((Cash and Cash Equivalents + Accounts Receivable + Short Term Investments) ÷ Current Liabilities)			

ARTICLE 6—SURETY INFORMATION

- 6.01 Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:			
Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?	☐ Yes ☐ No		
Is surety listed in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury? ☐ Yes ☐ No			
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 7—INSURANCE

- 7.01 Provide information regarding Business's insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?		☐ Yes ☐ No	
Does provider have an A.M. Best Rating of A-VII or better?		☐ Yes ☐ No	
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 8—CONSTRUCTION EXPERIENCE

8.01 Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

8.02 Provide information regarding the Business's previous contracting experience.

Years of experience with projects like the proposed project:				
As a general contractor:		As a joint venturer:		
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:				
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been barred from contracting by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been released from a bid in the past 5 years? ☐ Yes ☐ No				
Defaulted on a project or failed to complete any contract awarded to it? ☐ Yes ☐ No				
Refused to construct or refused to provide materials defined in the contract documents or in a change order? ☐ Yes ☐ No				
Been a party to any currently pending litigation or arbitration? ☐ Yes ☐ No				
Provide full details in a separate attachment if the response to any of these questions is Yes.				

8.03 List all projects currently under contract in Schedule A and provide indicated information.

8.04 List a minimum of three and a maximum of six projects completed in the last 5 years in Schedule B and provide indicated information to demonstrate the Business's experience with projects similar in type and cost of construction.

8.05 In Schedule C, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule C. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business's key leaders as well.

ARTICLE 9—REQUIRED ATTACHMENTS

9.01 Provide the following information with the Statement of Qualifications:

- A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.02.
- B. Diverse Business Certifications if required by Paragraph 3.01.
- C. Certification of Business's safety performance if required by Paragraph 4.02.
- D. Financial statements as required by Paragraph 5.01.
- E. Attachments providing additional information as required by Paragraph 8.02.

- F. Schedule A (Current Projects) as required by Paragraph 8.03.
- G. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 8.04.
- H. Schedule C (Key Individuals) and resumes for the key individuals listed, as required by Paragraph 8.05.
- I. Additional items as pertinent.

This Statement of Qualifications is offered by:

Business: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(date signed)

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

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address: _____

Phone: _____

Email: _____

Schedule A—Current Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule C—Key Individuals

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

SECTION 00510 - NOTICE OF AWARD

Date of Issuance:

Owner: **Worcester County**

Owner's Project No.:

Engineer: **George, Miles & Buhr, LLC**

Engineer's Project No.: **240256**

Project: **Glen Riddle Farm Water Tower Rehabilitation**

Contract Name: **Glen Riddle Farm Water Tower Rehabilitation**

Bidder:

Bidder's Address:

You are notified that Owner has accepted your Bid dated **[date]** for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

[Describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is \$**[Contract Price]**. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

[Number of copies sent] unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner **[number of copies sent]** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): **[Describe other conditions that require Successful Bidder's compliance]**

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 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: **[Full formal name of Owner]**

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

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DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS
SECTION 00520 - AGREEMENT BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between **Worcester County**, ("Owner") and _____
_____"Contractor").

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

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

- 1.01 Work consists of furnishing all materials, labor, tools and equipment necessary for the painting and refurbishment of the Glen Riddle Elevated Water Tower and appurtenant work as shown on the drawings and described in the specifications.

ARTICLE 2—THE PROJECT

- 2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **Glen Riddle Farm Water Tower Rehabilitation.**

ARTICLE 3—ENGINEER/ 3RD PARTY INSPECTION

- 3.01 The Owner has retained a third-party inspection agency (referred to as "Engineer and/or Inspector") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.
- 3.02 The part of the Project that pertains to the Work has been designed by George, Miles & Buhr, LLC.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is 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.

4.03 *Contract Times: Days*

- A. The Work will be substantially complete within **180** days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within **210** days after the date when the Contract Times commence to run. **Refer to additional project schedule constraints as detailed in Specifications Section 01040-Coordination.**

4.05 *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 and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. 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):

1. *Substantial Completion:* Contractor shall pay Owner **\$2,000** for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
 2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner **\$1,000** for each day that expires after such time until the Work is completed and ready for final payment.
 4. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.
- C. **Deleted.**

4.06 *Special Damages*

- A. Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.
- B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.
- C. The special damages imposed in this paragraph are supplemental to any liquidated damages for delayed completion established in this Agreement.

ARTICLE 5—CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

- 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 15 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 the basis of Contractor's Applications for Payment no more than once monthly during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in 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 elsewhere in the Contract.
 - 1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.
 - a. **95** percent of the value of the Work completed (with the balance being retainage).
 - b. **95** percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion **of the entire construction to be provided under the construction Contract Documents**, Owner shall pay an amount sufficient to increase total payments to Contractor to **100** percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E 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 punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

- A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

- A. The Contract Documents consist of all of the following:
 - 1. This Agreement.
 - 2. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 - 3. General Conditions.
 - 4. Supplementary Conditions.
 - 5. Specifications as listed in the table of contents of the Project Manual.
 - 6. Drawings (not attached but incorporated by reference) consisting of **5** sheets with each sheet bearing the following general title: **Glen Riddle Farm Water Tower Rehabilitation**.

7. Addenda (numbers **[number]** to **[number]**, inclusive).
8. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (Pages ___ to ___, inclusive).
9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives (forms to be provided during construction).
 - c. Change Orders.
 - d. Field Orders (forms to be provided during construction).
 - e. Warranty Bond, if any.
- B. The Contract Documents listed in Paragraph 7.01.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 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 Contractor's Representations

- A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:
 1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
 2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. Contractor has considered the information known to Contractor itself; 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 Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and

performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no 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.
8. 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.
9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *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 8.02:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything 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.

8.03 *Standard General Conditions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

Owner:

Worcester County

(typed or printed name of organization)

By:

(individual's signature)

Date:

(date signed)

Name:

Title:

(typed or printed)

Attest:

(individual's signature)

Title:

(typed or printed)

Address for giving notices:

1 West Street

Snow Hill, MD 21863

Designated Representative:

Name: Dalla Baker, P.E.

(typed or printed)

Title: Director of Public Works

(typed or printed)

Address:

6113 Timmons Road

Snow Hill, MD 21863

Phone: 410-632-5623

Email: dbaker@co.worcester.md.us

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

Contractor:

(typed or printed name of organization)

By:

(individual's signature)

Date:

(date signed)

Name:

(typed or printed)

Title:

(typed or printed)

(If **[Type of Entity]** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

(individual's signature)

Title:

(typed or printed)

Address for giving notices:

Designated Representative:

Name:

(typed or printed)

Title:

(typed or printed)

Address:

Phone:

Email:

License No.:

(where applicable)

State:

DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

SECTION 00550 - NOTICE TO PROCEED

Owner: Worcester County Owner's Project No.: _____
Engineer: George, Miles & Buhr, LLC Engineer's Project No.: 240256
Contractor: _____ Contractor's Project No.: _____
Project: Glen Riddle Farm Water Tower Rehabilitation
Contract Name: Glen Riddle Farm Water Tower Rehabilitation
Effective Date of Contract: _____

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **[date Contract Times are to start]** pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement: **[Select one of the following two alternatives, insert dates or number of days, and delete the other alternative.]**

The date by which Substantial Completion must be achieved is **[date for Substantial Completion, from Agreement]**, and the date by which readiness for final payment must be achieved is **[date for readiness, from Agreement]**.

[or]

The number of days to achieve Substantial Completion is **[number of days, from Agreement]** from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of **[date, calculated from commencement date above]**; and the number of days to achieve readiness for final payment is **[number of days, from Agreement]** from the commencement date of the Contract Times, resulting in a date for readiness for final payment of **[date, calculated from commencement date above]**.

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Owner: [Full formal name of Owner]
By (signature): _____
Name (printed): _____
Title: _____
Date Issued: _____
Copy: Engineer

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DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

SECTION 00610 - PERFORMANCE BOND

Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i> : [Address of Contractor's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: Worcester County Mailing address <i>(principal place of business)</i> : 1 West Street Snow Hill, MD 21863	Contract Description <i>(name and location)</i> : Glen Riddle Farm Water Tower Rehabilitation Berlin, Maryland Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: ☐ None ☐ See Paragraph 16	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
 - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
- 6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
- 7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
- 8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
- 9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
- 10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
- 11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
- 12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
- 13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

SECTION 00615 - PAYMENT BOND

Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i> : [Address of Contractor's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: Worcester County Mailing address <i>(principal place of business)</i> : 1 West Street Snow Hill, MD 21863	Contract Description <i>(name and location)</i> : Glen Riddle Farm Water Tower Rehabilitation Berlin, Maryland Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]
Bond Bond Amount: [Amount] Date of Bond: [Date] <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: ☐ None ☐ See Paragraph 18	
Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
- 16.1.7. The total amount of previous payments received by the Claimant; and
- 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
- 17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
- 18. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

Contractor's Application for Payment

Owner: <u>Worcester County</u> Engineer: <u>George, Miles & Buhr, LLC</u> Contractor: _____ Project: <u>Glen Riddle Farm Water Tower Rehabilitation</u> Contract: <u>Glen Riddle Farm Water Tower Rehabilitation</u>	Owner's Project No.: _____ Engineer's Project No.: <u>240256</u> Contractor's Project No.: _____																																				
Application No.: _____ Application Date: _____																																					
Application Period: From _____ to _____																																					
<table 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 + Line 5.c)</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 + Line 5.c)	\$	-
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)	\$	-																																			
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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 + Line 5.c)	\$	-																																			
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:	Worcester County	Owner's Project No.:	
Engineer:	George, Miles & Buhr, LLC	Engineer's Project No.:	240256
Contractor:		Contractor's Project No.:	
Project:	Glen Riddle Farm Water Tower Rehabilitation		
Contract:	Glen Riddle Farm Water Tower Rehabilitation		

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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Progress Estimate - Lump Sum Work

Contractor's Application for Payment

Owner:		Worcester County				Owner's Project No.:			
Engineer:		George, Miles & Buhr, LLC				Engineer's Project No.:		240256	
Contractor:						Contractor's Project No.:			
Project:		Glen Riddle Farm Water Tower Rehabilitation							
Contract:		Glen Riddle Farm Water Tower Rehabilitation							

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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Original Contract and Change Orders									
Project Totals		\$ -	\$ -	\$ -	\$ -	\$ -		\$ -	

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: Worcester County
Engineer: George, Miles & Buhr, LLC
Contractor: _____
Project: Glen Riddle Farm Water Tower Rehabilitation
Contract: Glen Riddle Farm Water Tower Rehabilitation

Owner's Project No.: _____
Engineer's Project No.: 240256
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) (\$)				
Original Contract											
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Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner:	Worcester County	Owner's Project No.:	
Engineer:	George, Miles & Buhr, LLC	Engineer's Project No.:	240256
Contractor:		Contractor's Project No.:	
Project:	Glen Riddle Farm Water Tower Rehabilitation		
Contract:	Glen Riddle Farm Water Tower Rehabilitation		

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 (L - 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) (\$)				
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Contractor's Application for Payment

Stored Materials 240256

DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

SECTION 00625 - CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: **Worcester County**

Engineer: **George, Miles & Buhr, LLC**

Contractor:

Project: **Glen Riddle Farm Water Tower Rehabilitation**

Contract Name: **Glen Riddle Farm Water Tower Rehabilitation**

Owner's Project No.:

Engineer's Project No.: **240256**

Contractor's Project No.:

This ☐ Preliminary ☐ Final Certificate of Substantial Completion applies to:

☐ All Work ☐ 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 Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. 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.

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to Owner's Responsibilities: ☐ None ☐ As follows:

Amendments to Contractor's Responsibilities: ☐ None ☐ As follows:

The following documents are attached to and made a 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.

Engineer

By (signature):

Name (printed):

Title:

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DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

SECTION 00626 - NOTICE OF ACCEPTABILITY OF WORK

Owner: **Worcester County** Owner's Project No.:
Engineer: Engineer's Project No.:
Contractor: Contractor's Project No.:
Project: **Glen Riddle Farm Water Tower Rehabilitation**
Contract Name: **Glen Riddle Farm Water Tower Rehabilitation**
Notice Date: Effective Date of the Construction Contract:

The Engineer hereby gives notice to the Owner and Contractor that Engineer recommends final payment to Contractor, and that the Work furnished and performed by Contractor under the Construction Contract is acceptable, expressly subject to the provisions of the Construction Contract's Contract Documents ("Contract Documents") and of the Agreement between Owner and Engineer for Professional Services dated **[date of professional services agreement]** ("Owner-Engineer Agreement"). This Notice of Acceptability of Work (Notice) is made expressly subject to the following terms and conditions to which all who receive and rely on said Notice agree:

1. This Notice has been prepared with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.
2. This Notice reflects and is an expression of the Engineer's professional opinion.
3. This Notice has been prepared to the best of Engineer's knowledge, information, and belief as of the Notice Date.
4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor's Work) under the Owner-Engineer Agreement, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Owner-Engineer Agreement.
5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Contract Documents, or to otherwise comply with the Contract Documents or the terms of any special guarantees specified therein.
6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.
7. Engineer

By (signature): _____

Name (printed): _____

Title: _____

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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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

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- 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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DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

Section 00800 - Supplementary Conditions

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These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC-4.05."

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

SC-1.01.A.10 Delete the definition of "Claim" and replace with the following definition:

Claim – (a) A demand or assertion by Owner directly to Contract in accordance with the provisions set forth herein; or (b) a demand or assertion by Contractor directly to Owner in accordance with the provisions set forth herein. A demand for money or services by a third party is not a Claim.

SC-1.01.A.23 Insert the following language in the definition of "Field Order" after "Engineer":

And approved or ratified by Owner.

SC-1.01.A.50 Add the following language at the end of the last sentence of Paragraph 1.01.A.50:

Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

SC-1.01.A.51 – Add the following new paragraph:

"Or-equal" – Or approved equal.

SC-1.01.A.52 Add the following new paragraph:

***Abnormal Weather Conditions* – Conditions of extreme or unusual weather for a given region, elevation, or season as determined by Engineer. Extreme or unusual weather that is typical for a given region, elevation, or season should not be considered Abnormal weather Conditions.**

ARTICLE 2—PRELIMINARY MATTERS

2.06 *Electronic Transmittals*

SC-2.06 Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

B. *Electronic Documents Protocol*: The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol ("EDP" or "Protocol") for exchange of electronic transmittals.

1. *Basic Requirements*

a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures

described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.

- b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.
- c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.
- d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.
- e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.
- f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. System Infrastructure for Electronic Document Exchange

- a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.
 - 1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is **10 MB**. Attachments larger than that may be exchanged using large file transfer functions or physical media.
 - 2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.
- b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for

maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.

- c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.
- d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.
- e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.
- f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.
- g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.
- h. ~~The Owner will operate a Project information management system (also referred to in this EDP as "Project Website") for use of Owner, Engineer and Contractor during the Project for exchange and storage of Project related communications and information. Except as otherwise provided in this EDP or the General Conditions, use of the Project Website by the parties as described in this Paragraph will be mandatory for exchange of Project documents, communications, submittals, and other Project-related information. The following conditions and standards will govern use of the Project Website:~~

- ~~1) The Project Website will be available for reliance by all parties throughout the entirety of the project and for three (3) months following completion of the project;~~
- ~~2) Reference Exhibit A as included at the end of this specification for details on Electronic Documents Protocol.~~

C. *Software Requirements for Electronic Document Exchange; Limitations*

1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.
 - a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.
2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.
3. Software and data formats for exchange of Electronic Documents will conform to the requirements set forth in Exhibit A to this EDP, including software versions, if listed.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.03 *Reporting and Resolving Discrepancies*

SC-3.03.A.2 **Delete “by Engineer” in the last sentence and replace it with “by Owner”.**

SC-3.04.C **Replace the words “a decision or interpretation” with “recommendation” in the first sentence. Delete the last sentence and replace with:**

“If Contractor is dissatisfied with Owner’s decision, Contractor may pursue resolution as provided in Article 12.”

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement and Progress of the Work*

SC-4.01 **Delete in its entirety and replace with:**

The Contract Times will commence to run on the day indicated in the Notice to Proceed.

4.02 *Starting the Work*

SC-4.02 **At the end of the first sentence add:**

“in accordance with the Notice to Proceed.”

SC-4.05 **Amend Paragraph 4.05.C by adding the following subparagraphs:**

5. *Weather-Related Delays*

- a. If “abnormal weather conditions” as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for an increase in Contract times, such request should include an allowance of four (4) calendar days of work lost per month due to inclement weather conditions as part of the original established contract period. The Contractor, at the time of each periodic pay request, shall submit to the Engineer and Owner for approval a list of all working days lost due to either inclement weather or site conditions caused by inclement weather for the period. Accompanying this list shall be a summary of the specific conditions which caused the loss. This request will be reviewed by the Engineer. After Substantial Completion, and not until then, a change order must be executed if a time extension for weather related delays is requested by the Contractor. The time extension must be based solely on the time approved within the periodic payment estimates. Subtracted from this time will be the four (4) calendar days per month allowance allocated for work lost per month due to inclement weather conditions. There cannot be a decrease in contract length if the allowance for inclement weather exceeds the actual number of days lost due to inclement weather. To convert working days into calendar days, multiply the working days by seven (7) and divide by the number of working days in a typical work week.

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

5.01 *Availability of Lands*

SC-5.01.B Delete in its entirety.

SC-5.01 Add the following new paragraphs immediately after paragraph 5.01-C:

D. All permanent construction will be within lands of the Owner, public rights-of-way, or within easements through private property acquired by the Owner. The Contractor shall confine his operation strictly within the limits of the rights-of-way and construction areas. In the event the Contractor allows construction to occur outside the lands of the Owner, public rights-of-way, or within easements through private property, Contractor shall be responsible for correcting said error through relocating construction, obtaining corrective deeds or easements, or through other appropriate measures as may be agreed upon by the Owner. The Contractor shall replace in-kind and repair all damages within the prescribed areas equal to or superior to original conditions. Work will be permitted outside of the prescribed easement area if written permission to occupy additional ground is provided by the owner of the affected property. The Contractor shall be responsible for replacement of any property damaged outside of the prescribed area. Trees and other natural obstructions shall not be removed without written permission from the owner of the property. Such additional agreements shall be promptly sent to Engineer, in advance of construction, for filing.

5.03 *Subsurface and Physical Conditions*

SC-5.03 Delete Paragraph 5.03 in its entirety and replace with the following:

5.03 *Subsurface and Physical Conditions*

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

1. those reports of explorations and tests of subsurface conditions at or adjacent to the Site (other than any Geotechnical Data Report or Geotechnical Baseline Report) that contain Technical Data. Such reports are as follows: **NONE**
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. Such drawings are as follows: **NONE**

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 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; or
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
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.

5.05 *Underground Facilities*

SC-5.05.A.5 Insert the following into Paragraph 5 after the first sentence:

If Contractor damages any utilities, he or she shall immediately take such measures as are required to prevent further damage and to protect life and property. The Contractor shall also immediately notify the affected utility company and make permanent repair of the damage. The Contractor shall pay for all damages incurred, as well as for the full repair and restoration thereto at the sole expense of Contractor with no expense being incurred by Owner.

5.06 *Hazardous Environmental Conditions at the Site*

SC-5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

- A. Unless provided in the Appendix of the specifications, no reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Deleted.

ARTICLE 6—BONDS AND INSURANCE

6.02 *Insurance—General Provisions*

SC-6.02.A **Remove “Owner and” from the sentence.**

SC-6.02.B **Delete in its entirety and replace with the following:**

All insurance required by the Contract to be purchased and maintained by Contractor shall be obtained from insurers that are allowed to do business in Maryland, with a Best's Financial Strength Rating of "A-" or better, and a Financial Size Category of "Class VII" or better in the latest evaluation of the A.M. Best Company, unless otherwise approved by Owner.

SC-6.02.E **Delete in its entirety.**

SC-6.02-F **Replace “Owner or Contractor” with “Owner” in both instances of this paragraph.**
Replace “the other party’s” with “Contractor’s”.

SC-6.02.H.1. **Delete SC-6.02.H.1. in its entirety and replace with:**

Contractor shall require all Subcontractors to obtain and maintain workers' compensation, employers' liability, commercial general liability, business auto liability, and contractors' pollution liability (optional), contractors' professional liability (optional) to the same extent required of Contractor, including additional insured status for persons required under Contractor's commercial general liability. Prior to the start of Work under this Contract, Contractor will furnish Subcontractors' certificates of insurance and required endorsements to Owner.

SC-6.02.I **Replace “either party” and “such party” with “Contractor” and “other party” with “Owner”.**

SC-6.02.K **Delete Paragraph 6.02.K in its entirety and replace with the following:**

Without prejudice to any other right or remedy, if Contractor has failed to obtain required insurance, Owner may elect to obtain equivalent insurance, to protect Owner's interests at the expense of Contractor, and the Contract Price shall be adjusted accordingly.

SC 6.02.L **Add the following sentence to the end of paragraph 6.02.L:**

Nothing in this subsection shall be construed to allow insurance coverage, as required by the Contract Documents, to lapse during this Contract, unless and until specific, written authorization for alternative coverage is issued by Owner.

SC-6.02.N **Add the following paragraphs immediately after 6.02.N:**

- O. No acceptance and/or approval of any insurance by Owner shall be construed as relieving or excusing Contractor, or its surety, or its bonds from any liability or obligation imposed upon them by the provisions of the Contract.
- P. Any deductibles or retentions of \$5,000 or greater (\$10,000 for umbrella excess liability) shall be disclosed by Contractor and are subject to Owner's written approval. Such approval will not be unreasonably withheld. Any deductible or retention amounts elected by Contractor or its Subcontractors or imposed by Contractor's or Subcontractor's insurer(s) shall be the sole responsibility of Contractor or its Subcontractors and are not chargeable as expenses.
- Q. For any "claims-made" liability insurance purchased by Contractor or Subcontractors, the purchaser must comply with the following additional conditions. The limits of liability and the extensions to be included remain the same.
 - 1. The retroactive date (if any) of such "claims-made" coverage can be no later than the earlier of the Effective Date of the Contract or the commencement of the Work under the Contract and either 2 or 3 below;
 - 2. The Contractor or Subcontractor shall provide certificates of insurance evidencing the claims-made insurance for a period of three (3) years after Substantial Completion; or
 - 3. The Contractor or Subcontractor shall purchase a three (3) year extended reporting period endorsement for each such "claims-made" policy in force as of the date the Contract terminates or expires, whichever is earlier and evidence the purchase of the extended reporting period endorsement by means of a certificate of insurance and a copy of the endorsement itself.
- R. If Owner is damaged by the failure or neglect of Contractor to obtain and maintain insurance as described and required herein, without so notifying Owner, then Contractor shall bear all reasonable costs properly attributable thereto.

6.03 *Contractor's Insurance*

SC-6.03.C.1. **Replace 6.03.C.1. with the following:**

- 1. include and list as additional insureds Owner and Engineer, and their respective elected and appointed officials, officers, directors, members, partners, employees, and agents.

SC-6.03 **Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:**

D. *Workers' Compensation and Employer's Liability:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	\$
Bodily injury by disease—aggregate	\$
Employer's Liability	
Each accident	\$ 1,000,000
Each employee	\$ 1,000,000
Policy limit	\$ 1,000,000
Stop-gap Liability Coverage	
For work performed in monopolistic states, stop-gap liability coverage must be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	\$

- F. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:
1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
 2. damages insured by reasonably available personal injury liability coverage, and
 3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage.
 - a. Such insurance must be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
 4. Underground, explosion, and collapse coverage.
 5. Personal injury coverage.

6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
 7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:
1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
 2. Any exclusion for water intrusion or water damage.
 3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
 4. Any exclusion of coverage relating to earth subsidence or movement.
 5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
 6. Any limitation or exclusion based on the nature of Contractor's work.
 7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.
- I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	\$ 2,000,000
Products—Completed Operations Aggregate	\$ 1,000,000
Personal and Advertising Injury	\$ 1,000,000
Bodily Injury and Property Damage—Each Occurrence	\$ 1,000,000

- J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Each Person	\$ 1,000,000
Each Accident	\$ 1,000,000

Automobile Liability	Policy limits of not less than:
Property Damage	
Each Accident	\$ 1,000,000
[or]	
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	\$ 1,000,000

- K. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	\$ 1,000,000
General Aggregate	\$ 1,000,000

- L. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements:* Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of **\$1,000,000.00** after accounting for partial attribution of its limits to underlying policies, as allowed above.

6.04 *Builder's Risk and Other Property Insurance*

SC-6.04 **Delete Paragraph 6.04.A, 6.04.B, 6.04.C, 6.04.D and 6.04.E of the General Conditions and substitute the following in its place:**

For all property owned by Contractor and used in or a part of the Work under this Contract, Contractor may purchase all-risk (Special Form) property insurance for such property and any consequential loss of income and extra expense resulting from loss of or damage to Contractor's property, in amounts sufficient to protect Contractor's interests. To the extent permitted by law, Contractor waives all right of recovery from the Owner and its elected and appointed officials, agents, and employees for loss of or damage to Contractor's property and any consequential loss of income and extra expense. If Contractor elects to purchase insurance, such insurance will permit this waiver by endorsement or otherwise. If any property is to be transferred to the Owner as part of the Scope of Work, the risk of loss shall remain with Contractor until the property has been accepted by the Owner, including property in storage or in transit.

ARTICLE 7—CONTRACTOR’S RESPONSIBILITIES

7.03 *Labor; Working Hours*

SC 7.03.C **Delete paragraph 7.03.C in its entirety and insert the following:**

C. Except as otherwise required for the safety and 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 shall be performed during working hours as defined below. Total normal hours per week should be forty (40) hours.

Work Hours:

Work will not be permitted on Saturday, Sunday, or holidays observed by Owner unless approval is given in response to a written request a minimum of 48 hours in advance of commencing work. Emergency repairs or actions are an obvious exception.

Normal working hours shall consist of a nine-hour work day performed between the hours of 7:00 a.m. and 5:00 p.m. Any requests by Owner to limit the Work on certain areas of the Site to certain hours of the day will be accommodated by Contractor. Extensions to the Contract Time will not be permitted, as these limited work hours have been accommodated in the Contract Time as set forth herein.

Overtime:

Overtime hours will be tracked for any work beyond the first 40 hours of the week. Subcontractors must work the same work hours as the Contractor. All overtime work beyond the normal 40 hours per week for the entire projects’ duration must be paid by the Contractor.

Observed Holidays:

New Year’s Day	Martin Luther King Jr.’s Birthday
Good Friday	Memorial Day
Juneteenth Independence Day	Independence Day
Labor Day	Elections Day
Veterans Day	Thanksgiving Day
Day after Thanksgiving	Christmas Eve
Christmas Day	

7.05 *“Or Equals”*

SC-7.05.A **Amend the third sentence of paragraph by striking out the following words:**

Unless the specification or description contains or is followed by words reading that no like, equivalent, or “or-equal” item is permitted,

SC-7.05.A.1.a.4 **Delete paragraph in its entirety and insert “Deleted.”**

7.06 *Substitutes*

SC 7.06.B **Substitute the third sentence of 7.06.B with the following:**

Engineer will make a recommendation to Owner regarding acceptability of “or equal” item.

In sentence four of 7.06.B, insert “subject to Owner’s approval” after ...and Engineer determines.

7.01 Concerning Subcontractors and Suppliers

SC-7.07.A Amend by adding the following to the end of the paragraph:

The total amount of work subcontracted by the Contractor shall not exceed fifty percent of the Contract price without prior approval from the Owner, Engineer and Agency.

SC-7.07.B Delete paragraph in its entirety and insert “Deleted”.

SC-7.07.E Delete the second sentence of paragraph and insert the following in its place:

Owner may not require that Contractor use a specific replacement.

SC-7.07.F Delete paragraph in its entirety and replace with the following:

If the Owner or the Engineer refuses to accept any subcontractor, person, or organization or such list, the Contractor will submit an acceptable substitute, and the Contract price shall remain unchanged or shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate change order, if necessary, shall be issued.

SC-7.07.G Delete paragraph in its entirety.

SC-7.07.K Delete paragraph and replace with the following:

K. All work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Document for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 6.05, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

7.08 Patent Fees and Royalties

SC-7.08.B Delete paragraph in its entirety.

7.10 Taxes

SC-7.10 Add a new paragraph immediately after Paragraph 7.10.A:

- A. Owner is exempt from payment of sales and compensating use taxes of the State of **Maryland** and of cities and counties thereof on all materials to be incorporated into the Work.
 - 1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
 - 2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

7.12 Record Documents

SC-7.12.A Amend paragraph by adding the following after "written interpretations and clarifications,":

Manufacturers' Certifications,

Insert "and Owner" to the end of the last sentence of the paragraph.

SC-7.12.B The following paragraphs are added after SC-7.12.A as follows:

B. All work shall be measured, by the Contractor, during installation and before covering and backfilling. All measurements shall be referenced to project vertical datum and stationing shown on the drawings. All measurements will be recorded and kept current until completion of the Work. Such measurement records shall be transmitted to the Engineer to check Applications for Payment. The Contractor shall field survey inverts for installed gravity sewer pipelines and submit the results along with the Application for Payment for that particular section of sewer. All field measurements for all forcemain record documents shall be updated each month and shall also be submitted with the Application for Payment for that particular section of forcemain. The surveys shall indicate the pipeline in question has been installed in accordance with the Contract Documents.

C. Contractor shall be responsible for recording, keeping, and monitoring Record Drawings of work constructed in the field. Record Drawings will be kept on hand in the Contractor's field office for inspection by the Engineer. Two sets of initial draft Record Drawings shall be issued to the Engineer no later than 14-days from the date of substantial completion.

7.13 Safety and Protection

SC-7.13 Insert the following after the second sentence of Paragraph 7.13.J:

K. Access during construction:

- 1. The Contractor shall schedule Work to minimize the time period during which vehicular access to each building or dwelling along the work route is prevented. The Contractor shall provide, at all times, safe pedestrian access to all building or dwellings, whether residential, commercial, or other.
- 2. Construction shall be scheduled to interfere as little as possible with traffic. Necessary barricades, suitable and sufficient danger signals, and signs in accordance with the

Maryland Traffic Control Manual shall be provided for the protection of existing property and safety of the Public.

L. Protection of Property and Utilities:

1. The location of utilities, facilities, or structures that may be shown on the plans or encountered in the work are not guaranteed. Any inaccuracy or omission in such information shall not relieve the Contractor of his responsibility to protect such existing features from damage or unscheduled interruption of service.
2. The Contractor shall contact "Miss Utility" at (800) 257-7777 at least 48 hours prior to digging in the vicinity of existing underground utilities to have them located and marked.
3. The Contractor shall pay all charges levied by utility companies for work to locate, inspect, protect, relocate, replace, or repair overhead or underground utilities necessary for the construction of the project. The Owner assumes no responsibility for damages or downtime for the Contractor or their subcontractors resulting from the inadequate or negligent performance by utility locators.
4. The Contractor shall, at his own expense, locate, protect, and repair damages to all overhead and underground utilities whether shown by the drawings or not. The Contractor shall cooperate with the utility service, or governing agency to prevent the unscheduled interruption of utility services and facilities during repair or replacement.
5. The Contractor shall comply with the Utility Damage Prevention and Safety Act for the State of Maryland, Title 12, Maryland Code, Chapter 117.

M. Safety Plan:

1. The Contractor shall follow all nationally recognized Safety, Health and Environmental standards in fulfillment of this Contract.
2. The Contractor shall erect and maintain, as required by the existing conditions and performance of this Contract reasonable safeguards for safety and protection of the Site, during all hours for the durations of the project. Reasonable safeguards, include but are not limited to posting danger signs, erecting fences, adding spill containment, or constructing other physical barriers that will protect workers, bystanders, and the general public from hazards.
3. Contractor shall submit to the Owner for review a project specific safety plan addressing his intended program for maintaining safety in accordance with the above referenced requirements.

SC-7.15.A **Replace "Engineer" with "Owner" in the last sentence.**

7.16 *Submittals*

SC-7.16.A.1.d **Add new paragraph immediately after Paragraph 7.16.A.1.c:**

F. Survey and Stake-out Submittals

1. All surveying and stake-out and rim elevation work shall be done by persons licensed by the State of Maryland to perform such work.
2. Work done by the Contractor without having first established proper lines and grade, or work done by him to incorrect line and grade, may be ordered removed and replaced at no increase in contract price.
3. Any bench marks destroyed through or as a direct result of the Contractor's construction operations shall be replaced and/or restored at his expense with no additional cost to the Owner.

7.17 *Contractor's General Warranty and Guarantee*

SC-7.17.F Add new paragraphs immediately after Paragraph 7.17.E:

- F. The Contractor hereby guarantees all of the work performed under this Contract for a period of one year, unless otherwise noted. The guarantee period begins on the date of the completion of the Conditional Acceptance period. The guarantee shall be as follows:
1. Against all faulty or imperfect materials and against all imperfect, careless and/or unskilled workmanship, as evidenced by excessive pipe settlement, cracked pavement, failure of structures, and/or equipment, etc.
 2. That the entire equipment and each and every part thereof, shall operate with proper care and attention in a satisfactory manner, and in accordance with the requirements of these Contract Documents.
 3. That the entire structure in the vicinity of work done shall be watertight and leak-proof, at every point and in every particular.
 4. The Contractor agrees to replace with proper workmanship and materials, and to execute, correct or repair, without cost to the Owner, any Work which may be found to be improper or imperfect.
 5. The guarantee obligations assumed by the Contractor under these Contract Documents shall not be held or taken to be in any way impaired because of the specification, indication or approval by or on behalf of the Owner of any articles, materials, means, combinations, or things used or to be used in the construction, performance and completion of the Work, or any part thereof.
 6. No use or acceptance by the Owner of the Work or any part thereof, nor any failure to use the same, nor any repairs, adjustments, replacements, or corrections made by the Owner due to the Contractor's failure to comply with any of the obligations under the Contract Documents, shall impair in any way the guarantee obligations assumed by the Contractor under these Contract Documents.

7.18 *Indemnification*

SC-7.18.A **Deleted and replaced with the following:**

- 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, defend and hold harmless Owner and Engineer, and the elected and appointed officials, 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 performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused in whole or in part 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. Contractor shall be liable, regardless of whether or not such claims, damages, losses, injuries, or expenses are caused in part by a party indemnified hereunder.

Owner shall cooperate and assist the indemnifying party in the defense of the claim. The indemnifying party shall bear the cost of and have the right to control the defense and shall have the right to select counsel after consulting with the indemnified party. Contractor shall not settle or compromise any claim without the written consent of Owner.

SC- 7.18.B **Deleted and replaced with the following:**

- B. In any and all claims against Owner, Engineer, Engineer's Consultants, and the elected and appointed officials, officers, directors, partners, employees, agents and other consultants and subcontractors of each by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, and 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, Contractor agrees to expressly waive its immunity, if any, as a complying employer under the Workers' Compensation law or statute, but only to the extent that such immunity would bar or affect recovery under or enforcement of any indemnification obligation contained herein. This waiver applies to the Maryland Workers' Compensation Act, or any other applicable state Workers' Compensation law or statute.

7.19 *Delegation of Professional Design Services*

SC-7.19 **Delete this Section in its entirety.**

7.20 *No Limitation of Liability*

SC-7.20 **Paragraph 7.20 is added to the Standard General Conditions as follows:**

- A. It is understood and agreed that any and all of the duties, liabilities, and/or obligations imposed upon or assumed by the Contractor and the Surety, or either of them, by or

under the Contract Documents, shall be taken and construed to be cumulative, and that the mention of any specific duty, liability, or obligation imposed upon or assumed by the Contractor and/or the Surety under the Contract Documents shall not be taken or construed as a limitation or restriction upon any or all of the other duties, liabilities, and/or obligations imposed upon or assumed by the Contractor and/or the Surety by or under the Contract Documents.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

SC-8.01.B Delete paragraph in its entirety.

8.02 *Coordination*

SC-8.02.A Replace first sentence with the following:

- A. Owner will make reasonable efforts to provide advance notice of any other work being performed or to be performed at or adjacent to the Site. Owner's failure to provide such notice will not be construed as a default of the Contract Documents. In such notice, Owner shall include the following:

8.03 *Legal Relationship*

SC-8.03.A Delete paragraph 8.03.A and replace with the following:

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, or any other contractor working for Owner, 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 Times. Contractor must submit any Change Proposal seeking an equitable adjustment in 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 shall 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. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

SC-8.03.B Delete this paragraph in its entirety.

ARTICLE 9—OWNER’S RESPONSIBILITIES

9.01 *Communications to Contractor*

SC-9.01.A Delete Paragraph in its entirety.

9.02 *Replacement of Engineer*

SC-9.02.A Delete Paragraph and insert the following language in lieu thereof:

Owner may at its discretion appoint an engineer to replace Engineer. The replacement engineer’s status under the Contract Documents shall be that of the former Engineer.

9.06 *Insurance*

SC-9.06.A Delete Paragraph in its entirety.

9.11 *Evidence of Financial Arrangements*

SC-9.11.A Delete Paragraph in its entirety.

9.12 *Safety Programs*

SC-9.12.A Insert “in writing” to the end of the Paragraph.

ARTICLE 10—ENGINEER’S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative/ 3rd Party Inspector*

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.B:

- C. The Resident Project Representative (RPR) will be Engineer's representative at the Site, **will act as directed by and under the supervision of the Engineer, and will confer with Engineer regarding RPR’s actions.** RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:
 - 1. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor’s safety meetings), and as appropriate prepare and circulate copies of minutes thereof.
 - 2. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.
 - 3. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR’s own personal safety while at the Site.
 - 4. *Liaison*

- a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.
5. *Review of Work; Defective Work*
- a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Observe whether any Work in place appears to be defective.
 - c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.
6. *Interpretation of Contract Documents:* Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by or approved by Owner.
7. *Shop Drawings and Samples:*
- a. Record date of receipt of Samples and Contractor-approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
 - c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.
8. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by or approved by Owner.
9. *Review of Work and Rejection of Defective Work:*
- a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

10. *Inspections, Tests, and System Start-ups:*

- a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
- b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

11. *Records:*

- a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.
- b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
- c. Maintain records for use in preparing Project documentation.

12. *Reports:*

- a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.
- b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
- c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.

13. *Payment Requests:* Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

14. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

15. *Completion:*

- a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.
- b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
- c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

D. The RPR will not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.
5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Authorize Owner to occupy the Project in whole or in part.

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

SC-10.06 Rename Section "Engineer Recommendations".

SC-10.06.A Delete Paragraph in its entirety and replace with:

Engineer will render recommendations as noted throughout the Contract Documents.

10.07 *Limitations on Engineer's Authority and Responsibilities*

SC-10.07.A Add the following sentence to the end of paragraph:

This provision shall apply to Engineer's authority or responsibility to Contractor, and such authority and responsibilities and decisions impacting Owner shall not be affected by this Paragraph 10.07.

SC-10.07.B Add the following sentence to the end of paragraph:

Engineer shall be responsible for reporting to Owner any failures of Contractor with respect to the Contract Documents of which Engineer becomes or should have become aware through reasonably diligent observation or inspection.

SC-10.07.D Remove the words "only" and "generally" from the first sentence.

SC-10.07.D Add the following sentence to the end of the paragraph:

To the extent that Engineer is able to or should be able to discern any error or omission in the exercise of its professional standard of care, Engineer will be responsible for any failure to fulfill this obligation to Owner.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

SC-11.01.A Restate the sentence to read:

The Contract Documents may be amended or supplemented by a Change Order.

SC-11.01.B Delete paragraph in its entirety.

SC-11.01.C Delete paragraph in its entirety.

11.07 *Change of Contract Price*

SC-11.07.A Delete Paragraph in its entirety and insert the following language in lieu thereof:

- A. The Contract Price may only be changed by Change Order. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to Engineer promptly (but in no event later than twenty (20) days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. If such claim is made in connection with an extension of the Contract Time, such notice shall be in addition to the notice required under Paragraph 12.01. On or before the fifth day of the month succeeding that in which he has provided such notice, Contractor shall provide Owner and Engineer with an itemized statement of the details and amount of such claim and a written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the claimant is entitled as a result of the occurrence of said event. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this Paragraph 12.01.A.

SC-11.07.B.2 Delete paragraph in its entirety and replace with:

2. Where the Work is not covered by unit prices contained in the Contract Bid, the cost of the Work shall be determined on a time and material basis, plus a Contractor's fee for overhead and profit. Said Contractor's fee shall be determined as follows:
- a. For Work performed by the General Contractor, the Contractor's overhead and profit fee shall be 10%.
 - b. For Work performed by a subcontractor, the subcontractor's overhead and profit fee shall be 10% and the General Contractor's fee shall be 5%.

SC-11.07.B.3 Delete section in its entirety.

SC-11.07.C Delete section in its entirety.

11.09 *Change Proposals*

SC-11.09.C Replace this section in its entirety with the following:

Owner will consider Engineer's recommendation in its decision, but Owner shall make the final decision with respect to any Change Proposal. Owner's decision will be final and binding unless the Contractor appeals the decision by filing a Claim under Article 12.

11.10 *Notification to Surety*

SC-11.10.A Add the following to the end of the paragraph:

If Contractor does not give this notice, Contractor will be solely responsible for any damages or losses to Owner resulting from said failure to give notice. Owner may apply a set-off against any funds owed to Contractor to collect such damages or losses and shall be permitted to bring suit if Contractor fails to reimburse Owner for any amounts owed.

ARTICLE 12—CLAIMS

12.01 *Claims*

SC 12.01.A.1 Delete the sentence and replace with:

Appeals by Contractor of Owner's decisions regarding Change Proposals;

SC 12.01.A.3 Delete sentence in its entirety.

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

13.01 *Cost of the Work*

SC 13.01.B.1 Insert "in writing" to the end of the last sentence in the paragraph.

SC 13.01B.4 Add to the end of the sentence "and previously authorized to be retained in writing by Owner in writing".

13.02 *Allowances*

SC-13.02.C Delete paragraph in its entirety.

13.03 *Unit Price Work*

SC 13.03 Delete Paragraph 13.03.E in its entirety and insert the following in its place:

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 extended price of a particular item of Unit Price Work amounts to 20 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more

than 25 percent 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

14.03 *Defective Work*

SC-14.03.B Delete the existing sentence with the following:

The Engineer has the authority to make recommendations to Owner whether Work is defective, and Owner may then reject defective Work.

14.04 *Acceptance of Defective Work*

SC-14.04.A Add the following sentence to the end of the paragraph:

In addition, Owner may require Contractor to provide a bond or other security in a form acceptable to Owner prior to acceptance of any defective Work.

14.05 *Uncovering Work*

SC-14.05.A In the first sentence, remove "has the authority" and replace with "may recommend to Owner".

SC-14.05.C Insert "and Owner concurs with Engineer's recommendation," after "or tested by others" in the first sentence.

14.08 *Punch List Work*

SC-14.08.A Add the following paragraph to New Section 14.08:

In addition to Corrective Work or repair of Defective Work, the Owner shall exercise the rights and remedies described in Paragraphs 14.07 for Punch-List Work items that are not completed within the time period stipulated in the Punch-List.

ARTICLE 15—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.01 *Progress Payments*

SC-15.01.B.4 Add the following language at the end of paragraph:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage or invest the retainage for the benefit of the Contractor.

SC 15.01.C.2 Delete the phrase “to the best of Engineer’s knowledge, information, and belief” from the first sentence.

SC-15.01.C.3.b- After the phrase “between the parties”, insert “unrelated to the portion of the Work under review”.

SC-15.01.C.4 Delete the first sentence and replace with the following:

Neither Engineer’s review of Contractor’s Work for the purposes of recommending payments nor Engineer’s recommendation of or Owner’s payment of any payment, including final payment, will impose responsibility on Engineer or Owner.

SC-15.01.D.1 Delete paragraph in its entirety and insert the following in its place:

The Application for Payment with Engineer’s recommendations will be presented to the Owner and Agency for consideration. If both the Owner and Agency find the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 15.01.E will become due thirty (30) days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor. In the event the 30th day is a weekend or City holiday; payment can be expected on the previous workday. Upon receipt of the check, Owner will notify the Contractor by telephone that the check is ready for pickup or delivery.

SC-15.01.E.2 Delete the word “immediate” from the first sentence.

SC-15.02.A Amend paragraph by striking out the following text: “7 days after” and insert “no later than the subsequent Application for Payment submission.”

15.03 *Substantial Completion*

SC-15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

15.06 *Final Payment*

SC 15.06.A.2 Add new subsection f.:

- f. Satisfactory evidence that all subcontractors have been paid, except for any payment subject to dispute, in which case Owner may withhold 150% of amount withheld by Contractor in its dispute with subcontractor.

- SC 15.06.D Insert “and Owner’s agreement to final payment” after “Engineer’s written recommendation”.
- SC 15.06.E Insert “to the extent Owner agrees with said amount” after “the amount recommended by Engineer,”.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.04 Contractor May Stop Work or Terminate

- SC-16.04.A Delete item 2 within the paragraph.
- SC-16.04.A Change “30 days” to “60 days” in item A.3.

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

17.01 Methods and Procedures

- SC-17.01 **Add the following new section after 17.01.B:**
- C. If the parties cannot reach an agreement in response to a dispute, the parties may pursue any remedy available under law or equity. No additional action or notice shall be required by this Contract.

ARTICLE 18—MISCELLANEOUS

18.08 Assignment of Contract

EXHIBIT A—SOFTWARE REQUIREMENTS FOR ELECTRONIC DOCUMENT EXCHANGE

Item	Electronic Documents	Transmittal Means	Data Format	Note (1)
a.1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	Email	Email	
a.2	Meeting agendas, meeting minutes, RFI's and responses to RFI's, and Contract forms.	Email w/ Attachment	PDF	(2)
a.3	Contractors Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	Email w/ Attachment	PDF	
a.4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.	Email w/ Attachment or LFE	PDF	
a.5	Layouts and drawings to be submitted to Owner for future use and modification.	Email w/ Attachment or LFE	DWG	
a.6	Correspondence, reports and Specifications to be submitted to Owner for future word processing use and modification.	Email w/ Attachment or LFE	DOC	
a.7	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	EXC	
a.8	Database files and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	DB	
Notes				
(1)	All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.			
(2)	Transmittal of written notices is governed by Paragraph 18.01 of the General Conditions.			
Key				
Email	Standard Email formats (.htm, .rtf, or .txt). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies			
LFE	Agreed upon Large File Exchange method (FTP, CD, DVD, hard drive)			
PDF	Portable Document Format readable by Adobe® Acrobat Reader Version [number] or later			
DWG	Autodesk® AutoCAD .dwg format Version [number]			
DOC	Microsoft® Word .docx format Version [number]			
EXC	Microsoft® Excel .xls or .xml format Version [number]			
DB	Microsoft® Access .mdb format Version [number]			

Exhibit A—Software Requirements for Electronic Document Exchange Supplement to the Supplementary Conditions.

EJCDC® C-800, Supplementary Conditions of the Construction Contract.

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DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

CONTRACT CONDITIONS

SECTION 00810

SPECIAL PROVISIONS

1.01 GENERAL

A. The following Special Provisions shall take precedence over the Plans and other Sections of these specifications.

B. Section Includes:

- a. Safety
- b. Codes, Rules, Permits and Fees
- c. Time for Completion and Liquidated Damages
- d. Working Period and Overtime
- e. Interface with Existing Facilities
- f. Contractor's Sequence of Construction

1.02 SAFETY

A. The Contractor shall comply, within the prices bid and without extra cost to the Owner, with all safety regulations or determinations issued by any agency of the Federal Government, including OSHA and the State of Maryland.

1.03 CODES, RULES, PERMITS AND FEES

A. General:

- 1. Local, State and Federal permits secured by the Owner will be included in DIVISION 00 Bidding and Contract Requirements or will be provided to the prospective Bidders by Addenda. The Contractor shall comply with the provisions of all such permits, and the cost of all work dictated by such permits shall be included in the prices bid.
- 2. The Contractor shall give all necessary notices, obtain all permits (except those referenced above) and pay all governmental taxes, fees and other costs in connection with the work, file all necessary plans, prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction, obtain all required Certificates of Inspection and Approval for the work and deliver same to the Engineer, except as otherwise noted herein.

B. Compliance: All materials furnished, and all work installed shall comply with the requirements of all governmental departments having jurisdiction.

1.04 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

A. The Agreement states the number of consecutive calendar days allowed from date of "Notice to Proceed" to date of substantial completion and final completion of the work under this contract.

B. For each calendar day the Contractor is in default in completing the contract as defined in the General Conditions, Supplemental General Conditions and the Bid, he shall pay to the Owner liquidated damages and associated costs for additional engineering services described in the Agreement.

1.05 WORKING PERIOD AND OVERTIME:

A. The Contractor will be allowed to work a defined schedule up to 40 hours per week Monday through Saturday, 52 weeks per year.

B. The Contractor shall not work on Sunday or Holidays observed by the Owner unless prior approval is secured from the Owner. If the Contractor desires to work longer than ten (10) hours per day or if he desires to work on Sunday or Holidays, he must first obtain the written permission of the Owner and Engineer.

C. Contractor may be required to work outside of the defined work schedule, to accommodate plant operating conditions for process isolations and taking tanks offline temporarily during low flow conditions.

D. Should the Contractor, for his convenience and not out of necessity to accommodate operations, extend his work beyond 40 hours per week, independent of inclement weather, any and all cost of weekend, holiday and/or overtime inspection, including but not limited to direct salaries, fringe benefits, overhead profit, administration and supervision, incurred by the Engineer, and/or, the Owner, will be the sole obligation of the Contractor.

1.06 INTERFACE WITH EXISTING FACILITIES

A. Work shall be accomplished in a manner that minimizes interference with the operation of the water treatment plant while it is in service.

B. All operational functions in the existing treatment plant shall be performed by Owner **personnel**, or their designated representatives, unless otherwise authorized.

C. If applicable, connections to existing pipes and structures shall be scheduled and coordinated in advance with the Owner and the Engineer. It may be necessary to make connections during the night hours or weekends. No claim for extra compensation or extension of contract time will be allowed on account of the necessity for connections to

be made during normal "off" hours. Permission of the Owner shall be obtained by the Contractor prior to making any connections to the existing system.

D. When the Contractor desires certain existing electrical and/or mechanical functions to be interfaced, he shall inform the Owner and Engineer, in writing, a minimum of five (5) working days prior to the date he desires those interfaces to be made. The Contractor shall not alter the settings of or connect or disconnect any existing electrical or mechanical equipment without the approval of the Owner.

1.07 CONTRACTOR'S SEQUENCE OF CONSTRUCTION

A. The Contractor is responsible for all construction sequencing. The Contractor shall, in accordance with Section 01300 – SUBMITTALS, submit and obtain approval of his construction schedule. A fully detailed and comprehensive CPM schedule with critical path items so noted shall be submitted within 14 days of the notice to proceed and found acceptable to the Owner and Engineer. Approval of updated monthly CPM schedules will be a pre-condition for approval of payment applications. Acceptance of this plan by the Engineer or the Owner denotes only lack of objection at the time and in no way implies that the Engineer or the Owner guarantees that particular sequence of construction as proposed by the Contractor will in fact work.

B. As construction proceeds, should the Contractor's sequence of construction cause operational problems that were unforeseen at the time of approval, the Engineer or the Owner reserves the right to withdraw the previous approval and require the Contractor to submit and obtain approval of an amended sequence of construction. The sequence of construction will be updated monthly.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

*** END OF SECTION ***

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DIVISION 00 - BIDDING AND CONTRACT REQUIREMENTS

SECTION 00920

PROJECT PERMITS

- MDE Construction Permit
- Worcester County 17HT General Discharge Permit
(Any discharge of water from cleaning of tank or project work shall follow conditions of permit)
- Erosion & Sediment Control – **Waived**
Disturbance less than 5,000 SF

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WATER AND/OR SEWERAGE CONSTRUCTION PERMIT

Permit No.: 25-14-1023
Permit Fee: N/A

Date Issued: 2/17/2026
Expiration Date: 2/17/2029

This permit authorizes Worcester County to paint and repair a water storage tank together with all appurtenances, at the site of 11401 Grays Corner Rd in Berlin MD, Worcester County, in accordance with an application dated 3/3/2025 and received by the Maryland Department of the Environment on 3/27/2025 titled in part:

**GLEN RIDDLE FARM WATER TOWER REHABILITATION
WORCESTER COUNTY DEPARTMENT OF PUBLIC WORKS
WORCESTER COUNTY, MARYLAND
GMB FILE NO. 240256
SHEETS G1.0, C1.0, C2.0, C2.1, C2.2 AND PROJECT MANUAL**

THIS PERMIT IS ISSUED SUBJECT TO THE ATTACHED FOLLOWING CONDITIONS:

Note: This permit may be suspended or revoked upon a final, unreviewable determination that the permittee lacks, or is in violation of federal, state or local approval necessary to conduct the activity authorized by this permit.

Walid Saffouri, P.E., Program Administrator
Engineering & Capital Projects Program
Water and Science Administration

GENERAL CONDITIONS FOR WATER OR SEWERAGE CONSTRUCTION PERMIT

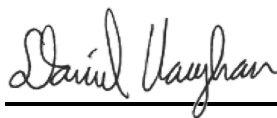
- The structural adequacy and expected performance characteristics of the various components are not certified by this permit.
- This permit is not transferable.
- A copy of this permit must be posted at the work site during construction.
- This permit will expire, if not specifically extended, unless the construction authorized under this permit has been initiated. The permit will then remain valid for the remainder of construction for a period of up to five years from the start of construction.
- If any provision of this permit shall be held invalid for any reason, the remaining provisions shall remain in full force and effect, and such invalid provision shall be considered severed and deleted from this permit.
- Persons violating the requirements of this permit are subject to penalties of up to \$1000 per day as set forth in Environment Article 9-268 and 9-334 through 9-342, Annotated Code of Maryland.
- A copy of the plans and specifications, authorized for use under this permit, shall be made available at the work site during construction of this project. A revised construction permit in accordance with COMAR 26.03.12 is required prior to making substantive changes or material alteration to the construction authorized under this permit.
- The owner shall secure all Federal, State or local permits, including approval of Sedimentation and Erosion Control Plans that may be required before starting the construction of the project.
- The owner shall insure that this project is inspected during the progress of construction to assure substantial compliance with the approved plans and specifications. A log and construction records shall be maintained by the inspector and may be requested for review at any time by this office.
- The project engineer of the Maryland Department of the Environment (the 'Department') shall be notified prior to the start of construction.
- Inspectors of the Department shall be afforded access to the project site, at reasonable times and upon presentation of credentials:
 - a. to inspect construction authorized under this permit and to determine compliance with applicable regulations;
 - b. to have access to and copy any records required to be kept by this permit and by applicable regulations; and
 - c. to obtain any photographic documentation or evidence.
- Within 60 days after completion of construction, a copy of as-built drawings and the attached construction completion certificate (page 3 of this permit) shall be submitted to the Department. Where construction was completed in accordance with the original plans approved under this permit, the submittal of as-built drawings will not be required.
- The owner shall maintain a permanent record of the as-built drawings, or the original plans if as-built drawings are not required.

GENERAL CONDITIONS (CONTINUED)

- Pursuant to Labor & Employment Article 9-201, the owner shall ensure that the contractor and subcontractors involved in the construction of this project must carry workers' compensation insurance for their employees. If the owner determines to perform the project construction by his/her labor force, the owner shall provide the same. If the entity, undertaking the project construction, is not covered by a workers' compensation policy, a Certificate of Compliance shall be submitted and approved by the Workers' Compensation Commission before initiation of the construction.
- Approval must be obtained from the Department before this project may be placed into service. Any exception allowing partial use of this project shall have the prior written approval of the Department. Approval may be obtained pursuant to the following procedure:
 - a. Where large political subdivisions, commissions, authorities etc. have their own inspection capabilities (satisfactory to the Department), the attached construction completion certificate shall be completed by the director of Public Works or similar responsible person and submitted to the Department.
 - b. Where an acceptable local construction inspection program does not exist, the attached construction completion certification shall be completed by a Professional Engineer licensed to practice in the State of Maryland (preferably the same engineer whose seal and signature appear on the plans approved under this permit) and submitted to the Department.
 - c. Upon receipt of the signed certificate, the Department shall, within (30) working days of the receipt, 1) issue an approval, 2) require further review and on-site inspection or 3) reject the construction certification. Approval shall be automatic for projects that have not received some form of written notification from the Department within (30) working days of receipt of the signed certificate.

25-14-1023

Permit Number



**Project Engineer
Engineering & Capital Projects Program**

WATER AND SEWER CONSTRUCTION COMPLETION CERTIFICATION

The undersigned certifies that the construction authorized by this permit has been completed and inspected and that it substantially meets the terms of Environment Article 9-204, Annotated Code of Maryland.

Signature

Title

Date

The above project has been accepted by the Department within the terms of Environment Article 9-204, Annotated Code of Maryland.

Authorized Official

Date

Complete this certificate and return to:
Maryland Department of the Environment
Engineering & Capital Projects Program (ECPP)
Office of Budget and Infrastructure Financing
1800 Washington Boulevard
Baltimore, MD 21230

06/2022

240256

00920 - 5



NOTICE

Prior to starting construction, please notify Daniel Vaughan, Project Engineer, by email at Daniel.Vaughan@maryland.gov. Upon completion of the project, the construction must be certified with the signed permit returned to this office along with a set of as-built drawings.

Should you have any questions concerning the permit or its conditions, please contact me at (410) 537-3757 or at walid.saffouri@maryland.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Walid Saffouri". The signature is fluid and cursive, with a long horizontal stroke at the end.

**Walid Saffouri, P.E., Program Administrator
Engineering and Capital Projects Program
Water and Science Administration**



Maryland

Department of the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary
Adam Ortiz, Deputy Secretary

02/17/2026

The County Commissioners of Worcester County, MD
Dallas Baker Jr., Director of Public Works
6113 Timmons Road
Snow Hill, MD 21863

RE: General Discharge Permit 17HT: Discharges from Tanks, Pipes, Other Liquid Containment Structures, Dewatering Activities, and Groundwater Remediation – NPDES Permit NO. MDG679797 - Registration Number 17HT9797

Dear Dallas Baker Jr.:

The Maryland Department of the Environment has received your Notice of Intent (NOI) to apply for registration under the 17-HT general permit. This letter will serve as your receipt and notification that your NOI has been accepted. This letter is also your guide to assist in determining which parts of the permit are applicable to you.

In signing the NOI, you have certified your company's agreement to comply with the terms of this permit for its operations located within four water systems (Riddle Farm Water System – MD0230019, Newark Water System – MD0230002, Mystic Harbor Water System – MD0230011, and Ocean Pines Water System – MD0230005). Authorization for this facility's discharge, under Registration Number 17HT9797, becomes effective as of 3/17/2021 and extends until **February 26, 2026**. Please note that the permit will be administratively extended until the general permit has been reissued.

Covered Discharges

Based on information presented on your NOI, you are authorized for discharges from the following categories:

- Discharge Category B: Potable Water Systems including:
 - discharges following mechanical cleaning

See Part I.B.9 of the permit for additional ancillary discharges which are covered for all permittees subject only to narrative conditions of the permit.

Narrative Requirements

You are responsible for adherence to all narrative conditions in the permit as applicable (**see Permit Part III.C**) including: erosion and sediment control, development and maintenance of a Pollution Prevention Plan (PPP), training/use of contractors, and visual monitoring. You must also consider any narrative requirements specific to the Discharge Categories under which you are registered, as outlined in **Permit Appendix A**. For all narrative conditions which require corrective actions, you must note in your PPP any time a corrective action was required, including the condition which triggered the need and a description of the action(s) taken.

Outfall Identification for NetDMR Reporting

The table below identifies the assigned outfall numbers for each registered outfall which is subject to reporting via NetDMR.

Outfall Number	Discharge Category	Receiving Stream	Class
001	B	Multiple	I

If you have identified multiple outfalls on your NOI for Discharge Category A or B which are subject to numerical limitations, they have been conglomerated into a single outfall number for reporting purposes. You must collect samples for every applicable discharge event (per the frequency specified in Permit Appendix A) and report the absolute maximum and minimum values collected for each parameter (as applicable) across all samples under the assigned outfall for the appropriate Discharge Category. If there were any exceedances of permit limitations during a reporting quarter, you must report the number of excursions for each parameter in the applicable location on your NetDMR submission. All monitoring results from the individual samples collected during the reporting period shall be attached to your submission in NetDMR and shall also be maintained on site for the entire permit term and made available upon request of Department personnel.

Numeric Requirements

Based on the information provided on your NOI, your discharges are responsible for the meeting of all monitoring requirements and numeric limitations in the tables below

Discharge Category B: Discharges from Potable Water Systems

Requirements for potable water sources where mechanical cleaning has occurred:

Parameter	Daily Minimum	Daily Maximum	Monthly Average	Units	Monitoring Frequency	Sample Type	Notes
Flow		REPORT	REPORT	gpd	1/Discharge	Measured	(1)
Total Suspended Solids		60		mg/L	3/Discharge	Grab	(2)
pH	6	9		s.u.	3/Discharge	Grab	(2)

Notes (for all tables) – Discharge Category B

1. Total volume of flow shall be measured and divided by the time over which the entire discharge occurred.
2. Three grab samples shall be collected at approximate even intervals and analyzed separately.

Antidegradation Review

According to the information submitted on your Notice of Intent, the discharges authorized under this permit do not go into Tier II receiving waters or catchments. Consequently, the terms of the 17-HT permit have been constructed to protect and maintain the existing uses of the receiving streams and the basic uses associated with the respective designated Use(s).

Changes at the facility, such as new sources or new outfall locations or new types of processes, require a new NOI so that the facility may be evaluated for continued general permit eligibility. If you have any questions, please refer to the 17-HT page on the MDE website (<https://mdewwp.page.link/HTGP>) or call the Department at 410-537-3323.

Sincerely,

John Graff

John Graff
Natural Resources Planner
Industrial and General Permits Program
Water and Science Administration

Enclosures

cc: WSA Compliance Program, Eastern Division (Worcester County)

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DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS
SECTION 00941 - CHANGE ORDER NO.: [Number of Change Order]

Owner: **Worcester County**
 Engineer: **George, Miles & Buhr, LLC**

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

Contractor: Contractor's Project No.: **240256**
 Project: **Glen Riddle Farm Water Tower Rehabilitation**
 Contract Name: **Glen Riddle Farm Water Tower Rehabilitation**
 Date Issued: Effective Date of Change Order:

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

Description:

[Description of the change]

Attachments:

[List documents related to the change]

Change in Contract Price	Change in Contract Times [State Contract Times as either a specific date or a number of days]
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. [Number of previous Change Order] : \$ _____	[Increase] [Decrease] from previously approved Change Orders No.1 to No. [Number of previous Change Order] : Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: \$ _____	[Increase] [Decrease] this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required) By: _____ Title: _____ Date: _____ Authorized by Owner By: _____ Title: _____ _____	Accepted by Contractor _____ _____ _____ Approved by Funding Agency (if applicable) _____ _____ _____

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The Glen Riddle Farm Water Treatment Plant (WTP) and elevated storage tower (EST) is owned by Worcester County, MD and is located just east of the intersection of Racetrack Road (Rd 589) and Route 50. The plant is on Gray's Corner Road and serves the Glen Riddle community and nearby properties. The WTP and EST were constructed around 2004 and designed to maintain system pressures around 60-75 psi.

B. The work under this Contract consists of a full rehabilitation of the existing EST to include cleaning and repainting. Rehabilitation includes the following items (not listed in any required sequence). The Contractor is solely responsible for determining the means, methods, techniques, sequences, and procedures of construction.

1. Coordinate with Owner to operate valves and control system to isolate the EST from operations.
2. Design and installation of an Abrasive Blasting Exterior Containment Plan.
3. Surface preparation and repainting of the exterior surfaces.
4. Surface preparation and repainting of the interior surfaces.
5. Clean and remove sediment from interior tank cone located at bottom of through prior to repainting of interior surfaces.
6. Remove notched rail safety climbs and replace with galvanized flexible cable safety climbs.
7. Remove insulation jacketing from inlet/distribution pipe. After repainting, install new insulation and metal jacketing.
8. Restore full lighting system and thermostat functionality.
9. Install new bird room drain line with overflow tie and/or repair or replace condensate drain line.
10. Install welded conduit clips off of ladders, and relocate all conduits, light fixtures, and coaxial cables onto new clips in bell, stem, bird room, and access tube.
11. Surface preparation and painting of the concrete foundation, including grouting and caulking around the base of the bell.
12. Install OSHA compliant roof handrails to enclose the center roof area.
13. Install neoprene boot or new overhang, batten, and screen at access tube vet gap.
14. Seal unused penetration and remove and seal unused conduit adjacent to access tube manhole.

15. Relocate antennas and FAA lights to new roof handrails to provide maximum visibility.
16. Install new de-chlorination system at overflow/drainpipe discharges and install new concrete splash pad.
17. Secure roof manholes with locks.
18. Clean and disinfect the interior surfaces.
19. Remove and ensure proper off-site disposal of all debris resulting from the rehabilitation and construction activities.

C. During the rehabilitation, additional work as directed by the on-site inspector may include:

1. If required perform pit filling with 100% solids epoxy surfacing components to interior pitted areas exhibiting up to 50% metal loss, as per Section 09950.
2. If required, perform pit welding to areas exhibiting greater than 50% metal loss, as per Section 05500.
3. If required, perform seam welding to interior seams exhibiting undercutting or extensive metal loss from corrosion, as per Section 05500.
4. If required, install patch plates over holes in the steel, as per Section 05500.

D. The above general outline of principal features does not in any way limit the responsibility of the Contractor to perform all work and furnish the required materials, equipment, labor and means as shown or required by the Contract Documents.

E. Materials, equipment, labor, etc., that are obviously a part of the work and necessary for the proper operation and installation of same, although not specifically indicated in the Contract Documents, shall be provided as if called for in detail without additional cost to the Owner.

F. The work under this Contract includes all requirements to paint, refurbish, and rehabilitate an existing water storage tank to provide a finished and fully operable water storage tower including miscellaneous items and incidentals as indicated, shown, specified, or required to complete the work in strict conformity with the Contract Documents. The Contractor shall provide all labor, equipment, tools, materials, and incidentals and shall perform all construction operations required to completely finish all of the work to the satisfaction of the Owner and the Engineer. At the conclusion of the project, the Contractor shall furnish a complete and functioning water storage facility.

1.02 DESCRIPTION OF EXISTING TANK

A. The existing EST stands at an elevation of 180' with a capacity of 400,000 gallons. The tank is currently out of service. See Contract Plans for more details.

1.03 TIME OF COMPLETION OF CONTRACT AND LIQUIDATED DAMAGES

- A. The Agreement states the number of consecutive calendar days allowed from date of "Notice to Proceed" to date of completion of the work under this contract. Because of the urgent requirement for completion, this date must be met. For each and every day that the Contractor is in default in completing the Contract as defined in the General Conditions and in the Agreement, he shall pay to the Owner liquidated damages.

1.04 CONTRACT DOCUMENTS

- A. All work shall be completed in accordance with the Contract Documents. Contract Documents for this project include:

1. ***Worcester County Standard Specifications and Construction Details, latest edition.***
2. Instructions to Bidders.
3. Bid Form.
4. Agreement.
5. Standard General Conditions.
6. Technical Specifications.
7. Construction Drawings (Plans).

- B. The Contract Drawings and Technical Specifications are complementary. However, should a dispute arise as to which shall govern, the Technical Specifications will apply.

- C. Any discrepancy between the "Standard General Conditions" and the "Technical Specifications," the Technical Specifications shall govern.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 COORDINATION

- A. The Contractor will be required to coordinate his work and to phase the maintenance operations to prevent interference to operation of Owner's facilities. Any work requiring shut-down of facilities must be scheduled and performed only at such times as shall be authorized by the Owner. Such work must be completed during the specific periods authorized by the Owner.

1. Work by Others: The Contractor's attention is directed to the fact that work may be conducted at the site by other contractors during the performance of the work under this Contract. The Contractor shall conduct its operations so as to cause a minimum of interference with the work of such other contractor's and shall cooperate fully with such contractors to provide continued safe access to their respective portions of the site, as required to perform work under their respective contracts.
2. Interference with Work on Utilities: The Contractor shall cooperate fully with all utility forces of the Owner or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the work, and shall schedule the work so as to minimize interference with said relocation, altering, or other rearranging of facilities.

B. In addition to the above, the Contractor shall coordinate scheduling, submittals, and work of the various sections of specifications to assure efficient and orderly completion of work.

*** END OF SECTION ***

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01030

ALTERNATIVES

PART 1 - GENERAL

1.01 RELATED WORK

A. Alternative equipment, methods, and materials must be listed in the Bid. Failure to submit information on alternative equipment, methods, and materials as requested by the Owner is cause for rejection of the proposed alternative and only the specified equipment and materials will be permitted to be incorporated in the finished project.

B. All alternative equipment, methods, and materials offered in the Bid must comply with the detailed requirements of the Specifications and shall be covered by the specified guarantees and warranties. If it is determined that the alternative equipment, methods and materials do not conform with the Specifications, such proposed alternative shall not be accepted and the Contractor will be required to furnish and install the specified equipment and materials.

C. No alternative materials, methods, and equipment will be incorporated in the finished project except an alternative accepted in writing by Owner pursuant to the requirements of this Section. Acceptance by Owner of any such alternative shall not relieve Contractor of responsibility for assuring that any such alternative will, after installation or incorporation in the Work, conform to any performance requirements and other information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

1.02 PAYMENT

A. The Contractor shall pay for all installation costs necessitated by the selection of alternative equipment, methods, and material. Such costs are included in the Contract price and any modifications as stated in the Bid.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

*** END OF SECTION ***

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01040

COORDINATION

1.01 CONSTRUCTION SEQUENCING AND COORDINATION

A. The existing 400,000 gallon storage tank is not currently in service. The Contractor shall coordinate and interfere to the least extent possible with the operations of the existing water treatment plant (WTP) located on the same site.

B. Operations of valves and/or gates required to perform the work shall be done by Worcester County personnel. The Plant Manager or the Plant Manager's designated agent will supervise this work, and no valve, gate, or other equipment shall be operated without his knowledge. Operation of said valves, gates, or equipment shall be at the sole discretion of the WTP Plant Manager.

1.02 INTERFACE WITH EXISTING FACILITIES

A. The Contractor shall locate all existing utilities prior to excavation and shall exercise caution to protect them during construction.

B. Connections to existing pipes and structures shall be scheduled and coordinated in advance with the Owner. It may be necessary to make connections during the night hours or weekends. No claim for extra compensation or extension of contract time will be allowed on account of the necessity for connections to be made during normal "off" hours. Permission of the Owner shall be obtained by the Contractor prior to making any connections to the existing system.

C. All operational functions in the existing facilities shall be performed by Worcester County personnel unless otherwise authorized. The Contractor shall conduct his operations so as not to interfere with or injure the work of other contractors or workmen performing work for the County. The Contractor shall promptly make good, at its own expense, any injury or damage which may be done to such work by him or his employees, agents, or subcontractors.

D. When the Contractor desires certain existing electrical and/or mechanical functions to be interfaced, he shall inform the Owner, in writing, a minimum of twenty-one (21) days prior to the date he desires those interfaces to be made. The Contractor shall not alter the settings of or connect or disconnect any existing electrical or mechanical equipment without the approval of the Owner.

1.03 MAINTENANCE OF TRAFFIC

A. The Contractor shall provide safe access for the treatment plant personnel to all existing water storage, treatment, and pumping units at all times. The Contractor shall keep access roads open at all times.

B. It shall be the responsibility of the Contractor not to interfere with or create any hazards to traffic. No equipment or material will be stored or permitted to stand where traffic must be maintained. It shall be the responsibility of the Contractor to control dust on all roads, drives, and walkways on which traffic is being maintained.

1.04 SEQUENCE OF CONSTRUCTION

A. The Contractor is responsible for all construction sequencing. The Contractor shall, in accordance with Section 01300 - SUBMITTALS, submit and obtain approval of his detailed sequence of construction. Acceptance of this plan by the Owner denotes only lack of objection at the time and in no way implies that the Owner guarantees that particular sequence of construction as proposed by the Contractor will in fact work. Any approval given is done so with the stipulation that all work done shall comply with the plans and specifications.

B. As construction proceeds, should the Contractor's Sequence cause operational problems that were unforeseen at the time of approval, the Owner reserves the right to withdraw the previous approval and require the Contractor to submit and obtain approval of an amended Sequence of Construction.

1.05 CONSTRUCTION CONSTRAINTS

A. This section contains a list of project constraints that the Contractor must incorporate into his proposed construction schedule.

1. All new piping and/or valves shall be installed, tested, disinfected, and put into service prior to any rehabilitation work on the existing 400,000 gallon elevated storage tank.
2. All tank refurbishment and painting work, starting when the valve to the tank is closed until the tank is refurbished, painted, filled with potable water, disinfected, successfully tested, and accepted by the Owner and placed back in service shall not exceed sixty (60) calendar days.
3. Any modifications to the operation, due to construction, must be approved in advance by the Owner in writing.
4. Any changes to the operation or control of the existing process or equipment must be approved by the Owner.
5. All new structures and piping must be tested and accepted prior to being put into service.
6. All new structures and equipment must be provided with safe access for maintenance and observation.

7. All temporary piping, pumping, and electrical power required for construction of these facilities are to be provided by the contractor at no additional expense to the Owner.

1.06 COORDINATION OF TRADES

A. Where the work of any trade shall be installed in close proximity to work of other trades, or where there is evidence that the work of any trade shall interfere with the work of other trades, the Contractor shall work out space allocations to make a satisfactory adjustment. If so ordered by the Owner, the Contractor shall prepare composite working drawings and sections at a suitable scale, not less than 1/4 inch equal 1 foot, clearly showing how work is to be installed in relation to the work of the other trades. If the Contractor permits any work to be installed before coordinating with the various trades or so as to cause interference with work of other trades, he shall make necessary changes in the work to correct the condition without extra cost to the Owner.

B. The Contractor shall arrange that each trade determine the location, size, and arrangement of all chases and openings and shall establish clearances in concealed spaces required for the proper installation of its work and shall see that such are provided.

1.07 CLEANUP

A. The Contractor shall keep all trash, garbage, spent material containers, etc. picked up on a daily basis.

B. Upon completion of the work and before Final Acceptance will be made, the work site, storage areas, and other areas occupied by the Contractor during construction shall be cleaned, and all surplus and discarded materials, false work, and rubbish placed thereon by the Contractor shall be removed by the Contractor. The Contractor's storage area shall be top-soiled, seeded, and mulched in accordance with the appropriate Division 2 of the Project Manual. No additional payment will be made for the work as all such costs shall be included in the lump sum price bid.

C. Should daily site cleaning and final restoration not be performed, the Owner shall have such done with the costs of same being charged to the Contractor.

1.08 TOOLS, ACCESSORIES AND SPARE PARTS

A. The Contractor shall, unless otherwise stated, furnish with each type, kind, and size of equipment, one complete set of any special tools and appliances which may be needed to adjust, operate, maintain, or repair the equipment.

B. Each piece of equipment shall be provided with a substantial name plate, which is securely fastened in place and clearly inscribed with the manufacturer's name, year of manufacture, and principal rating data.

C. Where the Specifications require spare parts to be furnished by the Contractor, said spare parts for each item of equipment shall be kept separate and tagged to identify the specific item of equipment to which they belong, shall be packaged so as to preclude damage from handling and storage, and shall be bagged or packaged together where items are small in dimension.

1.9 DELAYS AND EXTENSIONS OF TIME

A. The Contractor shall not be entitled to payment or compensation of any kind from the Owner for direct, indirect, or impact damages, including but not limited to costs of acceleration arising because of hindrance or delay from any cause whatsoever, whether such hindrances or delays be reasonable or unreasonable, foreseeable or unforeseeable, or avoidable or unavoidable; provided, however, that this provision shall not preclude recovery by the Contractor of damages for hindrances or delays due solely to fraud or bad faith on the part of the Owner or his agents.

B. In the event the Contractor requests an extension of the Contract Time, he shall furnish such justification and supporting evidence as the Owner may deem necessary for a determination of whether or not the Contractor is entitled to an extension of time under the provisions of the Contract. The Contractor shall submit such requests in writing to the Engineer (with a copy to the Owner) within fifteen (15) days of the incident which caused the delay. The Owner shall base its findings of fact and decision on such justification and supporting evidence and shall advise the Contractor in writing thereof. If the County finds that the Contractor is entitled to any extension of the Contract Time, the Owner's determination of the total number of days' extension shall be based upon the currently approved progress schedule and on all data relevant to the extension. Such data will be incorporated into the schedule in the form of a revision thereto, accomplished in a timely manner. The Owner and the Engineer reserve the right to delay final decisions regarding time extension requests to within thirty (30) days of the point that it would impact the approved contract time. The Contractor acknowledges and agrees that actual delays in activities or time required to accomplish change order activities which, according to the schedule, do not affect the critical path and therefore do not have any effect upon Contract completion time, will not be a basis for an extension of time.

1.10 WARRANTY AND GUARANTEE

A. The Contractor shall initiate all requests for acceptance by the Owner of substantially completed work. The request shall include a detailed listing of equipment and/or materials included in that work (i.e. serial numbers, quantities, descriptions, etc.).

B. Prior to this request, all specified operation and maintenance instructions and training shall have been provided for the plant personnel, all certificates, spare parts, test equipment, record drawings, and other items required to be delivered shall have been provided, all punch-list items shall have been addressed to the Owner's satisfaction, and

all additional required documents shall have been submitted, such as AIA lien release forms, warranty bond, etc.

C. Upon receipt of the request, the Owner, and the Contractor will make an inspection of the work to determine the status of completion as defined in the General Conditions.

D. Substantial completion dates for work shall be expressly established in writing by the Owner.

E. The Contractor shall warrant and guarantee to the Owner for a period of one (1) year from the date(s) of Substantial Completion Acceptance the following:

1. That all materials and equipment provided under this Contract are new, unless otherwise specified.
2. That all work is of good quality and free from faults and defects and in accordance with the requirements of the Contract Documents.
3. That all equipment and systems and each and every part thereof, shall operate (with proper care and attention) in a satisfactory and efficient manner, and in accordance with the Contract Documents. Equipment accepted in intermediate phases of the Contract shall be warranted and guaranteed for a period of one (1) year from Substantial Completion Acceptance of that particular phase of the Contract.
4. That the Contractor shall, upon receipt of written notice from the Owner, promptly replace with workmanship and materials which comply with these Specifications, and re-execute, correct or repair, without cost to the Owner, all work which may be found to be not in accordance with the Contract Documents.
5. That the guarantee obligations assumed by the Contractor under these Contract Documents shall not be held or taken to be in any way impaired because of the Specifications, indication or approval by or on behalf of the Owner of any articles, materials, means, combinations of things used or to be used in the construction, performance and completion of the work, or any part thereof.
6. That no use or acceptance by the Owner of the work or any part thereof, nor any failure to use the same, nor any repairs, adjustments, or corrections made by the Owner due to the Contractor's failure to comply with any of his obligations under the Contract Documents, shall impair in any way the guarantee obligations of the Contractor under these Contract Documents.

F. If the Contractor fails to make repairs during the guarantee period(s), the Owner may cause such damaged or defective work to be repaired and made good at the cost and expense of the Contractor, including, but not limited to, compensation if required for additional professional services and Owner staff's time and material. The Contractor shall also bear the expenses of making good all work destroyed or damaged by the correction, removal or replacement of his defective work.

1.11 FINAL COMPLETION ACCEPTANCE

A. Upon completion of the final phase of the warranty period, the Contractor shall request, in writing, final acceptance of the Contract by the Owner.

B. See the General Conditions for other terms of the warranty period.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

*** END OF SECTION ***

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01100

MOBILIZATION

PART 1 - GENERAL

1.01 GENERAL

A. Mobilization shall include the procurement of all permits, the movement of all equipment onto the site, the furnishing and erection of temporary buildings and other construction facilities, and implementation of security requirements; all as required for the proper performance and completion of the work. Mobilization shall include the following principal items:

1. Moving onto the site of all Contractor's equipment required for first month operations.
2. Installing temporary construction power, wiring, and lighting facilities as needed.
3. Establishing fire protection system.
4. Developing construction water supply.
5. Providing on-site sanitary facilities and potable water facilities.
6. Arranging for and erecting of Contractor's work and storage yard.
7. Constructing and implementing security features and requirements complying with Section 01500.
8. Obtaining all required permits.
9. Having and posting all OSHA required notices and establishment of safety programs.
10. Having the Contractor's foreman at the job site full time.
11. Providing initial submittals.

1.02 PAYMENT FOR MOBILIZATION

A. The Contractor's attention is directed to the condition that no payment for mobilization, or any part thereof will be approved for payment under the Contract until all mobilization items listed above have been completed as specified.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

*** END OF SECTION ***

DIVISION 01 – GENERAL REQUIREMENTS

SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Payment for the work completed under this Contract will be made at the lump sum, contingent/unit, and allowance prices bid, which prices shall include the furnishing of all labor, tools, equipment and materials and the performance of all work required to complete the project as indicated and specified in accordance with all requirements of the Project Manual and to the entire satisfaction of the Engineer.

B. It is intended that all work shown on the Contract Drawings and included in the specifications is to be paid for under the items listed in the proposal form. The absence from the proposal form of bid items for any specific category of work shall be interpreted as meaning that the cost of such work, accomplished as defined by the Contract Documents, shall be included in the prices bid for related items listed in the proposal form. Should the Contractor feel that the cost for any item of work has not been defined by a Bid Form payment item, he shall include the cost for that work in some other applicable bid item, so that his proposal for the project reflects his total price for completing the work in its entirety.

C. The prices stated in the proposal(s) include all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other costs and expenses for performing and completing the work as shown on the Drawings and specified herein. The basis of payment for an item at the lump sum or unit price shown in the proposal(s) shall be in accordance with the description of that item in this Section.

D. All items in the Bid which are designated as "Contingent Bid Items" are to be used and will be paid for only at the written direction and authorization of the Owner. Payment under this section will be made for materials furnished and placed in addition to those shown or beyond the limits indicated or reasonably inferred from the Contract Documents. All materials furnished and installed shall be in accordance with these specifications. Measurements and payment will be in accordance with the proposal and will include but not necessarily be limited to the furnishing, hauling, placing, and installing of materials, and the furnishing of such manpower and equipment as required to accomplish the work as directed in writing by the Owner.

E. All excavation under this Contract is unclassified; that is, the unit prices bid shall be taken to include and cover all materials required to be excavated and backfilled, whether wet or dry, and regardless of the character of the materials. The excavations, removal and replacement of road surfacing materials, curb, sidewalk, gutter and yard restoration, as required, shall be included in the unit prices bid with any exceptions as noted herein or as designated on the plans.

F. The cost of dewatering and associated work will not be separately paid for but shall be considered as incidental to other bid items and included in the prices bid for them.

G. All removal, relocation and disposal work as indicated in the Contract Documents, and/or as necessary to complete the proposed work shall be performed at no additional cost to the Owner. Cost of all removal, relocation and disposal work shall be included in the price bid.

H. For the unit price Items included in the Bid, the Contractor will be paid for the actual quantity of the authorized work done or material furnished under each item of the proposal, at the unit price bid for such item. The quantities for payment under this Contract shall be determined by actual measurement of the completed items, in place, ready for service and accepted by the Owner, in accordance with the General Conditions.

I. All items of work shall be measured concurrently, upon installation and before covering or backfilling, by the Resident Project Representative and the Contractor's representative. All items so measured will be recorded by both parties in a format which can be kept current until completion of work. All measurements, to the maximum extent possible, shall be referenced to base dimensions and stationing shown on the Drawings.

J. Payments during the course of the work for lump sum items will be made on the basis of percentage completion of the work items listed in the Schedule of Values for each lump sum item. The Schedule of Values shall be prepared by the Contractor and submitted to the Engineer and shall serve as a breakdown of the Lump Sum bid for the purpose of arriving at a basis for the monthly estimate. The Schedule shall add up to 100% of the Lump Sum bid.

1.02 LUMP SUM ITEMS

A. Bid Item A1: Mobilization/General Conditions

1. The lump sum price bid shall include all work directly or indirectly related to the mobilization / demobilization and general conditions as described in the Specifications. The work shall include, but not be limited to, initial movement of personnel to the project site; establishment of offices, shops and plants; moving on and off site all construction equipment, hauling units, concrete mixers, hoisting equipment, compressors and tools required to complete the work; establishment and security of storage yard area; furnishing, installing, maintaining and removing any project signs; maintenance of traffic;

construction of sanitary, sediment and erosion control, and other facilities required by the Specifications and State and Local regulations; temporary utilities, electric power and security fence; submittals; closeout and cleanup; construction stakeout; administrative overhead costs; all other work and operations which must be performed prior to beginning work on compensable items of work at the project site, including obtaining all permits and the cost of required insurance and bonds and other initial expenses; etc.

2. Measurement shall be made on the basis of the entire mobilization / demobilization effort, complete. Payment shall be made at the lump sum price bid.
3. This item shall be limited to five (5) percent of the total bid price. At the onset of construction and full mobilization, fifty percent (50%) of the Bid Item amount can be requested for payment and the remaining 50% will be paid on a pro-rated basis for the remainder of the construction contract duration.

B. Bid Item A2: Rehabilitation of Existing 400,000 Gallon Elevated Water Tower

1. The lump sum price bid shall include all work directly or indirectly related to the blasting, painting, refurbishment and rehabilitation of the existing 400,000 gallon water tower as indicated in the Contract Documents, including fully blasting interior and exterior for surface preparation and repainting of the interior surfaces and exterior surfaces; surface preparation and painting of the concrete foundation, including grouting and caulking; clean and remove sediment from interior tank cone and throughout; remove notched rail safety climbs and replace with galvanized flexible cable safety climbs; remove insulation jacketing from inlet/distribution pipe and install new insulation and metal jacketing after painting; restore full lighting system and thermostat functionality; install new bird room drain line with overflow tie and/or repair or replace condensate drain line; install welded conduit clips off of ladders, and relocate all conduits, light fixtures, and coaxial cables onto new clips in bell, stem, bird room, and access tube; install OSHA compliant roof handrails to enclose the center roof area; install neoprene boot or new overhang, batten, and screen at access tube vet gap; seal unused penetration and remove and seal unused conduit adjacent to access tube manhole; relocate antennas and FAA lights to new roof handrails to provide maximum visibility; install new de-chlorination system at overflow/drainpipe discharges and install new concrete splash pad; secure roof manholes with locks; clean and disinfect the interior surfaces; and temporary control modifications and operational changes associated with the temporary shut-down of water tower. Also included shall be all removal and proper disposal of debris and excess materials including all cleared materials, and all other work necessary for a fully usable and operational facility. All work shall be performed as required by the Contract Documents and in accordance with the requirements of the Owner for the lump sum price bid.

2. **Lump sum bid includes painting of all surfaces but excludes painting of logo.**
3. Measurement and payment shall be made on the basis of the percentage complete of this item as agreed upon by the Owner and Contractor at each pay application, not to exceed the lump sum price bid.

C. Bid Item A3: Design Submittal and Installation of Abrasive Blasting Exterior Containment Plan

1. The lump sum price bid shall include all work directly or indirectly related to furnishing all materials, tools, labor, equipment, engineering or other professional services, necessary to design, construct and operate an abrasive blast cleaning residuals containment system. The minimum design requirements for the containment system shall meet **Class 4A Containment** as per SSPC-Guide 6 and fully enclose the tank or individual work areas necessary to protect Owner's property in and around the vicinity of the tank and any adjacent properties restrict and control wind borne fallout of residue, particulate matter from cleaning operations, and/or paint.
2. The price bid shall include design and submittals of the contaminant system and associated structural components or attachments to existing tower. Containment plan shall be designed and sealed by a Professional Engineer registered in the State of Maryland.
3. Payment will be made at the lump sum price bid for this item.

D. Bid Item A4: Modification to exterior Overflow Drain Piping, Pipe Support and Splash Pad

1. The price bid for furnishing and installing all materials, equipment and labor necessary to remove existing overflow and drain pipes outside of dry riser, replace overflow and drain pipes with de-chlorination chamber and relocate duckbill check valve, install any necessary fittings, stone, surface restoration and complete all other work required to provide functional system.
2. Furnish and install new splash pad (s) and remove and dispose of old materials.
3. Payment will be made at the lump sum price bid for this item.

E. Bid Item A5: Disinfection and Sampling

1. The price bid for furnishing all material, equipment and labor to complete disinfection and sampling as specified.
2. Complete and cover costs for all required state sampling and reporting to state prior to bringing tank online.
3. Payment will be made at the lump sum price bid for this item.

1.03 CONTINGENT BID/UNIT PRICE ITEMS

A. In the BID FORM, there are several items listed as "Contingent Unit Price Items". These items are for work which may or may not be ordered by the Owner. These items will be used only if the Owner determines that they are required due to actual field conditions. A quantity is listed in the "Unit Price Item" description. The Contractor will include the cost of these items in his BASE BID. In the event that the actual quantity used is higher or lower than that shown, the amount paid to the Contractor will be adjusted up or down in accordance with the price quoted by the Contractor.

B. All contingent unit price work shall be performed only as, and when, ordered in writing by the Engineer.

1.04 EXPLANATION OF CONTINGENT BID UNIT PRICE ITEMS

A. Bid Item B1: Miscellaneous Pit Filling

1. Measurement for this item will be the actual volume of pit filler in gallons placed. This item will only be used if directed by the Engineer and/or Owner.
2. Payment for the work completed under this item will be made at the unit price bid per gallon for "Contingent Pit Filling" which price shall be full compensation for all labor, materials, tools, equipment and incidentals required to complete all work in accordance with Section 09950 – Tank Interior – Painting System and as ordered by the Engineer or Owner. All surface preparation and coating required for the rehabilitation of the tank and other related work shown on the Drawings shall be included in the lump sum price bid A2 – Rehabilitation of Existing 400,000-gallon Water Tower.

B. Bid Item B2: Miscellaneous Pit Welding

1. Measurement for this item will be made on the actual amount of time in hours required for pit welding. This item will only be used if directed by the Engineer and/or Owner.
2. Payment for this item will be made at the unit price bid for "Contingent Pit Welding" which price shall be full compensation for all labor materials, tools, equipment and incidentals required to complete all work in accordance with Section 05500 – Miscellaneous Metals and as ordered by the Engineer and/or Owner. All surface preparation and coating required for the rehabilitation of the tank and other related work shown on the Drawings shall be included in the lump sum price bid A2 – Rehabilitation of Existing 400,000-gallon Water Tower.

C. Bid Items B3: Miscellaneous Contingent Seam Welding

1. Measurement for this item will be made on the actual amount of time in hours required for seam welding. This item will only be used if directed by the Engineer and/or Owner.
2. Payment for this item will be made at the unit price bid for "Contingent Seam Welding" which price shall be full compensation for all labor materials, tools, equipment and incidentals required to complete all work in accordance with Section 05500 – Miscellaneous Metals and as ordered by the Engineer an/or Owner. All surface preparation and coating required for the rehabilitation of the tank and other related work shown on the Drawings shall be included in the lump sum price bid A2 – Rehabilitation of Existing 400,000-gallon Water Tower.

D. Bid Item B4: Miscellaneous Steel Patch Plates

1. Measurement for this item will be made on the actual number of patch plates installed. This item will only be used if directed by the Engineer and/or Owner.
2. Payment for this item will be made at the unit price bid for "Contingent Steel Patch Plates" which price shall be full compensation for all labor materials, tools, equipment and incidentals required to complete all work in accordance with Section 05500 – Miscellaneous Metals and as ordered by the Engineer and/or Owner. All surface preparation and coating required for the rehabilitation of the tank and other related work shown on the Drawings shall be included in the lump sum price bid A2 – Rehabilitation of Existing 400,000-gallon Water Tower.

E. Item B5: Miscellaneous Weld Repairs

1. Measurement for this item will be made on the actual amount of time in hours required for weld repairs. This item will only be used if directed by the Engineer and/or Owner.
2. Payment for this item will be made at the unit price bid for "Contingent Weld Repairs" which price shall be full compensation for all labor materials, tools, equipment and incidentals required to complete all work in accordance with Section 05500 – Miscellaneous Metals and as ordered by the Engineer an/or Owner. All surface preparation and coating required for the rehabilitation of the tank and other related work shown on the Drawings shall be included in the lump sum price bid A2 – Rehabilitation of Existing 400,000-gallon Water Tower.

F. Item B6: Furnish and Place Miscellaneous 4,000 PSI Concrete

1. The price bid shall include and cover furnishing and placing miscellaneous 4,000 psi concrete, including forming, finishing, and all other incidental work or other construction not included as part of other pay items.

2. Measurement of quantities for miscellaneous concrete will be made based upon authorized depth, width, and length of concrete placement.
3. Payment for all work in connection with miscellaneous concrete will be made at the appropriate unit prices bid for the volume of concrete actually furnished and placed within the limits defined here in before and as authorized by the Engineer and/or Owner.

G. Item B7: Excavate and Replace Rip Rap

1. Measurement for this item will be made on the actual number of cubic yards of material removed and stone placed. This item will only be used when the Engineer and/or Owner directs the Contractor to remove material and replace the material with rip rap. Any material removed shall be disposed of off-site in a suitable manner.
2. Payment for this item shall be made at the per cubic yard price bid which shall be full compensation for all labor, materials, tools, equipment, and incidentals required to excavate the existing material, haul and dispose of the material off site, and replace it with stone.

1.05 MEASUREMENT AND PAYMENT FOR EQUIPMENT

A. Payment schedule for equipment that requires performance testing shall be:

1. 90% of the total (with supporting documentation) upon shipment of the equipment to the site.
2. 10% of the total upon completion of installation and demonstration that the performance Testing and Guarantee requirements stated in individual equipment specifications are met in their entirety.

1.06 PAYMENT

A. Payment for Material not incorporated in the Work

1. Storage of Material
 - a. Payment for equipment and materials stored on the site and not actually incorporated in the work will be made on the basis of 95 percent of the amount of paid invoices submitted to the Engineer for incorporation in the monthly estimate.
2. Authorization for Payment
 - a. Payment will be authorized after delivery to the Construction and after being certified by the Engineer or Owner as being stored in conformance with the manufacturers recommendations and satisfactory evidence is provided that the items are as specified.
 - b. Title to all items of equipment and materials upon which payment has been made shall rest with the Owner and document transferring title shall be executed by the Contractor. Transfer of ownership shall not

relieve the Contractor of continuing insurance coverage and of protecting stored items against damage, deterioration or loss of any kind.

- c. Should material or equipment become damaged or stored improperly and contrary to manufacturers recommendations, being therefore subject to later damage, then the Engineer will reduce the next following monthly payments by an amount sufficient to repair or replace such units.
- d. To initiate a request for partial payment the Contractor shall submit his request in writing to the Engineer with all necessary evidence.

1.07 PAYMENTS WITHHELD

A. The Owner may decline to pay all or any part thereof or, because of subsequent observations, it may nullify the whole or any part of any payment previously issued, to such extent as may be necessary in its opinion to protect the Owner from loss because of:

- 1. Defective work not remedied.
- 2. Third party claims filed or reasonable evidence indicating probable filing of such claims.
- 3. Failure of the Contractor to make payments properly to subcontractors or for labor, material or equipment.
- 4. Reasonable evidence that the work cannot be completed for unpaid balance of the Contract Sum.
- 5. Damage to the Owner or another Contractor.
- 6. Reasonable evidence that the work will not be or has not been completed within the Contract time.
- 7. Failure to carry out the work in accordance with the Project Manual.
- 8. Cancellation, material change or lapse of required insurance as specified in the Project Manual.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

*** END OF SECTION ***

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 PRECONSTRUCTION CONFERENCE

A. Prior to the start of construction, a pre-construction meeting shall be held with the Owner, Engineer, Contractor and other interested parties in attendance. The meeting shall cover the general features of the project and various requirements of the Contract.

1.02 PROGRESS MEETINGS

A. During the entire duration of the contract, there will be Progress Meetings held once each month at the Project Site. The meetings will be attended by the Owner, Engineer, and Contractor and will be used to discuss the progress of the project and the coordination of subcontracts. Representatives of the Contractor will be required to attend all Progress Meetings. Representatives of subcontractors whose work may be discussed should also be available to attend.

B. It is imperative that progress meetings be held on a regular basis. If it becomes necessary to meet more frequently due to unforeseen conditions and problems, the meetings will be established to the satisfaction of all parties involved.

C. The Contractor's set of updated As-built Drawings shall be reviewed prior to the start of each progress meeting.

D. The Contractor's updated Construction Schedule shall be reviewed at each progress meeting.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

*** END OF SECTION ***

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 SHOW DRAWINGS, PRODUCT DATA AND SAMPLES

A. Shop drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills or material and other data prepared by the Contractor, his subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction and installation of the work, or a portion thereof.

B. All costs necessary for compliance with the requirements of this Section of the specifications shall be included in the lump sum price bid.

C. Detailed shop drawings, data, and literature for fabricated materials or equipment to be incorporated in the work shall be submitted to the Engineer for review for general compliance with the contract documents before fabrication. The Contractor shall obtain and check manufacturer's shop drawings, certified prints, and other pertinent data for conformance with all requirements of the Plans and Specification and in ample time to permit satisfactory progress of the work. After the completion of such checking and verification by the Contractor, the Contractor shall sign or stamp such drawing, which stamp shall state as follows:

Checked by _____
(Contractor's Name)

Signed by _____
(Checker's Name)

D. All data, drawings and correspondence from subcontractors, manufacturers or suppliers shall be routed through the Contractor. The Engineer shall review only such data and details as are transmitted to him by the Contractor. All correspondence from the Contractor to the Engineer shall refer to the appropriate section of these specifications containing the subject matter of the inquiry.

E. All shop drawings shall be in conformity with all requirements of the plans and specifications. All shop drawings except diagrams, brochures, schedules, and illustrations shall be to an appropriate scale, no smaller than 1/8 inch = 1 foot 0 inches and shall give all dimensions necessary for installation and incorporation in the work. All shop drawings shall be accurate and complete, showing outline and section views, details, materials, accessories, appurtenances, and related items. Shop drawings

showing piping and conduit systems shall incorporate sufficient views to show all fittings and specialties including locations and spacing of hangers and supports. Piping and/or conduit systems 3-inches in diameter and smaller may be shown as single line. Equipment and specialties installed within and/or connected to piping and conduit systems shall be cross-referenced to equipment and specialty shop drawings by shop drawing identification number, manufacturer name, catalog or model number and equipment numbers shown on the plans. Electrical shop drawings shall include, but are not necessarily limited to, complete terminal identification diagrams and schedule, complete point-to-point interconnection diagram, complete single line and elementary wiring diagrams, for all power, signal, control and lighting systems, together with panel layout drawings. Terminal point and wire identification on all working drawings shall be identical to related terminal point and wire identifications on equipment and panels, and absolutely no deviation from this requirement will be permitted.

F. The Contractor may submit to the Engineer a minimum of eight (8) copies of shop drawings and approval data plus any additional number required for the Contractor's use. The Engineer will retain seven (7) copies of each submittal and return one (1) copy to the Contractor. The Engineer's notation of the action taken will be noted on all the returned copies. At the time of each submission, the Contractor shall call to the Engineer's attention, in writing, any deviations that the shop drawings may have from the requirements of the Plans and Specifications. The Engineer will submit three (3) of the shop drawings pertaining to public water and sewer facilities for review by Salisbury Department of Infrastructure and Development. The final shop drawings to be approved by Salisbury Department of Infrastructure and Development must be signed by the Engineer and Contractor.

G. Upon review by the Engineer of the above drawings, lists, samples and other data the same shall become a part of the Contract, and the fabrications furnished shall be in conformity with the same, provided that the review of the above drawings, lists, specifications sample or other data shall in no way release the Contractor from his responsibility for the proper fulfillment, by any fabrication, or the requirements of this Contract.

H. Corrections or comments made on the shop drawings during the Engineer's review do not relieve the Contractor from compliance with the requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. The Contractor is responsible for confirming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, and performing his work in a safe manner. If the shop drawings deviate from the Contract Documents, the Contractor shall advise the Engineer of the deviations, in writing accompanying the shop drawing, including the reasons for the deviations, and shall request deviation from the Contract Documents.

I. The shop drawings are intended to be utilized by the Contractor for additional fabrication, assembly, and erection data. The shop drawings do not change or supersede

the Plans and Specifications except in specific cases when the Contractor requests in writing and receives approval in writing for a deviation from the Plans and Specification. The Contractor's request for a change shall give, in detail, the specific change requested and shall state the reason for the change. Changes requested by the Contractor and approved by the Engineer shall not be construed to include approval of any change except the changed details specifically requested and approved.

J. The Contractor will also submit to the Engineer for review with such promptness as to cause no delay in work, all samples required by the Contract Documents. All samples shall have been checked by and stamped with the approval of the Contractor, identified clearly as to material, manufacturer any pertinent catalog numbers and the use for which intended.

K. The Contractor's attention is specifically directed to the fact that no work shall be fabricated, nor equipment or materials ordered, nor any construction performed, prior to approval by the Engineer of shop drawings applicable thereto. Construction performed in violation of this requirement will be neither approved nor certified for payment until applicable shop drawings have been submitted and approved. If the Engineer so directs, the Contractor shall disassemble and remove any such construction performed prior to approval by the Engineer of shop drawings applicable thereto, and the Contractor will be allowed no additional compensation nor extension of contract time. If any equipment or materials are ordered by the Contractor prior to submission and approval of shop drawings he does so at his own risk.

L. It shall be the responsibility of the Contractor to make all the necessary changes in other items, which result from deviations or changes requested by the Contractor and approved by the Engineer, so that all items perform the requirements and intent of the Contract Documents.

M. After review by the Engineer, shop drawings shall be returned to the Contractor marked as follows: APPROVED, APPROVED AS NOTED, REVISE AND RESUBMIT or REJECTED. Unapproved shop drawings (i.e., REVISE AND RESUBMIT or REJECTED) shall be returned to the Contractor for necessary modifications: only two (2) copies of unapproved shop will be returned. Subsequently, the Contractor shall submit a minimum of eight (8) copies of complete, revised shop drawings to the Engineer for approval.

N. Within fourteen (14) days of the preconstruction conference, the Contractor shall submit a list of all shop drawings to be submitted. This list can then be used as a check to ensure that all items are submitted.

O. Timing of Submittals:

1. Make submittals promptly and in such sequence as to cause no delay in the Work.
2. In scheduling, allow 15 working days for Engineer's review of Mechanical and Electrical shop drawings following receipt of the submittal. Allow 15

working days for Engineer and Salisbury Department of Infrastructure and Development to review shop drawings pertaining to public water and sewer facilities. Allow 10 working days for Engineer's review of all other shop drawings following receipt of the submittal.

3. Delays caused by tardiness in receipt of submittals shall not be an acceptable basis for extension of the Contract Duration time.

1.02 OPERATION AND MAINTENANCE MANUALS

A. The Contractor shall furnish the Engineer four (4) copies of a complete instruction manual for installation, operation, maintenance, and lubrication of each component of mechanical and electrical equipment. The operation and maintenance manual shall be submitted at least thirty (30) days prior to the anticipated completion of the project.

B. Manuals shall include operating and maintenance information on all systems and items of equipment. The data shall consist of catalogs, brochures, bulletins, charts, schedules, equipment numbers, wiring diagrams and assembly drawings which shall describe location, operation, maintenance, lubrication, operating weight, lubrication charts showing manufacturer recommended lubricants for each rotating or reciprocating unit and other necessary information for the Owner to establish a complete maintenance program.

1. Manuals shall include a complete and detailed listing describing routine maintenance for each time interval: daily, weekly, monthly, quarterly, semi-annually, and yearly. Routine maintenance shall include lubrication, adjustments, inspections, calibrations, etc., and a list of acceptable equivalent lubricants from at least three (3) different major manufacturers whose products are locally available. A manufacturer and/or vendor responsible such as "see instruction manual" will not be acceptable.

C. The following items shall also be submitted:

1. Two (2) prints of one (1) 8x10 color photograph of each major piece of equipment.
2. Name of manufacturer with address and phone number for service and parts.
3. Name, address and phone number of the nearest service representative for the manufacturer.
4. Complete "nameplate" data including serial number for each piece of equipment.
5. A list of spare parts including part number and other information needed to order parts.
6. Weight of individual components of each piece of equipment weighing over 100 pounds.
7. Complete electrical wiring diagrams.

8. A complete shop drawing spreadsheet which references all shop drawing numbers, titles, date submitted, date returned, and action taken. An updated copy will be submitted at each progress meeting and at the request of the Owner.
- D. Where an O&M manual includes information on equipment not supplied or installed, the extraneous information shall be marked out to avoid confusion.
- E. Where an O&M manual contains a written warranty or guarantee, it shall be certified to meet the minimum length of time and requirements defined in the Contract Documents.

1.03 SUBMISSION OF MANUFACTURER'S CERTIFICATES

A. General:

1. The Contractor shall submit Manufacturer's Certificates for the installation of those items of major equipment named in the various sections of specifications.
2. Such Manufacturer's Certificates shall state that the equipment has been installed under either the continuous or periodic supervision of the manufacturer's authorized representative, that it has been adjusted and initially operated in the presence of the manufacturer's authorized representative and that it is operating in accordance with the specified requirements, to the manufacturer's satisfaction.

B. Manufacturer's Representative:

1. The definition of "manufacturer's representative" shall be as follows: a representative from the manufacturer's plant, familiar with the actual problems of manufacturing, installing, and operating the particular equipment or product and with enough years of experience in this field to determine the successful operation of the equipment or product. Sales representatives or agents of the manufacturers will not be acceptable.
2. As related to his obtaining the manufacturer's certificates, the Contractor shall include in his contract price the cost of furnishing competent and experienced manufacturer's representatives who shall represent the manufacturer on equipment and products furnished and listed under this Contract, to assist the Contractor to install, adjust, start up and test the equipment and products in conformity with the Contract Documents. After the equipment and products have been operated through the trial period for each phase of construction and before being put into permanent service by the Engineer, such manufacturer's representative shall make all adjustments and tests required to provide that such equipment and products are in proper and satisfactory operating condition and meet the requirement for issuing the manufacturer's certificate.

1.04 OPERATING INSTRUCTIONS

A. Particular sections of these General Requirements require that the Contractor furnish qualified personnel to instruct Plant personnel in the proper operation and maintenance of equipment and systems provided in this Contract. Such instruction periods shall be in accordance with the requirements of the individual sections of the General Requirements and with the following paragraphs.

B. When specified in individual sections of these specifications, upon completion of all work and testing for a particular section of the General Requirements, the Contractor shall furnish, at no extra cost to the Owner, the necessary manufacturer's engineers, representatives, technicians, skilled labor, and helpers and shall operate all systems and equipment for the specified instruction period. During this period, the manufacturer's representatives shall fully instruct the Engineer and/or his representatives and the Plant personnel in the operation, maintenance, lubrication and adjustment of all systems and equipment.

C. If the Operation and Maintenance Manuals specified herein are not available at the time of the instruction period, the Contractor shall provide the Engineer with one copy of the manufacturer's operation literature for each system or item of equipment. Installation and operating sheets or booklets normally shipped with equipment may be used for this purpose.

D. The Contractor shall schedule the instruction period for a time mutually agreeable with the Engineer and the Owner. A minimum of five (5) days' notice shall be provided.

1.05 CONSTRUCTION SCHEDULE

A. The Contractor shall submit a construction schedule in accordance with the General Conditions, plotting work increments against time, indicating anticipated date of beginning and completion of each work increment and indicating completion of all increments by the scheduled date. The Contractor shall assign such work forces as are necessary to accomplish all increments of the work within the time allotted on the construction schedule.

B. The Construction schedule shall be submitted within ten (10) days after the effective date of the Agreement. This schedule is in addition to any other schedule required under the General Conditions.

1.06 BREAKDOWN OF LUMP SUM PRICE INTO CONSTRUCTION CATEGORIES

A. Within ten (10) days after the effective date of the Agreement, the Contractor shall submit for approval, a breakdown into construction categories of his lump sum bid price. This breakdown shall add up to the full 100 percent value of his lump sum bid, and all parts of it shall be covered by the Performance Bond. The breakdown shall be used for the purpose of arriving at a basis for monthly estimates. The Cost of mobilization shall be limited to a maximum of five (5) percent of the Total Base Bid.

1.07 AS-BUILT DRAWINGS

- A. Shall be in accordance with the General Conditions.
- B. The Contractor shall keep one copy of all Contract Documents and approved Shop Drawings at the site in good order and annotated to show all changes made during the construction process. These should be available to the Engineer and shall be delivered to him upon completion of the Project.

1.08 LIST OF SUBCONTRACTORS

- A. The Contractor shall submit a list of subcontractors for approval within fourteen (14) days after the Bid Due Date.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

*** END OF SECTION ***

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01400

QUALITY CONTROL

PART 1 – GENERAL

1.01 CODES, RULES, PERMITS AND FEES

A. General

1. Local, State, and Federal permits secured by the Owner will be included in the Project Manual or will be provided to the prospective Bidders by Addenda. The Contractor shall comply with the provisions of all such permits, and the cost of all work dictated by such permits shall be included in the prices bid.
2. The Contractor shall give all necessary notices, obtain all permits (except those referenced above) and pay all governmental taxes, fees, and other costs in connection with the work, file all necessary plans, prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction, obtain all required Certificates of Inspection and Approval for the work and deliver same to the Engineer, except as otherwise noted herein.

B. Compliance: All materials furnished, and all work installed shall comply with the requirements of all governmental departments having jurisdiction.

1.02 VERIFICATION OF DIMENSIONS

- A. The contractor shall be responsible for field verification of all dimensions of existing facilities, underground utilities, and other items which are shown on the Contract Drawings.
- B. The Contractor shall be responsible for the cross-checking dimensions between different drawings as facilities are being laid out. Any discrepancies shall be immediately brought to the attention of the engineer.
- C. Scaling of drawings is not permitted.

1.03 STANDARDS

- A. Any reference to standards in the Contract Documents shall always imply the latest issue in effect including all revisions at the time bids are taken, of said standards unless otherwise stated.

B. Abbreviations for various organizations which may be used in these Specifications are as follows:

<u>Abbreviation</u>	<u>Organization</u>
AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturers Association
AASHO	American Association of State Highway Officials
ACI	American Concrete Institute
AFBMA	Anti-Friction Bearing Manufacturers Association
AIA	American Institute of Architects
AIMA	Acoustical and Insulating Manufacturers Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute
APA	American Plywood Association
ASME	American Society Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPB	American Wood Preservers Bureau
AWS	American Welding Society
AWWA	American Water Works Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Commercial Standard
FS	Federal Specification
IEEE	Institute of Electrical and Electronics Engineers
ILI	Indiana Limestone Institute
MBM	Thousand Feet, Board Measure
NAAMM	National Association of Architectural Metal Manufacturers
NBHA	National Builder's Hardware Association
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
PCI	Prestressed Concrete Institute
PS	Product Standard of NBS
SDI	Steel Door Institute
SPBI	Southern Pine Inspection Bureau
SSPC	Steel Structures Painting Council
SMACNA	Sheet Metal & Air Conditioning Contractor's National Association
TCA	Tile Council of America
UL	Underwriter's Laboratories
WWPA	Western Wood Products Association

C. No provision of any standard, specification, manual, code, or instruction shall be effective to change the duties and responsibilities of Owner, Contractor, Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to Owner, Engineer, or any of their consultants, agents or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provision of the Contract Documents.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

*** END OF SECTION ***

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 ELECTRIC POWER

A. The Contractor shall be responsible for coordinating power use with the Owner and local public electric utility. In situations where availability of light, heat, ventilation and/or power is insufficient then it shall be the obligation and responsibility of the Contractor to provide and maintain temporary facilities for furnishing supplementary light, heat, ventilation and power necessary for operations under the General Contract, and to make all necessary arrangements therefore, including all required connections, ordering the meter, and paying all fees and inspection charges until final acceptance at no additional charge to the County.

B. The Contractor shall make temporary light, heat, ventilation and power facilities available to any and all approved Subcontractors, for their use in connection with their Contracts, and may charge each Subcontractor for such service an amount not to exceed a fraction of the cost of the project. Removal of temporary facilities shall be by the Contractor. The installation and meters shall remain until need for same by each Subcontractor has ceased or until completion of the Contract.

1.02 TEMPORARY LIGHTING

Provide and maintain lighting for construction operations. The work area shall be illuminated as per SSPC-Guide 12, "Guide for Illumination of Industrial Painting Projects."

1.03 TEMPORARY HEAT AND VENTILATION

A. It shall be the obligation and responsibility of the General Contractor to provide and maintain temporary heat by means of portable electric, oil or gas-fired units. The General Contractor shall provide and pay for all fuel and electricity used in the temporary facilities and shall provide proper smoke pipes or other means to prevent smoke or smudge from marking up walls, ceilings or other parts of equipment.

B. Should the temporary heating facilities require electric service, the General Contractor shall provide the necessary wiring and power.

C. After their installation and testing, the permanent heating system facilities may be used for temporary heat, it shall be the responsibility of the General Contractor to guarantee the heating system for a period of two years following final acceptance of the

General Contract or beneficial occupancy of the General Contract, whichever comes first. It also shall be the responsibility of the General Contractor to replace all filters before the final acceptance of the General Contract.

D. It shall be the responsibility of the General Contractor to repair any damage to heating and ventilating equipment suffered as the result of use by the General Contractor.

1.04 BARRIERS

A. Landscaping: Provide protection for plant life designated to remain. Replace damaged plant life.

B. Sound: At the discretion of the Owner, suitable sound barriers as determined by the Owner shall be installed around all equipment that is generating excessive noise.

1.05 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition. Remove debris and rubbish from site weekly and dispose off-site.

1.06 SECURITY

A. The Contractor will be responsible for any security needed to guard the heating and dehumidification system while in service. If the heater needs to be operating 24 hours a day, it will be the Contractor's responsibility to supply the necessary personnel to watch the equipment. The Owner will not watch, secure, observe or protect the Contractor's equipment in any way.

1.07 SANITARY FACILITIES

A. The Contractor shall provide suitable temporary facilities and enclosures for the use of the workmen and shall maintain same in a sanitary condition for the full term of the Contract and remove same when project is complete.

1.08 FIELD CONDITIONS AND MEASUREMENTS

A. The Contractor shall base all measurements, both horizontal and vertical, from established benchmarks and monuments. The Contractor shall be responsible for field verification of all dimensions and conditions at the job site.

B. Should the Contractor discover any discrepancy between actual conditions and those indicated, which prevent following good practice or the intent of the Contract Drawings and Specifications, he shall notify the Engineer and shall not proceed with his work until he has received instructions from the Engineer.

C. No claims shall be made for extra payment or extensions of Contract completion time if the Contractor fails to notify the Engineer of any discrepancy before proceeding with the aspect of the work.

1.09 PROTECTION OF PERSONS AND PROPERTY

A. The Contractor shall be responsible for initiating, maintaining, and providing supervision of safety precautions and programs in connection with the work including, but not limited to, all legally required precautions and programs.

B. The Contractor shall provide the confined space entry plan and all appurtenances for confined space entry to the Owner and/or Engineer prior to entering any manhole or vault.

C. The Contractor shall take all reasonably necessary precautions for safety of, and shall provide all reasonably necessary protection to prevent damage, injury or loss to: (1) employees on the work and other persons who may be affected thereby; (2) the work, materials, and equipment to be incorporated therein; and (3) other property at or adjacent to the site.

D. The Contractor shall give all notice and comply with all applicable laws, ordinances, rules, regulations, and orders of public authorities bearing on the safety of persons and property and their protection from damage, injury or loss arising from Contractor's operations hereunder.

E. The Contractor shall be liable for damage or loss (other than damage or loss to property insured under the property insurance provided or required by the Contract Documents to be provided by the Owner) to property at the site to the extent caused in whole or in part by the Contractor, a Subcontractor of the Contractor or anyone directly or indirectly employed by either of them, or by anyone for whose acts they may be liable, except damage or loss attributable to the acts or omissions of the Owner, the Owner's separate contractors or anyone directly or indirectly employed by them or by anyone for whose acts they may be liable and not attributable to the fault or negligence of the Contractor.

1.10 CONTRACTOR STORAGE AND WORK AREAS

A. The Contractor will be responsible for providing storage and work areas for use by the Contractor for parking of workmen's vehicles, storage of materials, tools, field offices, equipment, and other items necessary for construction. The exact limits of the areas will be designated in the field by the Owner during the Pre-bid Conference. The Contractor shall be fully responsible for the security of these areas, including fencing, watchmen, and other means of security. Under no circumstances will the Owner be responsible for the security of any property belonging to the Contractor, his subcontractors, or any of his work forces.

- B. Contractor shall maintain all staging areas including grass cutting.

1.11 DRAINAGE

- A. The Contractor shall keep all existing surface and subsurface drainage and water courses unobstructed, or provide equal courses effectively placed, and prevent accumulations of surface water.

1.12 SOIL EROSION AND SEDIMENT CONTROL

- A. Adequate control of soil erosion and sedimentation of both a temporary and permanent nature on areas disturbed by this work shall be provided at no extra cost to the Owner, subject to the approval of the Engineer.
- B. It shall be the Contractor's responsibility to adhere to the Standards and Specifications for Soil Erosion and Sediment Control in Developing Areas as approved and adopted by the State of Maryland, Sediment and Stormwater Administration, an agency of the Department of the Environment.

1.13 SAFETY

- A. Precaution shall be exercised at all times for the protection of persons (including employees) and property. The safety provisions of applicable laws, building and construction codes shall be observed. Machinery and equipment shall be guarded, and all hazards shall be eliminated in accordance with the safety provisions of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable law.
- B. The Contractor shall comply with the U.S. Department of Labor, Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 (Public Law 91-596) and under Section 107 of the Contract Work Hours and Safety Standards (Public Law 91-54).
- C. Nothing in the Occupational Safety and Health Act of 1970 shall be construed to supersede or in any manner affect any workmen's compensation law or to enlarge or diminish or affect in any manner the common law or statutory rights, duties, or liabilities of employers and employees under any law with respect to injuries, diseases, or death of employees arising out of or in the course of employment.
- D. The Contractor shall comply with all regulations and requirements of the Maryland Occupational Safety and Health Administration (MOSHA).

1.14 UTILITIES

- A. The Contractor shall CONTACT "Miss Utility" at 1-800-441-8355 at least 72 hours prior to digging in the vicinity of existing underground utilities to have them located and marked.

PART 2 – PRODUCTS

2.01 MATERIALS

A. The Contractor shall provide either new or used materials and equipment, for temporary facilities, are in substantially undamaged condition and without significant deterioration and which are recognized in the construction industry, by compliance with appropriate standards, as being suitable for intended use in each case. Where a portion of temporary utility is provided for Contractor by utility company, the Contractor shall provide remainder with matching and compatible materials and equipment and comply with recommendations of utility company.

PART 3 – EXECUTION

3.01 INSTALLATION OF TEMPORARY UTILITY SERVICES

A. General: Wherever feasible, the Contractor shall engage the utility company to install temporary service to the project, or as a minimum, to make connection to existing utility service; locate services where they will not interfere with total project construction work, including permanent utility services; and maintain temporary services as installed for required period of use; and relocate, modify or extend as necessary from time to time during that period as required to accommodate total project construction Work.

B. Approval of Electrical Connections: All temporary connections for electricity shall be subject to approval of the power company representative and shall be removed in like manner at the Contractor's expense prior to final acceptance of the Work.

C. Separation of Circuits: Unless otherwise permitted by the Owner, circuits separate from lighting circuits shall be used for all power purposes.

D. Construction Wiring: All wiring for temporary electric light and power shall be properly installed and maintained and shall be securely fastened in place. All electrical facilities shall conform to the requirements of Subpart K of the OSHA Safety and Health Standards for Construction (GFI).

3.02 INSTALLATION OF POWER DISTRIBUTION SYSTEM

A. Power: The Contractor shall provide all necessary power required for its operations under the Contract and shall provide and maintain all temporary power lines required to perform the work in a safe and satisfactory manner.

B. Temporary Power Distribution: The Contractor shall provide a weatherproof, grounded, temporary power distribution system sufficient to accommodate performance

of entire WORK of project, including, but not necessarily limited to, temporary electrical heating where indicated, operation of test equipment and test operation of building equipment and systems which cannot be delayed until permanent power connections are operable, operation of other temporary facilities, including permanent equipment and systems which must be placed in operation prior to use of permanent power connections (pumps, HVAC equipment, elevators, and similar equipment), and power for temporary operation of existing facilities at the site during change-over to new permanent power system. Provide circuits of adequate size and proper power characteristics for each use; run circuit wiring generally overhead, and rise vertically in locations where it will be least exposed to possible damage from construction operations, and result in least interference with performance of the Work; provide rigid steel conduit for wiring which must be exposed on grade, floors, decks, or other recognized exposures to damage or abuse.

3.03 INSTALLATION OF LIGHTING

A. Construction Lighting: All work conducted at night or under conditions of deficient daylight shall be suitably lighted to ensure proper work and to afford adequate facilities for inspection and safe working conditions.

B. Temporary Lighting: The Contractor shall provide a certified explosion proof, weatherproof, grounded temporary lighting system in every area of construction work, as soon as overhead floor/roof deck structure has been installed; and provide sufficient illumination for safe work and traffic conditions; and run circuit wiring generally overhead, and rise vertically in locations where it will be least exposed to possible damage from construction operations on grade, floors, decks, or other recognized areas of possible damage or abuse. Lighting lumens shall meet SSPC minimum requirements for illumination as per Guide 12.

3.04 WATER SUPPLY

A. Water Connections: The Contractor shall not make connection to, or draw water from, any fire hydrant or pipeline without first obtaining permission of the Owner. For each such connection made, the Contractor shall first attach to the fire hydrant or pipeline a valve and a meter, if required by the Owner, of a size and type acceptable to the Owner. Any connection made to the existing facility shall require a back flow prevention device.

3.05 INSTALLATION OF SANITARY FACILITIES

A. Toilet Facilities: Fixed or portable chemical toilets shall be provided wherever needed for the use of Contractor's employees. Toilets at construction job sites shall conform to the requirements of Subpart D, Section 1926.51 of the OSHA Standards for Construction.

3.06 INSTALLATION OF FIRE PROTECTION

A. Fire Protection: All parts of the Work shall be connected with the Contractor's water supply system and shall be adequately protected against damage by fire. Hose connections and hose, water casks, chemical equipment, or other sufficient means shall be provided for fighting fires in the all portions of the Work, and responsible persons shall be designated and instructed in the operation of such fire apparatus so as to prevent or minimize the hazard of fire. The Contractor's fire protection program shall conform to the requirements of Subpart F of the OSHA Standards for Construction.

3.07 OPERATIONS AND TERMINATIONS

A. Inspections: Prior to placing temporary utility services into use, the Contractor shall inspect and test each service and arrange for governing authorities' required inspection and tests and obtain required certifications and permits for use thereof.

B. Protection: The Contractor shall maintain distinct markers for underground lines and protect from damage during excavating operations.

C. Termination and Removal: When need for a temporary utility service or a substantial portion thereof has ended, or when its service has been replaced by use of permanent services, or not later than time of substantial completion, the Contractor shall promptly remove installation unless requested by the Owner to retain it for a longer period. The Contractor shall complete and restore Work which may have been delayed or affected by installation and use of temporary utility, including repairs to construction and grades and restoration and cleaning of exposed surfaces.

D. Removal of Water Connections: Before final acceptance of the Work on the project, all temporary connections and piping installed by the Contractor shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the Owner and to the agency owning the affected utility.

*** END OF SECTION ***

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 – GENERAL

1.01 EQUIPMENT AND PRODUCTS SPECIFIED

A. Where any item of equipment or product or system is specified, it is to be understood that equal quality equipment or products or systems, of either a named manufacturer or of an unnamed manufacturer, which meet the detailed requirements of the specifications, are intended. In each case, the equipment, product, or system is subject to the approval of the Engineer as to the equality thereof. It is distinctly understood that: (1) the Engineer is to use his own judgment in determining whether or not any item of equipment or product proposed is equal in quality to that specified; (2) the decision of the Engineer on all such questions of equality shall be final; and (3) in the event of any adverse decision by the Engineer, no claim of any sort shall be made or allowed against the Engineer or the Owner.

B. Substituted items or items other than those named shall be equal or better in quality and performance and must be suitable for the available space, required arrangement and application. The Contractor shall submit any and all data necessary to determine the suitability of substituted items.

C. If any submitted equipment necessitates changing architectural or structural items, or electrical, water, gas, air or other utility services from the sizes, capacities and configurations shown on the Drawings, it shall be the Contractor's responsibility to bear the cost of engineering fees to analyze, design, specify and formulate the construction changes necessitated by the proposed deviations from the specified equipment and/or the Contract Drawings. All re-designs shall bear the seal and be the responsibility of a professional Engineer registered in the State of Maryland.

D. Substituted items are warranted by the Contractor to perform equal or better than those specified. Substituted items failing to do so will be replaced by the Contractor at no cost to the Owner. No excuses such as improper design, construction, operation, or maintenance shall be accepted.

1.02 "OR EQUAL" SPECIFICATIONS

A. The specifications have been subjected to prior review with the intent of removing proprietary, exclusionary, or discriminating requirements other than those based upon performance, unless the requirements are necessary to test or demonstrate a specific thing or to provide interchangeability of parts and equipment.

B. In a few sections of the specifications, an item of material or equipment is specified by the name of a manufacturer without addition of the "or equal" expression, it is to be understood that these items are so specified for reasons of standardization and to provide interchangeability of parts and equipment.

C. Minor items including such articles as electrical fittings, plumbing fittings, hardware, and other similar articles will be identified by one brand name to generally indicate design. For these items, a substitution of equal items is generally acceptable by the Engineer.

1.03 SINGULAR NUMBER

A. Where material, a device, or part of the equipment is referred to in the singular number, it is intended that such reference shall apply to as many items of material, devices, or parts of the equipment as are required to complete the installation.

1.04 EQUIPMENT UNIFORMITY

A. All pumps, blowers, valves, and other multiple-unit equipment shall be, to the greatest extent possible within its category, the product of a single manufacturer.

1.05 STORAGE AND PROTECTION OF MATERIALS AND EQUIPMENT

A. All equipment and materials provided, and work performed under this Contract shall be protected from damage before and after installation. The Contractor shall be responsible for work, equipment, and materials until inspected, tested, and finally accepted.

B. During construction, the open ends of the work shall be effectively closed with temporary covers or plugs to prevent the entry of foreign material.

C. Where permanent equipment called for under this Contract is installed before the erection of adequate protective structures, the Contractor without additional compensation, therefore, shall provide approved effective and durable covers for fully protecting such equipment against damage from the elements or from any other cause.

D. Electrical equipment shall be carefully and effectively covered with waterproof material and otherwise protected at all times from the elements.

E. All structures, machinery, equipment, piping, electric conduit, wiring and accessories and appurtenances shall be adequately supported and safeguarded against all damage or injury during performance of work under this Contract. The Contractor shall be responsible for all damage or injury resulting from his operations and shall repair such damage immediately and to the satisfaction of the Engineer.

F. Store and protect products in accordance with the manufacturer's recommendations.

G. Covered Storage:

1. The following type of material may be stored out-of-doors on wood blocking if covered with material impervious to water:
 - a. Valves
 - b. Rough Lumber
 - c. Masonry Units
 - d. PVC Pipe (cover must also block sunlight)
2. Tie down covers with rope, and slope to prevent accumulation of water on covers.

H. Uncovered Storage:

1. The following types of materials may be stored out-of-doors without cover:
 - a. Reinforcing Steel
 - b. Piping – Except PVC
 - c. Castings
 - d. Handrailing
 - e. Materials not listed above or required to be covered under manufacturer's recommendations.
2. Store the above materials on wood blocking so there is no contact with the ground.

I. Fully Protected Storage:

1. Store all products not named above in buildings or trailers which have a concrete or wooden floor, a roof, and are fully enclosed with walls on all sides.
2. Provide heated storage space for materials which would be damaged by freezing.
3. Protect mechanical and electrical equipment from being contaminated by dust, dirt, and moisture.
4. Maintain humidity at levels recommended by manufacturers for electrical and electronic equipment.
5. Temporarily connect equipment with built-in space heaters to a power source and keep heaters in operation.
6. Prior to installation of the units, they shall be stored at locations approved by the Engineer.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

*** END OF SECTION ***

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01700

CONTRACT CLOSEOUT

PART 1 – GENERAL

1.01 CLEANUP

A. Upon completion of the work and before Final Acceptance will be made, the work site, storage areas, and other areas occupied by the Contractor during construction shall be cleaned, and all surplus and discarded materials, false work, and rubbish placed thereon by the Contractor shall be removed by the Contractor. The Contractor's storage area shall be topsoiled, seeded, and mulched in accordance with the appropriate Section of Division 2. No separate payment will be made for the work as all such costs shall be included in the lump sum price bid.

B. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Owner's representatives' inspection. Provide submittals to Owner that are required by governing or other authorities. Submit Application for final payment identifying total adjusted Contract sum, previous payments, and sum remaining due.

1.02 RESTORATION

A. The Contractor shall restore and/or replace paving, curbing, sidewalks, gutters, shrubbery, fences, sod or other disturbed surfaces and structures to a condition equal to that before the work began and to the satisfaction of the Owner and shall furnish all labor and materials incidental thereto.

1.03 WARRANTY AND GUARANTEE

A. After the project is substantially complete and the start-up period begins, all guarantees and warranties shall commence.

B. The Contractor warrants and guarantees to the Owner for a period of one year the following:

1. That all materials and equipment provided under this Contract are new, unless otherwise specified.
2. That all work is of good quality and free from faults and defects and in accordance with the requirements of the Contract Documents.
3. That all equipment and systems and each and every part thereof, shall operate (with proper care and attention) in a satisfactory and efficient manner, and in accordance with the Contract Documents.

4. That the Contractor shall, upon receipt of written notice from the Owner, promptly replace with workmanship and materials which comply with these Specifications, and re-execute, correct, or repair, without cost to the Owner, all work which may be found to be not in accordance with the Contract Documents.
5. That the guaranteed obligations assumed by the Contractor under these Contract Documents shall not be held or taken to be in any way impaired because of the Specifications, indication or approval by or on behalf of the Owner of any articles, materials, means, combinations of things used or to be used in the construction, performance and completion of the work, or any part thereof.
6. That no use or acceptance by the Owner of the work or any part thereof, nor any failure to use the same, nor any repairs, adjustments or corrections made by the Owner due to the Contractor's failure to comply with any of his obligations under the Contract Documents, shall impair in any way the guaranteed obligations of the Contractor under these Contract Documents.

C. If the Contractor fails to make repairs during the guarantee period, the Owner may cause such damaged or defective work to be repaired and made good at the cost and expense of the Contractor, including, but not limited to, compensation if required for additional professional services. The Contractor shall also bear the expenses of making good all work destroyed or damaged by the correction, removal, or replacement of his defective work.

1.04 TESTING OF EQUIPMENT AND SYSTEMS

A. Preliminary Testing:

1. When the Contractor has completed the installation of all equipment including electrical appurtenances, he shall perform preliminary testing on each piece of equipment.
2. Contractor shall provide for the inspection of each piece of equipment by authorized and qualified manufacturer's representatives. The manufacturer's representatives shall verify that all equipment has been installed properly.
3. Manufacturer's representatives shall verify that the individual equipment and/or components are functioning in accordance with the Contract Documents.
4. The manufacturer of each piece of equipment shall provide a manufacturer's certificate in accordance with Section 01300 - SUBMITTALS.

B. Final Testing:

1. After receipt of all manufacturer's certificates, the Contractor will be required to perform wet tests on all pieces of equipment.

2. Final testing shall include the actual running of equipment to ensure that all electric and controls are properly connected. This testing shall be done under the supervision of the manufacturer's representative.

1.05 SUBSTANTIAL COMPLETION

A. Upon completion of all work under this Contract including the Preliminary and Final testing of equipment, the Contractor shall request, in writing, Substantial Completion by the Engineer.

B. Prior to this request, all specified operation and maintenance instructions and training shall have been provided for the Owner and all certificates, spare parts, test equipment, record drawings, and other items required to be delivered shall have been provided.

C. Inspection Procedures: Upon receipt of Contractor's request, Engineer will either proceed with inspection or advise Contractor of prerequisites not fulfilled. Following initial inspection, Engineer will either prepare certificate of substantial completion or advise Contractor of work which must be performed prior to issuance of certificate; and repeat inspection when requested and assure that work has been substantially completed. Results of complete inspection will form punch-list for final acceptance.

1.06 COMPLETION OF PUNCHLIST ITEMS

A. At the time of Substantial Completion, the Engineer shall prepare a punch list of items remaining to be completed or corrected prior to final acceptance. The punch list shall fix the time within which, and a retainage amount equal to one and one-half times the estimated cost for which such items shall be completed or corrected, said time to be within the Contract Time.

B. Contractor shall complete all items of work on the punch list, plus any new items that may be added to it, as soon as possible after the date of Substantial Completion but within the Contract Time.

C. No partial payments or monthly progress payments shall be allowed between the Substantial Completion Payment and the Final Payment.

1.07 FINAL ACCEPTANCE

A. General: Prior to requesting Engineer's final inspection for certification of final acceptance and final payment, as required by General Conditions, the Contractor shall complete the following and list known exceptions:

1. Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certifications where required.

2. Submit updated final statement, accounting for additional (final) changes to Contract Sum.
3. Submit a copy of Engineer's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance.
4. Submit Consent of Surety.

B. Reinspection Procedure: Upon receipt of Contractor's notice that work has been completed, including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, Engineer will reinspect work. Upon completion of reinspection, the Engineer will either prepare certificate of final acceptance or advise Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, the procedure will be repeated.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

*** END OF SECTION ***

DIVISION 02 - SITEWORK

SECTION 02010

SUBSURFACE EXPLORATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Prior to submitting his Bid, the Bidder shall make his own investigations of the on-site conditions and materials and shall base his Bid upon his own findings. The Owner will not approve any request for change order based upon the contention that subsurface conditions or materials vary from those indicated on the Drawings. The Contractor's bid shall be based upon his own investigation of these materials and conditions.

B. Neither the Engineer nor the Owner guarantees the soil condition in the area of construction. Contractor should note that subsurface exploration report was completed as part of previous work at facility. As such, portions of the report are not applicable to work contained herein.

1.02 EXISTING SUBSURFACE LINES

A. All known subsurface lines, pipes, conduits, and structures are shown on the plans and profiles. The lines shown are based upon the best available plans and maps. The locations have not been verified by test pits and the Engineer/Owner assumes no responsibility for the accuracy of the Drawings. In any area where the Contractor must make connections to or cross existing lines it shall be his responsibility to test pit the lines and verify the locations to his satisfaction. In the event that lines are not found located as shown on the plans the Contractor shall notify the Engineer so that an evaluation can be made as to the magnitude and method of any adjustments in the plans. The elevations of the pipelines at these locations are critical, and thus, these locations should be test pitted as soon as possible after the Notice to Proceed. The cost of these test pits shall be included in the lump sum price bid.

B. **If modification and excavation of existing subsurface lines is required, the Contractor shall be required to verify the location and depth of all critical lines using test pits before beginning work.**

C. The Contractor shall be solely responsible for any damage to any underground or aboveground lines encountered in any manner during construction. When crossing and working in the vicinity of existing lines it will be the Contractor's responsibility to properly support and maintain the operation of the lines. Extreme care must be exercised in

excavation and refill operations. The Contractor will correct at his own expense any damage caused to existing lines.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

*** END OF SECTION ***

DIVISION 02 - SITEWORK

SECTION 02050

DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Includes the removal and/or abandonment of existing structures, utilities, and other miscellaneous demolition activities. All underground utilities shown on the plans to be abandoned shall be permanently plugged and abandoned in-place or removed, if necessary to construct other work.

B. Submit proposed demolition and removal procedures to the Engineer for approval before work is started. Procedures shall provide for coordination with other work in progress and a disconnection schedule of utility service. Procedures shall include method of disposal of debris, steel, equipment, etc.

C. Demolition work, as specified herein, is not intended to be performed as a wrecking operation but as preparatory work relative to the performance of the various construction operations of the Project.

D. Comply with applicable codes and accident and fire prevention regulations.

E. Contract Drawings showing details of existing structures are available for review. The Contractor may review these Drawings prior to submitting his bid. The Contractor must make arrangements with the Engineer to review these Drawings.

F. Perform all demolition in accordance with Contract Documents.

1.02 JOB CONDITIONS

A. Dust Control: Comply with all dust regulations imposed by local air pollution agencies.

B. 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.

1. Additionally, if pedestrian safety is endangered during the progress of demolition work, provide adequate protective measures to protect pedestrian and vehicular traffic on plant roads and walkways.

2. 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.
- C. Explosives: Use of explosives will not be permitted.
- D. Burning: Burning will not be permitted without permission of the Fire Department, Owner, and appropriate authorities.
- 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 off site 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. Lead & Asbestos Abatement: The Contractor shall be responsible for the abatement of all lead and asbestos in facilities slated for renovation or demolition. The Contractor shall be responsible for containment, removal, and disposal of all asbestos and lead containing materials in accordance with all applicable local, state, and federal regulations and guidelines as well as acquisition of all necessary permits. Identification of all lead and asbestos containing materials shall be the sole responsibility of the Contractor. The Contractor shall be responsible for surveying all existing facilities for lead and asbestos prior to bid and shall include the cost of all abatement, disposal and permit fees in the lump sum price bid. Any lead and asbestos identified in the existing facilities stated for demolition or rehabilitation after bidding shall be the abated by the Contractor at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials needed or required for temporary protection in the form of barricades, fences, enclosures, etc., may be "used" construction materials of sound condition and reasonably clean. However, the condition of "same" materials shall meet or exceed the requirements of governing agencies or approving bodies as 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 which will perform the work within the limits of the Contract requirements.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to performance of the actual work, carefully inspect the site and locate those objects and structures designated to be demolished and/or partially removed.
- B. Locate existing exposed and buried active utilities and determine the requirement for their protection, or their disposition with respect to the demolition work.

3.02 PERFORMANCE

- A. General: The means and methods of performing demolition operations is the sole responsibility of the Contractor.
- B. Debris Removal: All demolition debris shall become the property of the Contractor and shall be disposed of off-site in accordance with local and State regulations.
- C. Abandoned Materials, Equipment, and Machinery: Existing equipment and machinery in or on the structures, not claimed as salvage by the Owner, shall also become the property of the Contractor and shall be removed and disposed of in a lawful manner off site.
- D. Abandoned Pipes and Conduits: Remove pipes, conduits, underdrains, and such other existing lines being abandoned to the extent required not to interfere with the new work. Permanently cap such existing abandoned lines. No abandoned lines will be permitted within 5 feet of new structures.
- E. Debris and Rubbish: 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.

*** END OF SECTION ***

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DIVISION 02 - SITEWORK

SECTION 02151

SHEETING, SHORING, AND/OR BRACING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall furnish all labor, materials, equipment and services necessary for and reasonably incidental to the furnishing, driving, and placing of all sheeting, bracing and shoring as required, and/or as herein specified.

B. The work under this section shall include, but is not limited to, the following: timber sheeting, sheet piling, bracing, tie backs, and shoring of all walls, structures, underground utilities or objects, horizontally, vertically or both; and includes the work performed by the Contractor and all subcontractors employed to perform all work specified in all divisions of these specifications.

C. The lump sum price bid shall include full compensation for all sheeting, and shoring required for the safe conduct of work, whether or not it is specifically mentioned in these specifications or indicated on the Contract Drawings.

D. Related work specified elsewhere:

1. Section 02401: Dewatering
2. Section 02220: Excavation and Backfill
3. Section 02221: Utility Excavation, Backfill, and Compaction

1.02 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. Shoring materials and installation work shall conform to Federal, State and local laws, rules, regulations, requirements, precautions, orders and decrees.
2. Provide material for all sheet piling, sheeting, bracing and shoring and drive or set in place in accordance with Federal, State and local laws for excavations and construction; and as may be required to protect the workers and the plant personnel, or to maintain the trench widths specified in Section 02221 - UTILITY EXCAVATION, BACKFILL, AND COMPACTION regardless of whether the same is or is not considered necessary by the Contractor.

1.03 JOB CONDITIONS

A. Responsibility for Condition of Excavation: The failure or refusal of the Engineer to suggest the use of bracing or sheeting, or a better quality, grade, or section, or larger sizes of steel or timber, or to suggest sheeting, bracing, struts, or shoring to be left in place, shall not in any way or to any extent relieve the Contractor of any responsibility concerning the condition of excavation or of any of his obligations under the Contract, nor impose any liability on the Engineer or Owner, nor shall any delay whether caused by any action or want of action on the part of the Contractor, or by any act of the Engineer, Owner, or their agents, or employees, resulting in the keeping of any excavation open longer than would otherwise have been necessary, relieve the Contractor from the necessity of properly and adequately protecting the excavation from caving or slipping, nor from any of his obligations under the Contract relating to injury to persons, or property, nor entitle him to any claims for extra compensation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Wood Materials: Use wood sheeting, sheet piling, bracing, and shoring which is in good serviceable condition and timbers of sound condition, free from large or loose knots and of proper dimensions.

B. Steel Materials: Steel sheet piling and bracing of equal strength may be substituted for wood.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The word "trenches" used herein refers to excavations for utilities as well as footings and walls.

B. In all trench operations where men are at work or where they must pass to and from this work, sufficient lifts, either natural or artificial, shall be provided at all times.

C. All trenches 4 feet or more in depth shall at all times be supplied with at least 1 ladder for each 100 feet in length or fraction thereof. The ladder shall extend from the bottom of the trench to at least 3 feet above the surface of the ground and shall support a minimum weight of 300 pounds per step.

D. Red lanterns, electrical blinkers, torches, or other approved lighting shall be placed along the exposed sides of all trenches at night as required for necessary warning. In no case shall the lights be placed further than 20 feet apart.

E. Guardrail or barricades shall be provided at or near the sides of trenches as necessary to protect the workmen and Owner personnel. The description of the type of guardrail or barricades to be used shall be submitted to the Engineer for review prior to starting any work.

F. Excavations, if over four feet in depth, unless in solid rock, hard shale or hardpan, shall be shored, sheeted and braced. All shoring and bracing shall be constructed in accordance with the minimum requirements for trench timbering and shall be effective to the bottom of the trench.

G. Where the cross section of the horizontal stringer or wale is not square, the greatest dimension shall be placed in a horizontal plane to gain the maximum strength of the member.

H. Where a mechanical digger is used, the sheeting and bracing shall be placed as close as possible to the lower end of the boom.

I. The bracing shall be held in place by hydraulic jacks, screw jacks or by cross braces cleated and wedged in place. Where the width of the excavation is such that horizontal bracing is not feasible, diagonal cross bracing shall be installed such that the bottom of the bracing shall bear against a footing in the earth at the bottom of the excavation and adequate means shall be taken to prevent that bracing from kicking out. In hand excavated trenches, cleats shall be securely fastened to join the ends of braces to stringers to prevent the braces from being knocked out of place.

J. Excavated material and superimposed loads shall not be placed nearer than 18 inches to the sides of a trench or other excavation, unless bracing has been installed which is designed to withstand the load.

K. When trenches are undercut, they shall be shored to safely support the overhanging material. The design of shoring shall be performed and sealed by a professional structural Engineer registered in the State of Maryland. The design shall be submitted to the Engineer for review prior to installation.

L. If a trench is cut, or an embankment is created by excavating or grading alongside an existing structure, object or underground utility, and the footing or elevation of the bottom of the structure, object, or utility is nearer to the trench or embankment than the angle of repose for the soil, the sidewall of the trench or the embankment shall be rigidly and adequately supported and braced. If the method of, and the materials to be used for, support are not indicated on the Contract Drawings, same shall be submitted to the Engineer for review, in accordance with paragraph K above, prior to the start of the excavation or grading work.

M. When the depth of the trench requires two (2) lengths of sheet piling, one above the other, the lower length shall be set aside the bottom stringers or wales of the upper length and driven down and braced as the excavation continues.

N. Unless otherwise directed by the Engineer, all sheeting and shoring shall be removed. Any voids that may exist behind or left by the sheeting shall be filled with earth during the backfilling operation. The timber removed from the trench may be reused by the Contractor elsewhere on the work if it is structurally sound.

O. Wherever necessary in quicksand, or soft ground, or for the protection of any structure or property, sheeting shall be driven without extra compensation to such additional depth below the bottom of the trench as may be required or directed.

P. A trench box may be used in lieu of sheeting, shoring, and/or bracing only upon approval of appropriate Safety Agencies.

*** END OF SECTION ***

DIVISION 02 - SITEWORK

SECTION 02220

EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall excavate, sheet, shore, dewater, backfill, and compact all structural excavations necessary for constructing the work under this Contract. The Contractor shall furnish all labor, materials, and equipment necessary for completion of the work, all in accordance with these specifications. The Contractor shall also be responsible for the restoration of all areas disturbed during construction.

B. Definitions:

1. Excavation: Materials of any kind in the excavation.
2. Excavation Below Subgrade: Same as "Excavation" except such excavation is performed below elevations given as subgrade.
3. Subgrade: Subgrade under footings, foundations or slabs shall be as indicated on the Contract Drawings. Where no subgrade is shown, it shall be considered as the planned bottom of footings, foundations or slabs or gravel bedding shown on the Drawings.

C. The Contractor shall excavate, protect, and backfill all excavations that may be necessary for completing the work to be done under the contract. Excavations shall be in open cut except where and to such extent as the Engineer or permit requirements may authorize or direct that the same be done by other methods. Trenches may in general be excavated and backfilled either by machinery or by hand as the Contractor may elect provided, however the Engineer shall be empowered, wherever he shall decide that such necessity exists, to direct that hand excavation shall be employed, and provided further that backfilling by hand shall be done to the extent hereinafter specified. The Contractor shall have no claim for extra compensation due to the fact that hand instead of machine excavation may be required at any location where necessary from any cause whatever.

D. All excavation under this contract is unclassified; that is, the prices bid shall be taken to include and cover all materials required to be excavated, disposed of, and backfilled, whether wet or dry, and regardless of the character of the materials. The excavations, as required, shall be included in the prices bid with any exceptions as noted herein or as designated on the plans.

1.02 QUALITY ASSURANCE

A. Tests and Inspections:

1. The Engineer may, at his discretion, direct that Proctor and field density testing be done to determine the degree of compaction.
2. Tests and inspections will be performed by an independent testing agency employed by the Contractor. Work of the testing agency includes but is not limited to:
 - a. Inspection of foundation excavations and verification of subgrade suitability.
 - b. Prior approval of material used as fill and backfill.
 - c. Verification of compaction by in-place density tests.
3. Each report shall contain the project identification name and number, name of Contractor, name of testing agency, and location of sample tested by station, street, and depth, as a minimum.
4. Contractor shall provide access for and shall assist testing agency in acquisition of samples and performance of tests involving equipment outside the normal equipment used by the testing agency. Such assistance provided by the Contractor shall be accomplished at no cost to the Owner.
5. Whenever test results indicate compaction densities less than specified, the Contractor shall, at his own expense, secure the specified compaction using methods approved by the Engineer. Subsequent retesting occasioned by the initial non-compliance shall be performed by the same testing agency and all costs thereof shall be borne by the Contractor.

B. Reference Standards:

1. American Society for Testing and Materials:
 - a. ASTM D 1557: Moisture-Density Relations of Soils using 10-lb. Rammer and 18-in. Drop.
 - b. ASTM D 2167: Density of Soil in Place by the Rubber Balloon Method.
 - c. ASTM D 1556: Density of Soil in Place by the Sand-Cone Method.
 - d. ASTM D 2922-71: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
2. American Association of State Highways and Transportation Officials (AASHTO):
 - a. T 180: Method A: Moisture-Density Relationship; Modified Proctor Test.
 - b. T 191: Density by Sand Cone.
 - c. T 224: Coarse Particle Correction.
 - d. T 238: Density by Nuclear Methods.
 - e. T 239: Moisture Content by Nuclear Methods.
 - f. T 272: Method C: Moisture-Density Family of Curves.

1.03 SUBMITTALS

- A. Samples: Submit aggregate samples and all other required submissions to the Engineer's Office.
- B. Submit sources of supply for approval by Engineer.

1.04 JOB CONDITIONS

A. Environmental Requirements:

1. Do not perform excavating, backfilling, or compacting when weather or condition of materials are such, in the opinion of the Engineer, that work cannot be performed satisfactorily.
2. Do not use frozen materials as backfill nor wet materials containing moisture in excess of the amount necessary for satisfactory compaction.
3. Prior to use, moisten dry backfill material not having sufficient moisture to obtain satisfactory placement or compaction.
4. Prior to use, dry wet backfill material to a sufficient moisture to obtain satisfactory placement or compaction.
5. Plan work so as to provide adequate protection during storms with provisions available at all times for preventing flood damage. Protect installed piping and other work at all times against damage from uplift due to high ground water levels.
6. Accommodation of Drainage:
 - a. Sewers, gutters, drains and ditches shall be kept open at all times for surface drainage. No damming or ponding of water in gutters or other waterways will be permitted, except to a limited extent where the Engineer shall consider the same necessary or allowable.
 - b. The Contractor shall be responsible for all necessary diversions of drainage flows and erosion and sediment control measures associated therewith. The Contractor is not to direct flow of water across or over pavements except through approved pipes or properly constructed troughs. Provide pipes or troughs of such sizes and lengths as may be required. Control grading in the vicinity of excavations so the ground surface is properly pitched to prevent water running into excavated areas.
7. Accommodation of Traffic:
 - a. Any restriction or diversion of traffic at any time shall be subject to the approval of the Engineer and the requirements of that agency having jurisdiction over the road in which the Contractor is working.
 - b. During the progress of the work, sidewalks and crossings shall be kept open for the passage of pedestrians unless otherwise authorized. Streets shall not be unnecessarily obstructed; and unless the Engineer, Maryland State Highway Administration, Wicomico County and/or the City of Salisbury, as applicable, shall authorize the

complete closing of a street, the Contractor shall take such measures at his own expense as may be necessary to keep the street open for traffic. This shall include but not necessarily be limited to the provision, erection and maintenance of all necessary signs, barricades, lights and flagmen or uniformed traffic directors.

- c. The Contractor shall construct and maintain without extra compensation such adequate and proper bridges over excavations as may be necessary or directed for the purpose of accommodating pedestrians and/or motor vehicles.
 - d. Construction activities which may temporarily interfere with property access shall be coordinated in advance with the individual property owners.
 - e. The Contractor shall so schedule his work as to minimize the time period during which vehicular access to each dwelling along the work route is prevented. At no time shall vehicular access be prevented to any dwelling for longer than 24 hours. The Contractor shall provide, at all times safe pedestrian access to all dwellings, whether residential, commercial or other.
 - f. The Contractor shall provide vehicular access at all times to all commercial establishments. Any commercial establishments with either street frontage or pipe length crossing the property greater than 150 feet in length shall be provided with two (2) vehicular access points across the pipe trench at all times.
 - g. Vehicular access on side streets, in proximity of the route of the work, shall not be encumbered by the Contractor.
 - h. The Contractor shall not totally bar vehicular access from more than one block of the route of the work at any given time.
 - i. Access to fire hydrants shall be possible at all times and, wherever possible, one lane of traffic shall be maintained to accommodate access by emergency vehicles.
- 8. Pumping: Dewatering shall be accomplished in accordance with Section 02401 – Dewatering.
 - 9. Control groundwater and surface water during construction in order to maintain soil stability. Maintain the water table elevation sufficiently below the levels of excavation so that slopes will remain stable and bottoms of excavations will not become loosened by flow of water. If the foundation material loses its strength due to improper dewatering techniques, over excavate the material and replace it with “Special Backfill” at the Contractor's expense.

B. Protection:

- 1. Responsibility for Condition of Excavation:
 - a. The Contractor shall be responsible for the condition of all excavations made by him. All slides and caves shall be removed without extra compensation at whatever time and under whatever circumstances they occur.

- b. Any delay, whether caused by any action or want of action on the part of the Contractor or by any action or want of action of the Owner, of its agents, or employees resulting in the keeping of an excavation open longer than would otherwise have been necessary, will not relieve the Contractor from the necessity of properly and adequately protecting the excavation from caving or slipping or from any of his obligations under the contract relating to injury of person or property nor entitle him to any claim for extra compensation.
- c. The Engineer reserves the right to stop the excavation or any other part of the work, and to require the Contractor to complete the structure and the backfilling up to such a point as the Engineer, without assuming responsibility for safety to persons or property, may require before proceeding further with the excavation; and the Contractor shall not thereby become entitled to demand or to receive any allowance or compensation, other than an extension of the contract time for as many days as the Engineer may determine that the work was delayed by such stoppage.

2. Protection of Property and Structures:

- a. The Contractor shall at his own expense, sustain in their places and protect from direct or indirect injury all pipes, wires, conduits, poles, tracks, walls, signs, wells, septic tanks, buildings, and other structures or property in the vicinity of his work whether above or below ground, or that may appear in the excavation. He shall at all times have a sufficient quantity of timber and plank, chains, ropes, and other material and equipment, on the site and shall use them as necessary for sheeting his excavations and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened, or weakened.
- b. The Contractor shall take all risks attending the presence or proximity of pipes, wires, conduits, poles, tracks, walls, buildings, 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 ground surface, and he shall be responsible for all damage and assume all expense for direct or indirect injury caused by his work to any of them or to any person or property by reason of injury to them whether such structures are, or are not, indicated on the Contract Drawings.
- c. Any wells or structures removed or damaged as a result of the Contractor's work, shall be replaced to meet the latest applicable standards, at the Contractor's expense.
- d. The Contractor shall not enter upon private property for any purpose without obtaining the property owner's written permission, and he shall be responsible for the preservation of all public and private property, trees, monuments, and any and all natural or manmade objects, along and adjacent to the work and shall use every

precaution necessary to prevent damage or injury to any and all property or persons. He shall use necessary precautions to prevent damage to pipe, conduits, and all other structures, and shall protect markers until a registered land surveyor in the State of Maryland paid for and retained by the Contractor has witnessed or otherwise referenced the location and shall not remove them until directed. All such land monuments and property markers, whether damaged and/or removed, shall be properly replaced prior to the completion of the work by a registered land surveyor licensed in the state. The Contractor shall not willfully or maliciously injure or destroy trees or shrubs and shall not remove or cut them without proper written authority of the property owner. The Contractor shall be strictly responsible for any and all damage or injury of every kind and description which directly or indirectly may be done to any property or sustained by any persons during the procession of the work resulting from any wrongdoing, misconduct, want of care or skill, or any negligence of himself or his agents and/or employees in his manner or method of executing said Work or due to his non-execution of said Work, even though such manner or method of said Work be concurred in, permitted, or allowed by the Engineer or the Owner, its agents, and/or employees, or at any time due to defective Work or materials. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work, or in consequence of the non-execution thereof on the part of the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner. In case of the failure on the part of the Contractors to restore such property or make good such damage or injury, the Engineer may, upon forty-eight (48) hours' notice, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary, and the cost thereof may be deducted from any money due, or which may become due the Contractor under this Contract. No extension of the Contract duration will be allowed for any Work or restoration covered by this paragraph.

- e. The Contractor shall locate, protect, change, remove, realign, relocate, replace, or repair all signs and overhead and underground obstructions, structures and utilities whether shown on the drawings or not, as necessary for construction of the project, within the unit prices bid for furnishing and laying pipe. Contractor shall uncover and support such structures at his own expense before such removal, and before and after such alignment or change, as part of the contract; and the Contractor shall not be entitled to any claim for damage on account of the presence of said structure or on account

of any delay in the removal or rearrangement of same. The Contractor shall without extra compensation break through and reconstruct, if necessary, the invert or arch of any sewer, culvert, or conduit that may be encountered if said structure is in such position as, in the judgment of the Engineer, does not require its removal, realignment or complete reconstruction. The Contractor shall obtain the written permission of the property owner affected prior to the Contractor relocating, realigning and/or replacing any obstructions to construction owned by said affected property owner.

3. Utilities:

- a. The Contractor shall do all work, within the unit prices bid and without extra cost to the Owner, which is required to locate, protect, relocate, replace or repair all overhead and underground utilities whether shown on the drawings or not, as necessary for the construction of this project. The Contractor shall cooperate with the owner of any public or private utility service, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct, or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control his operations to prevent the unscheduled interruption of such utility services and facilities.
- b. It is understood and agreed that the Owner and the Engineer do not guarantee the accuracy of the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of his responsibility to protect such existing features from damage or unscheduled interruption of service. The Contractor shall contact "Miss Utility" at (800) 441-8555 at least 48 hours prior to digging in the vicinity of existing underground utilities to have them located and marked.
- c. Where the outside limits of an underground utility service have been located and staked on the ground the Contractor shall be required to use excavation methods acceptable to the Engineer within 3 feet of such outside limits at such points as may be required to insure protection from damage due to the Contractor's operations.
- d. Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, he shall immediately notify the proper authority and the Engineer and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the Engineer continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.
- e. The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to his operation whether

or not due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due to the Contractor, or his surety.

- f. The Contractor shall, within the unit prices bid and without extra cost to the Owner, pay all charges levied by utility companies from work performed by their forces to locate, inspect, protect, relocate, replace, or repair overhead or underground utilities shown on the drawings as necessary for the construction of this project.

C. Obstructions:

1. Obstructions Shown/Not Shown on Drawings:

- a. Certain information regarding the reputed presence, size, character, and location of existing underground and above ground structures has been shown on the plans. There is no certainty as to the accuracy of this information, and it shall be considered by the Contractor in this light. The locations and elevations of underground and/or above ground structures shown may be inaccurate, and other obstructions than those shown may be encountered. The Contractor shall hereby distinctly understand that the Owner is not responsible for the correctness or sufficiency of the information given, or on account of the insufficiency or absence of information regarding obstructions either revealed, or not revealed by the drawings; and that he shall have no claim for relief from the obligation or responsibility under the contract in case the location, size or character of any pipe, wire, conduit, pole, sign or other underground and/or above ground structure is not as indicated on the drawings or in case any pipe, wire, conduit, pole, sign or other underground and/or above ground structure is encountered that is not shown on the drawings.
- b. The Contractor shall locate, protect, change, remove, realign, relocate, replace, or repair all signs and overhead and underground obstructions, structures and utilities whether shown on the drawings or not, as necessary for construction of the project, within the unit prices bid for furnishing and laying pipe. The Contractor shall uncover and support such structures at his own expense before such removal, and before and after such alignment or change, as a part of the contract; and the Contractor shall not be entitled to any claim for damage on account of the presence of said structure or on account of any delay in the removal or rearrangement of same. The Contractor shall without extra compensation break through and reconstruct, if necessary, the invert or arch of any sewer, culvert, or conduit that may be encountered if said structure is in such position as, in the judgment of the Engineer, does not require its removal, realignment, or complete reconstruction. The Contractor shall obtain the written permission of the property owner affected prior to the

Contractor relocating, realigning and/or replacing any obstructions to construction owned by said affected property owner.

2. Removal of Obstructions:

- a. Except for items specifically noted to be removed or relocated, if the position of any pipe, conduit, pole, or other structure above or below ground, and not shown on the plans, be such, in the opinion of the Engineer, as to require its removal, realignment, or change due to work to be done under the contract, the work or removal, realignment or change will be done as extra work, or will be done by the owner of the obstructions without cost to the Contractor; but the Contractor shall uncover and support such structures at his own expense before such removal, and before and after such alignment or change, as a part of the contract; and the Contractor shall not be entitled to any claim for damage on account of the presence of said structure or on account of any delay in the removal or rearrangement of same.
- b. The Contractor shall not interfere with any persons, firms, or corporations or with the Owner in protecting, removing, changing or replacing their pipes, wires, conduits, poles, or other structures; but he shall suffer said persons, firms or corporations or the Owner to take all such measures as they may deem necessary or advisable for the purpose aforesaid; and the Contractor shall thereby be in no way relieved of any of his responsibilities under the contract.
- c. All structures, material, or resources within the right-of-way or construction areas, which are not to remain or have not been designated for use in the construction, shall remain the property of the Owner, and shall be salvaged and stored or otherwise disposed of by the Contractor as hereinafter specified, indicated on the plans, or directed by the Owner.
- d. The Contractor shall without extra compensation break through and reconstruct, if necessary, the invert or arch of any sewer, culvert, or conduit that may be encountered if said structure is in such position as, in the judgment of the Engineer, does not require its removal, realignment, or complete reconstruction.

3. Change of Trench Location:

- a. In case the Engineer shall direct that the location of a trench be changed to a reasonable extent from that shown on the plans on account of the presence of an obstruction or from other cause or if a changed location shall be authorized upon the Contractor's request, the Contractor shall not be entitled to extra compensation or to a claim for damage provided that the change is made before the excavation is begun. If, however, such change, made at the direction of the Engineer, involved the abandonment of excavation already made, such abandoned excavation together with the necessary refill will be classed as "Miscellaneous Excavation and Backfill". In the event that the trench is abandoned in favor of a new location at the

Contractor's request, the abandoned excavation and refill shall be at the Contractor's expense.

- b. If an obstruction shall lie within the trench in such manner that the trench must be excavated to extra width in order that sheeting, shoring and/or bracing may be properly placed or in order that the structure to be placed in the trench may be properly built, such extra width of trench shall be classed as "Miscellaneous Excavation and Backfill". No sloping of sides of excavations, however, will be considered as miscellaneous excavation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: No right of property in materials is granted the Contractor of excavated materials. This provision does not relieve the Contractor of his responsibility to remove and dispose of surplus excavated material.

1. The Contractor shall have no property right in any material taken from any excavations, and shall not remove any earth, sand, or other material from the site of the work, except upon direction or written permission of the Engineer, or as here in before specified.
2. The Contractor shall not be relieved by the above provisions of any of his obligations to remove and dispose of excess materials excavated, with or without rehandling, as elsewhere herein provided.

B. Gravel/Stone Bedding: Stone or gravel shall be in accordance with Maryland State Highway Administration. Stone subgrade under structures and piping shall be ASTM C33 #57. See Pipe Bedding: 2.01B, Section 02221. Stone subgrade under roads shall be CR-6.

C. Structural Backfill: Suitable soil or soil-rock mixed material free of topsoil, plant life, lumber, metal refuse, and rock or similar hard objects larger than two inches in any dimension.

D. Special Backfill: All requirements contained above for Structural Backfill shall apply to Special Backfill except that the maximum size of any hard object shall be one inch instead of two inches.

E. Excess Material: The Contractor will not be allowed to dispose of excess material on the site.

F. Underground Warning Tape

1. Provide for:
 - a. Telephone Conduit, orange.
 - b. Electrical Conduit, red.
 - c. Potable Water, blue.
 - d. Sewer, green.
 - e. Non-potable (utility) Water, purple.

PART 3 - EXECUTION

3.01 PREPARATION

A. Subgrade Preparation: Areas on which bedding layers are to be placed shall be trimmed and dressed to conform to cross sections shown on the Drawings, within an allowable tolerance of +1 inches from the theoretical slope lines and grades. Where such areas are below the allowable minus tolerance limit, they shall be brought to grade by filling with earth similar to the adjacent material and well compacted or by filling with well compacted bedding material. No additional payment will be made for any material thus required. No bedding shall be placed upon a frozen surface, snow, ice, or any frozen material. The prepared base will be inspected by the Engineer immediately prior to placing the bedding, and no material shall be placed thereon until that area has been approved.

3.02 PERFORMANCE

A. General:

1. Excavations shall be open cut except where and to such extent as the Engineer or Contract Drawings or permit requirements may authorize or direct that the same be done by other methods. Trenches may in general be excavated and backfilled either by machinery or by hand as the Contractor may elect provided, however, that the Engineer shall be empowered, wherever he shall decide that such necessity exists, to direct that hand excavation shall be employed, and provided further that backfilling by hand shall be done to the extent hereinafter specified. Hand excavation may be required where necessary to protect existing structures or buried utilities. The Contractor shall have no claim for extra compensation due to the fact that hand instead of machine excavation may be required at any location where necessary from any cause whatever.
2. In all areas in which the Maryland State Highway Administration exercises jurisdiction, all excavation and backfill shall be accomplished in full conformance with their requirements.
3. The Contractor shall have no property right to any material taken from any excavations, and shall not remove any earth, sand or other material from

the site of the work, except upon direction or written permission of the Engineer, or as specified.

4. The Contractor shall not be relieved by the above provisions of any of his obligations to remove and dispose of materials excavated, with or without rehandling, as elsewhere herein provided.
5. Excess excavated material that cannot be used at the project site shall be removed and disposed of off the site in a legal manner at no additional expense to the Owner.
6. Perform excavation of every description and of whatever substances encountered to the lines and grades or depths indicated by the Drawings and as specified herein.

B. Removal and Storage of Surface and Subgrade Materials:

1. The Contractor shall grub and clear the surface and remove all surface and subgrade materials of whatever nature over the line of the trench and the site of other structures and areas to be graded; and he shall properly store, guard, and preserve such of said materials as may be required for use in backfilling, resurfacing, repaving, or for any other purposes.
2. All curb, gutter, sidewalk, concrete traffic markers, brick and flagstones, and all paving material which may be removed for re-use together with all materials taken from trenches, shall be stored in such parts of the roadway or such other suitable places and in such manner as shall be approved or directed. The Contractor shall be responsible for any loss of or damage to curb, gutter, sidewalk, concrete traffic markers, brick, and flagstones, and to paving material through their careless, or neglectful, or wasteful storage, disposal, or use.
3. Where workspace is limited, remove excavated material from the limited area and replace the material after the structure has been installed. No additional compensation will be made for such removal and replacement.
4. Materials shall not be deposited or temporarily stockpiled on private property unless permission is obtained from the individual owner(s) in writing and the acceptance of the Engineer is secured by the Contractor. Prior to completion and acceptance of the work, a written release shall be obtained from those property owners having accepted disposal materials absolving the Owner from any liability connected therewith. The Contractor shall provide the Engineer with copies of each release.
5. Stockpiled materials shall in no case be placed in such a manner as to endanger the trench, existing structures, private property, or the environmental quality of the area. Measures shall be taken to ensure no blockage of existing surface drainage and to minimize the possibility of erosion and siltation of these materials.
6. All materials not suitable for incorporation in the finished work shall be disposed of by the Contractor at a location approved by the Engineer. The Contractor shall be responsible for obtaining a disposal site, including acquisition of any necessary permits for same.

C. Width and Depth of Trenches:

1. Trenches shall be excavated to the necessary width and depth as shown on the drawings, or as directed.
2. Where excavation is carried below specified subgrade elevations, or to a greater depth than the detailed trench width, the Contractor shall, at no additional expense to the Owner, make corrections to subgrade and width using approved backfill materials. Materials so used shall be thoroughly compacted to provide a firm and unyielding subgrade acceptable to the Engineer.
3. The side of the trenches shall be supported or sheeted where required for safety, or as required by OSHA and/or State safety regulations.

D. Length of Open Trench:

1. No greater length of trench in any location shall be left open in advance of the completed structure placed therein than shall be authorized or directed. The Engineer shall be empowered at any time to require the backfilling of open trenches over completed pipelines if in his judgment such action is necessary, and the Contractor shall thereby have no claim for extra compensation even though to accomplish said backfilling he is compelled temporarily to stop excavation or other work at any place.
2. If work is stopped on any trench for any reason and the excavation is left open for an unreasonable length of time in advance of construction, the Contractor shall, if so directed, backfill said trench at his own cost and shall not again open said trench until he is ready to complete the structure therein. If the Contractor shall refuse or fail to backfill said trench completely within 48 hours after said notice, the Owner shall be authorized to so do the work and the Owner shall charge the expense thereof to the Contractor and retain the same out of any monies due, or to become due, to him under the contract.
3. The excavation of all trenches shall be fully completed at least 20 feet in advance of pipe laying unless otherwise authorized.

E. Miscellaneous Excavation:

1. The Contractor shall do such miscellaneous excavation as may be necessary or directed. Such excavation shall be subject to the same conditions and requirements as specified for trench excavation but will be paid for as "Miscellaneous Excavation and Backfill".
2. Miscellaneous Excavation shall include the digging of test pits, extra width of trench made necessary by change in its location, or excavation for any special structures outside the trench that may not be shown on the drawings or described in the specifications, where such excavation is done at the direction of the Engineer.

3. Test pits shall be dug by the Contractor, whenever directed. The depth and size shall be such as required by the Engineer. Test pits shall be dug by the Contractor, without being directed to do so, along the lines of the trenches as shown on the drawings in advance of the excavation for the purpose of satisfying himself as to the location and elevation of underground obstructions or conditions. Miscellaneous excavation accomplished without written order of the Engineer will not be paid for by the Owner.

F. Excavation Below Subgrade:

1. Do not excavate below the depths indicated on the Drawings or such depths as required by the Engineer.
2. Excavation below depths indicated on the Drawings, through the fault of the Contractor, shall be restored to the indicated or required depths with special backfill at the expense of the Contractor.
3. Whenever the character of the material at the bottom of an excavation is such, in the opinion of the Engineer, as to require excavation to an additional depth for adequate foundation, or wherever a trench has been excavated by machinery to the grade directed by the Engineer and he deems it necessary on account of a change in plan to excavate deeper such additional depth shall be paid for as "Excavation Below Subgrade", provided, however, that no such excavation taken out by default or negligence on the part of the Contractor shall be so classed.
4. Except as modified above, subgrade in the case of pipelines shall be termed the underside of the pipe foundation as shown on the plans. For miscellaneous structures, subgrade shall be termed the underside of the masonry slab, foundation or gravel bedding as shown on the plans, or as described in the specifications.

G. Preparation of Foundation:

1. The Contractor shall complete excavations in earth as nearly as practical to the neat lines of the structures to be built therein. All irregularities and cavities in the bottoms of trenches shall be filled to the required level with clean earth, or other approved material firmly compacted before pipelines are laid therein and without extra compensation unless said cavities have been formed at the direction of the Engineer and their excavation classed as "Excavation Below Subgrade".
2. As directed, the Contractor shall use suitable material from excavation, special backfill, gravel or concrete, or a combination thereof in backfilling excavations below subgrade. If material from excavation is used, no additional payment will be made. If special backfill, gravel bedding or concrete have been authorized for use by the Engineer, they shall be paid for as "Special Backfill", "Gravel Bedding" or "Miscellaneous Concrete" for the quantities actually installed within trench payment limits shown on the drawings.

3. Gravel Bedding: Where gravel bedding is indicated on the Contract Drawings to be used as a subbase under slabs, footings or foundations, spread backfill uniformly without segregation of coarse and fine material. Thoroughly compact material to the satisfaction of the Engineer with a vibratory compactor. Where more than six inches of aggregate is required, place aggregate in six (6) inch layers and thoroughly compact each layer with a vibratory compactor to the satisfaction of the Engineer.

H. Backfilling:

1. The Contractor shall backfill all excavations as rapidly as practicable after the completion of construction work therein or after the excavations have served their purpose. All unauthorized excavations made by the Contractor shall be immediately backfilled at the Contractor's cost. All backfilling shall be accomplished as specified herein and as indicated on the drawings.
2. Perform backfilling using machinery, except that hand backfilling may be required where necessary to prevent displacing walls, foundations or buried utilities or damage to such. No additional compensation will be paid where backfilling by hand is required.
3. Materials from excavation shall be used for backfill unless, in the opinion of the Engineer, such material is not suitable for such use. In general, organic material, refuse, large lumps or stones having any dimension greater than 1-inch, paving material, frozen earth, or materials which will not readily consolidate or compact in the trench will be considered unsuitable. Milled asphalt is not considered suitable for trench backfill. The Engineer's decision regarding suitability or unsuitability of materials shall be final.
4. Backfill materials shall be carefully placed and compacted along the haunch of the pipe. Unless otherwise indicated or directed, backfill materials shall be hand placed in 6-inch lifts to a point at least one foot above the pipe crown. Each layer shall be thoroughly compacted for the full trench width and under, around and over the pipe, using mechanical tampers exerting a pressure of not less than 250-foot pounds per square foot of tamping force.
5. Material to backfill shall be imported from an approved off-site borrow pit. The Engineer's decision regarding suitability or unsuitability of borrow material shall be final. The cost for backfill shall be included in the unit prices bid for "Furnishing and Installing Storm Drain."
6. The Contractor shall secure and place sufficient approved material from borrow to complete the backfill. Material for backfill shall conform to Maryland State Highway Administration Classification 1993 Standard Specifications, Section 16, Soil and Soil Aggregate Borrow, and shall be A-2, A-3, or A2-4 Select Borrow. Materials for "Special Backfill" shall also meet these requirements.
7. Structural Backfill:
 - a. Place backfill in horizontal layers not exceeding eight (8) inches in depth, moistened if required and compact by hand or mechanical tampers to a density of not less than 95 percent of the maximum dry

- weight density, in accordance with the testing procedures of Modified Proctor Test AASHTO T-180, Method "A".
- b. No fill or other load shall be placed on or against concrete surfaces before expiration of the minimum period after placing the concrete, as indicated below, unless otherwise specified.
- (1) Walls and vertical faces: 14 days
 - (2) Horizontal footings: 14 days
 - (3) After the minimum period specified above has elapsed, fill operations may be initiated. Within 3 feet (measured horizontally) of walls and vertical or near-vertical faces and within 5 feet (measured vertically) of horizontal footings, no hauling equipment will be permitted and all compaction shall be by approved power tampers. Any damage to structures caused by the Contractor's equipment shall be repaired to the satisfaction of the Engineer without cost to the Owner.
 - (4) Prior to backfilling and after completion of footings and walls and the removal of forms, clean excavation free of trash and debris.
8. Unless otherwise indicated or directed, the remainder of trench, more than one foot above pipe crown, may be backfilled by machinery. The trenches shall be backfilled in 6" layers in accordance with City Standard 400.32. Each layer shall be thoroughly compacted for the full trench width using mechanical tampers or other suitable equipment. Heavy duty equipment shall not be run over the trench unless pipe cover exceeds three (3) feet.
9. All backfill materials shall be compacted to 95% percent of maximum density at optimum moisture content for the specific soil classification, as determined by the modified Proctor Test AASHTO T-180 Method A.
10. After completion of backfilling, all material not used shall be removed and disposed of in such manner and at such point as shall be approved, or directed, and all roads, sidewalks, and other places on the line of the work shall be left free, clean and in good order. Said cleaning up shall be done by the Contractor without extra compensation, and if he shall fail to do such work within a reasonable time after receipt of notice, it will be performed by the Owner, and the cost shall be retained out of the monies due, or to become due, the Contractor under the contract.
11. Vibratory rollers may be used at the surface if approved by the Engineer. Variation in depth of fill layers will not be permitted because of the use of vibratory rollers.
12. No pipelines shall be backfilled until measurements of pipe, etc. have been made by the Engineer and until the Engineer's permission to backfill has been secured. Any pipelines covered without authorization shall, if required by the Engineer, be uncovered by the Contractor at his own expense.
13. All backfill materials under roadways, driveways, or shoulder areas shall be compacted to 95% density. All other areas shall have backfill materials compacted to 90% of maximum density at optimum moisture content for the specific soil classification, as determined by the Modified Proctor Test

AASHTO T-180 Method A. If the Engineer has reason to believe that proper compaction of trench backfill is not being obtained, he may direct that Proctor and Field Density testing be done to determine the degree of compaction. Such testing shall be arranged by the Contractor and performed by an independent testing agency approved by the Engineer. The Contractor shall pay the testing laboratory for all tests performed inclusive of sample collection, preparation, and transportation. The Contractor will be paid, at the unit price bid, for all Proctor tests. For those field density tests which indicate that compaction satisfied specification requirements, the Contractor will be paid for testing at the unit price bid. For those tests which indicate that compaction does not satisfy specification requirements, the Contractor will not be paid. Whenever test results indicate compaction densities less than specified, the Contractor shall, at his own expense, secure the specified compaction using methods approved by the Engineer. The testing agency, so employed by the Contractor, shall submit a copy of all testing reports directly to the Engineer. Each report shall contain the project identification name and number, name of Contractor, name of testing agency, and location of sample tested by station, street and depth, as a minimum.

I. Special Backfill:

1. Should any excavated materials be considered by the Engineer to be unsatisfactory for backfill, the Contractor shall remove and dispose of such material at an approved location.
2. If sufficient approved material from excavation at other work locations is not available for backfill, the Contractor shall secure and place sufficient approved material from borrow to complete the backfill.
3. Payment for securing and placing borrow material will be made as "Special Backfill". Payment will be made only for material actually placed within trench payment widths indicated on the drawings and for trench length and depth as authorized.
4. All requirements for placement, compaction, and field testing of backfill material shall apply as well to "Special Backfill".
5. The Contractor shall be required to submit an MD SHA approved source of supply for borrow materials at the pre-construction conference.

J. Maintenance of Backfilled Excavations:

1. The Contractor shall maintain at his own expense all back-filled, repaved, topsoiled or otherwise restored areas, including temporary pavement, in proper condition until the end of the guarantee period for the project. All defects shall be promptly corrected. If the Contractor shall fail to do so within a reasonable time after the receipt of written notice from the Engineer, the Engineer may remedy such defects and the cost thereof shall be deducted from any monies due or to become due the Contractor under the contract.

In case of emergency, the Engineer may correct any dangerous condition without giving previous notice to the Contractor; and the cost of so doing shall be retained from any monies due the Contractor.

2. The Contractor shall be responsible for any injury or damage that may result from improper maintenance of trenches or pavement at any time prior to the end of the aforementioned guarantee period.

K. Dewatering:

1. Dewatering shall be accomplished by methods which shall insure that the groundwater will be drawn down to an elevation two (2) feet below the bottom of the bedding. Said methods may include deep wells, well points, sump pumps, and other means, subject to the acceptance of the Engineer. Upon removal of such dewatering equipment, the Contractor shall backfill, consolidate and pave (in roads) all holes, including restoration of adjacent disturbed areas to pre-existing, or better, conditions as specified herein.
2. Dewatering for structures and pipelines shall commence when groundwater is first encountered and shall be continued until such time as backfill operations have been completed.
3. The Contractor shall provide for the disposal of all water removed from excavations so that it will not cause injury to the public health, to public or private property, or to any portion of the work completed or in progress or cause any impediment to the use of the streets by the public. Excessive local ponding and siltation, or its deposition, will not be tolerated. Dewatering operations shall be in accordance with applicable local and state regulations.
4. Dewatering operations in trenches adjacent to existing structures shall be accomplished in a manner which will exclude the possibility of earth material being washed from areas outside the confines of the trench structurally endangering existing structures.
5. Should the Contractor's dewatering operations affect any existing private water supply well used exclusively as a primary potable water source, the Contractor shall, at no additional cost to the Owner, take whatever steps are necessary to provide uninterrupted water service, including the installation of temporary water lines, if necessary.
6. It shall be the Contractor's responsibility to verify groundwater conditions prior to bidding. The presence or absence of groundwater at the time of construction shall not entitle the Contractor to additional compensation.

L. Sheet piling, Shoring and / or Bracing:

1. The Contractor shall support the sides and ends of all excavations, wherever necessary, with sheet piling, shoring and/or bracing of the quality and character as required. All sheet piling, shoring and/or bracing shall be put in place by men skilled in such work and shall be so arranged that it may be withdrawn, as backfilling proceeds, without injury to the structures built

- under the contract, or to any roadbed or adjacent structure, or property.
2. All sheeting, shoring and/or bracing in excavations shall be withdrawn in stages on both sides of trenches (to prevent lateral movement of the pipe) as the backfilling is being done, except where and to such extent as the Engineer shall order in writing that said sheeting be left in place, or where he shall permit the same to be left in place at the Contractor's expense upon his request. The Contractor shall cut off any sheeting ordered left in place as directed and shall remove the material cut off without compensation thereof.
 3. Wherever necessary in quicksand, or soft ground, or for the protection of any structure or property, sheeting shall be driven without extra compensation to such additional depth below the bottom of the trench as may be required or directed.
 4. The cost of installing and removing sheeting will be included in the prices bid.
 5. A trench box may be used in lieu of sheeting, shoring and/or bracing only upon approval of appropriate Regulatory Agencies.

3.03 RESTORATION AND CLEAN-UP OF SERVICE

A. Replacement of Structures by Contractor: The Contractor shall restore (unless otherwise stipulated) all sidewalks, curbs, gutters, shrubbery, fences, poles, sod or other property and surface structures removed or disturbed as a part of the work to a condition equal to that before the work began, furnishing all labor and materials incidental thereto.

B. Clean Up and Maintenance of Surfaces:

1. General: During construction, the surfaces of all areas including, but not limited to, roads, streets, and driveways shall be maintained on a daily basis to produce a safe, desirable, and convenient condition. Streets shall be swept and flushed after backfilling, and recleaned as dust, mud, stones and debris caused by the work, or related to the work again accumulates. Failure of the Contractor to perform this work shall be cause for the Engineer to order the work by others, and back charge all costs to the Contractor.
 - a. All surplus materials furnished by the Contractor and temporary structures shall be removed from the site by the Contractor.
 - b. All dirt, rubbish, and excess earth from the excavation shall be disposed of by the Contractor in a manner and place acceptable to all governing agencies.
 - c. The construction site shall be left clean at the end of each working day to the satisfaction of the Engineer.
2. Repair or Correction of Unsatisfactory Conditions: All unsatisfactory conditions resulting from the work shall be corrected.
 - a. Any subnormal or dangerous condition caused by the work, on any surface, shall be repaired or corrected within two hours of observance or notification of its existence. If repairs or corrections

are not made within this period, the Owner shall cause to have the work completed with the resulting cost subtracted from the Contractor's next monthly payment request. Any such costs shall be deemed a reduction in the total amount due the Contractor under the contract and no subsequent reimbursement shall be made to the Contractor by the Owner for these costs.

3.04 FIELD QUALITY CONTROL

A. Testing: Performed by the Contractor's independent testing agency as prior approved for laboratory testing.

1. In-place field density tests conducted in accordance with ASTM D 1556, ASTM D 2167, or ASTM D 2922. If methods of ASTM D 2922 are used for density testing, the moisture content must be determined as stated in ASTM D 3017.
2. Perform up to two (2) field moisture-density determination (test) for each lift of material placed.
3. Test locations as directed by the Engineer.
4. The Engineer may require additional tests whenever necessary to ensure that the specified density is being obtained.

B. Corrective Measures: Whenever tests indicate that the field moisture or density does not meet specified requirements, take corrective action as approved by the Engineer. The costs associated with corrective measures and retesting shall be borne by the Contractor.

1. Corrective measures may include loosening the soil and wetting or drying it to prior to re-compaction, additional compaction, or removing and replacing the material.
2. Retest material that did not meet the moisture and density requirements after corrective measures have been performed.

C. Retesting: The Engineer may at any time require retesting of any material, whether in stockpiles or being placed, if it appears that the material differs from that which has previously been approved for use.

D. Roadway Subgrade:

1. Surface Tolerance: Check finished subgrade surface for smoothness and elevation in accordance with the following:
 - a. Use an approved template shaped to conform to the design requirement indicated on the Drawings for checking crown and contour of roadways.
 - b. Use an approved ten (10) foot straight edge to check for longitudinal irregularities in the subgrade.

- c. Surface irregularities shall not exceed 1/2-inch.
 - d. Use string lines for controlling the finished elevation of roadway subgrade. Maintain such lines until surface irregularities have been satisfactorily corrected.
2. Corrections: Correct surface irregularities exceeding previously specified limits to the Engineer's satisfaction either by removing or adding material as required, followed by rolling until satisfactorily compacted.

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DIVISION 02 – SITEWORK

SECTION 02221

UTILITY EXCAVATION, BACKFILL AND COMPACTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work shall consist of all excavation necessary to open the pipe or conduit trench, lay the pipe or conduit, and backfill and compact to the existing or proposed grade as required by the Contract Drawings.

B. Related Work Specified Elsewhere:

1. Section 02010: Subsurface Exploration.
2. Section 02151: Sheet piling, Shoring and/or Bracing.
3. Section 02401: Dewatering.
4. Section 02540: Erosion and Sediment Control.

C. Definitions:

1. All excavation for this Contract is unclassified. Items involved in the excavation such as grassed areas and sidewalks, of whatever material will be considered as unclassified excavation, and no extra payment will be made for removal.
2. Excavation: Removal of materials of any kind in the excavation.
3. Excavation Below Subgrade: Same as excavation except such excavation is performed below elevations given as subgrade.
4. Subgrade: Trench bottom prepared as specified to receive gravel bedding, concrete cradle or concrete encasement or the bottom of excavations prepared to receive pipe line structures.

1.02 QUALITY ASSURANCE

A. Tests and Inspections:

1. Tests and inspections will be performed by an independent testing agency selected and paid by the Contractor. Work of the testing agency includes but is not limited to:
 - a. Prior approval of material used as fill and backfill.
 - b. Verification of compaction by in-place density tests.

- c. Contractor shall provide access for and shall assist testing agency in acquisition of samples and performance of tests.
2. Whenever test results indicate compaction densities less than specified, the Contractor shall correct the installation and retest until satisfactory results are achieved. All costs thereof shall be borne by the Contractor.

B. Reference Standards:

1. American Association of State Highway and Transportation Officials (AASHTO):
 - a. T 180, Method A: Moisture-Density Relationship; Modified Proctor Test.
 - b. T 191: Density By Sand Cone.
 - c. T 224: Coarse Particle Correction.
 - d. T 238: Density By Nuclear Methods.
 - e. T 239: Moisture Content By Nuclear Methods.
 - f. T 272: Method

C: Moisture-Density Family of Curves.

1.03 SUBMITTALS

- A. Samples: Submit aggregate samples to the Engineer.
- B. Submit sources of supply for approval by the Engineer.

1.04 JOB CONDITIONS

A. Environmental Requirements:

1. Do not perform trenching, backfilling or compacting when weather conditions or the condition of materials are such, in the opinion of the Engineer, that work cannot be performed satisfactorily.
2. Do not use frozen materials as backfill nor wet materials containing moisture in excess of the amount necessary for satisfactory compaction.
3. Prior to use, moisten dry backfill material not having sufficient moisture to obtain satisfactory placement or compaction.
4. Prior to use, dry wet backfill material to a sufficient moisture to obtain satisfactory placement or compaction.
5. Plan work so as to provide adequate protection during storms with provisions available at all time for preventing flood damage. Protect installed piping and other work at all times against damage from uplift due to high ground water levels.
6. Accommodation of Drainage: Keep gutters, sewers, drains and ditches open at all times for surface drainage. No damming or ponding or water in gutters or other waterways will be permitted. Do not direct water flows

across or over pavements except through approved pipes or properly constructed troughs. When so required, provide pipes or troughs of such sizes and lengths as may be required, and place the same as required at no expense to the Owner. Perform grading in the vicinity of trenches so that the ground surface is properly pitched to prevent water running into the trenches.

7. Pumping: Dewatering shall be accomplished in accordance with Section 02401 - DEWATERING.

B. Removal of Obstructions:

1. Except for items specifically noted to be removed or relocated, if the position of any pipe, conduit, pole, or other structure above or below ground be such as in the opinion of the Engineer to require its removal, realignment, or change due to work to be done under the Contract, the work of removal, realignment, or change will be done as extra work unless noted as a part of a lump sum item, or will be done by the Owner of the obstructions without cost to the Contractor; but the Contractor shall uncover and support such structures at his own expense before such removal, and before and after such realignment or change as a part of the contract; and 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 same.
2. The Contractor shall not interfere with any person, firms, or corporations or with the Owner in protecting, removing, changing, or replacing their pipes, wires, conduits, poles, or other structures; but he shall suffer said persons, firms, or corporation or the Owner to take all such measures as they may deem necessary or advisable for the purpose aforesaid; and the Contractor shall thereby be in no way relieved of any of his responsibilities under the Contract.

C. Protection:

1. Assume all risks attending the presence or proximity of overhead or underground utilities, pipes, conduits, existing structures, and property of whatever nature. Damages and expenses for direct or indirect injury to such structures or to any person or property by reason of them or by reason of injury to them; whether such structures are or are not shown on the Drawings, by work of this Contract, rests solely with the Contractor.
2. Pipe Supports: Adequately support underground pipes or conduits exposed as a result of excavations. Provide adequate support along their entire exposed length by salt treated timber or planking. Install such supports in such manner that backfilling may be performed without dislodging such pipes or conduits. Place and carefully compact material from excavation or Special Backfill, as required, around the supports, and leave such supports in place as a guard against breakage due to backfill settlement. No

additional payment will be due the Contractor for support material left in place nor for the labor of installing and maintaining supports.

D. Excavation Condition:

1. Condition and results of excavation are solely the responsibility of the Contractor. Remove slides and cave-ins at whatever time and under whatever circumstance they occur.

E. Change of Trench Location:

1. In case the Engineer shall direct that the location of a trench be changed to a reasonable extent from that shown on the drawings on account of the presence of an obstruction or from other cause or if a changed location shall be authorized upon the Contractor's request, the Contractor shall not be entitled to extra compensation or to a claim for damage provided that the change is made before the excavation is begun. If, however, such change made at the direction of the Engineer involves the abandonment of excavation already made, such abandoned excavation together with the necessary refill will be classed as miscellaneous excavation and refill. In the event that the trench is abandoned in favor of a new location at the Contractor's request, the abandoned excavation and refill shall be at the Contractor's expense.
2. If an obstruction shall lie within the trench in such manner that the trench has to be excavated to extra width in order that sheeting or bracing may be properly placed or in order that the structure to be placed in the trench may be properly built, such extra width of trench shall be classed as miscellaneous excavation and refill. No sloping of sides of excavations, however, for the presence or absence of obstructions, will be considered as miscellaneous excavation.

F. Trench Work for Electrical:

1. Refer to Division 16 of these Specifications.
2. Requirements specified herein for excavating, backfilling and compacting pipeline trench work shall also apply to such work required for electrical conduit installations.

G. Perform sheeting and shoring in accordance with requirements of Section 02151 - Sheeting, Shoring and/or Bracing. An OSHA approved steel trench box may be considered in lieu of sheeting, shoring, and/or bracing.

H. Perform soil erosion and sediment control work in accordance with details and notes shown on the Drawings and applicable requirements of the Soil Conservation District.

I. If stability of adjoining structures or walls is endangered by excavations, shoring and bracing or underpinning shall be provided as necessary to insure their stability.

J. If it is necessary to place or operate power shovels, trucks or other heavy objects on a level above and near an excavation, the sides of the excavation shall be sheet-piled, shored and braced as necessary to resist the extra pressure due to such superimposed loads.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: No right of property of material is granted the Contractor of excavated materials prior to backfilling. This provision does not relieve the Contractor of his responsibility to remove and dispose of surplus excavation materials.

B. Pipe Bedding:

1. Pipe bedding shall consist of coarse stone aggregate meeting Maryland Department of Highways and Transportation for No. 57, whose gradation shall be in accordance with the following:

Size Mesh Sieve Size (inches)	Minimum and Maximum Percent Passing by Weight
1-1/2"	100
1"	95-100
1/2"	25-60
No. 4	0-10
No. 8	0-5

C. Trench Backfill:

1. On site excavated soil or soil-rock mixed materials free of topsoil, plant life, lumber, metal, refuse and rock or similar hard objects larger than two inches in any dimension.
2. Backfill material shall contain sufficient moisture for proper compaction and shall be compacted to not less than 95% of the maximum density for any specific soil classification, as determined by the Modified Proctor Test AASHTO T-180, Method "A".

D. Special Backfill:

1. Material for borrow: See Section 02220 – EXCAVATION AND BACKFILL.

PART 3 - EXECUTION

3.01 PREPARATION

A. Pipe Lines and Grades: Prior to excavation for any run of piping, set control points for line and grade.

1. Control Point: Sufficiently offset control points from trench centerline to prevent loss of points during excavation and pipe laying operations. Make the offset on the trench side opposite the excavated material stockpile.
2. Set the control points 25 feet apart maximum for lines less than 100 feet in length. Set control points at maximum of 100 feet apart or less if required by the Contractor, for lines greater than 100 feet in length, with a minimum of 4 control points.
 - a. In unpaved or unsurfaced areas, place control points on top of hubs driven firmly into the earth. Place a reference stake next to each hub.
 - b. In paved areas, drive spikes or cut crosses into paving; in either case, enclose in a painted circle.
3. Elevations: Taken using a surveyor's level and recorded. Depths of cut to pipeline invert shall be computed and both the stationing and computed depth of cut shall be marked on the stakes and the road surface.
4. Horizontal and Vertical Control: Use either properly calibrated laser or grade stakes and batter boards to maintain vertical and horizontal alignment. Laser operation personnel shall be competent, trained for use with the instrument.
5. Methods used to lay out and maintain lines and grades of pipelines, other than those specified previously, will be permitted; however, such methods will be subject to the approval of the Engineer.

3.02 PERFORMANCE

A. Excavating: Perform excavation and backfilling using machinery except that hand excavation and backfilling may be required where necessary to protect existing structures or utilities and except that backfilling shall be done by hand to the extent hereinafter specified. No claim for extra compensation will be allowed for hand excavation instead of machine excavation as may be necessary from any cause whatever.

1. Excavate trenches to necessary width and depth as required elsewhere herein.
2. Begin excavation in trenches at the control point having the lower invert and proceed upgrade.

B. Bedding Placement: Bedding shall be placed uniformly on the prepared base, in a satisfactory manner, to the lines and grades indicated on the Drawings. Placing of bedding by dumping from top of slope or by other methods that will tend to segregate particle sizes within the bedding will not be permitted. Any damage to the surface of the

bedding base during placing of the bedding shall be repaired before proceeding with the work.

C. Trench Width and Depth:

1. Trench width shall provide suitable room for proper laying and joining of pipes, considering any sheeting or dewatering requirements. Refer to Drawings for Trench Pay Limits to be utilized for Contingent Bid Items.
2. From subgrade elevation to an elevation at least twelve inches above the top of the outside barrel of the pipe, excavate trench banks to vertical lines.
3. From a point twelve inches above the top of the outside barrel of the pipe, keep trench banks as nearly vertical as possible with due regard for safety.

D. Trench Width and Depth for Electrical Work:

1. Refer to Division 16 - Electrical. Excavate trenches for both single and banked conduit runs to vertical lines and to not less than a minimum nor more than a maximum width required to accommodate the conduit or conduits, with due regard for safety.
2. Excavate trenches for both single and banked conduit runs to elevations indicated, and where not indicated, to the depth required to provide the minimum cover specified in Division 16 - Electrical.

E. Length of Open Trench:

1. No greater length of trench in any location shall be left open in advance of the completed structure placed therein than shall be authorized or directed. The Engineer shall be empowered at any time to require the backfilling of open trenches over completed pipeline if in his judgment such action is necessary, and the Contractor shall thereby have no claim for extra compensation even though to accomplish said backfilling, he is compelled temporarily to stop excavation or other work at any place.
2. If work is stopped on any trench for any reason and the excavation is left open for an unreasonable length of time in advance of construction, the Contractor shall if so directed backfill such trench at his own cost and shall not again open said trench until he is ready to complete the structure therein. If the Contractor shall refuse or fail to backfill such trench completely within 48 hours after said notice, the Owner shall be authorized to do the work; and the Owner shall charge the expense thereof to the Contractor and retain the same out of any monies due or to become due him under the contract.

F. Excavation Below Subgrade:

1. The Engineer's written requirement for Excavation Below Subgrade shall entitle the Contractor to reimbursement for the quantities of additional excavation at the unit prices bid for Excavation Below Subgrade.

G. Backfilling:

1. Backfill excavations as rapidly as practicable after completion of construction work therein or after excavations have served their purpose. Unauthorized excavations made by Contractor shall be immediately backfilled at the Contractor's cost. Accomplish backfilling as specified herein and as indicated on drawings.
2. Use material from excavation for backfill unless, in the opinion of the Engineer, such material is not suitable for use as backfill.
3. Unless otherwise indicated or directed, hand place backfill materials in six (6) inch layers to a point at least two (2) feet above pipe crown. Thoroughly compact each layer for the full trench width and under, around and over pipe, using mechanical tampers exerting a pressure of not less than 250 foot pounds per square foot of tamping face.
4. Remainder of trench, more than two feet above pipe crown, may be backfilled by machinery in eight (8) inch layers. Thoroughly compact each layer for the full trench width using mechanical tampers.
5. Upon completion of backfilling in any area under the Contract, the Engineer may require tests to determine the degree of compaction of the backfill material. If the results of tests indicate densities less than specified, the Contractor shall, at his own expense, remedy the condition as directed, in such portions of the trenches as may be required.
6. No puddling of backfill shall be allowed.
7. Do not use frozen backfill materials or place backfill materials on frozen subgrade or trench surfaces.

H. Backfilling Trenches for Electrical Work:

1. Backfill single and banded conduits, using "Trench Backfill" placed in eight (8) inch minimum compacted layers.

I. Cleanup: After trenches and other excavations are refilled and the work completed, remove surplus excavated materials, stone or such other materials from the work in such manner as the Contractor may elect or provide, but subject to the Engineer's approval. Dispose of such materials off the site in a legal manner at no additional expense to the Owner.

1. If the Contractor fails or neglects to do so or to make satisfactory progress in doing so, within twenty-four hours after the receipt of a written notice from the Engineer, the Owner may remove such surplus material and the expense for such work charged to the Contractor and deducted from any monies due or to become due him under the Contract.

*** END OF SECTION ***

DIVISION 02 - SITEWORK

SECTION 02401

DEWATERING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall keep all excavations and structures free from water while the construction work is in progress and to such an extent as may be necessary while excavation work is being carried on. He shall provide for the disposal of the water in such a manner as to not impede the normal operation of the facility, nor will the Contractor be permitted to direct any of this water to the existing wastewater treatment plant.

B. The Contractor will be responsible for developing a complete dewatering plan, which protects all areas within the construction site. The Contractor will not be permitted any additional compensation due to the presence of high ground water in his excavation.

C. The water table elevation has not been verified at this location.

D. Related Work Specified Elsewhere:

1. Section 02010: Subsurface Exploration
3. Section 02220: Excavation and Backfill
4. Section 02221: Utility Excavation, Backfill and Compaction
5. Section 02540: Erosion and Sediment Control

1.02 PERMITS

A. The Contractor shall be responsible for obtaining necessary permits for dewatering activities.

1.03 SUBMITTALS

A. If dewatering methods are proposed, the Contractor shall prepare a plan of dewatering system and discuss with Owner and Engineer. Review or comments by Owner and Engineer concerning the proposed plan shall not relieve Contractor of his responsibilities for dewatering his excavations in conformance with this Section.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 METHODS

A. Dewatering can be accomplished by ordinary pumping methods, by the use of underdrains or by deep well points. In order to assure continuous dewatering, duplicate units of the selected system incorporated with emergency power should be employed so that a reliable operation may be obtained. It is essential that all excavations be kept dry during construction operations.

3.02 DEWATERING OF WORK AREAS

A. All permanent improvements shall be constructed in areas free from water. The Contractor shall construct and maintain all permanent or temporary slopes, dikes, levees, drainage ditches, sumps, and observation wells necessary for the removal of water from work areas. The Contractor shall design, furnish, install, maintain, and operate all necessary pumping and other dewatering equipment required for dewatering the various work areas and for keeping these and other work areas free from water from any and all sources.

B. All dewatering shall be performed in advance of excavation. The dewatering shall be accomplished in a manner that will prevent loss of fines from the foundation, will maintain stability of all excavated slopes and bottoms of excavations, and will permit all construction operations to be performed in the dry. Dewatering of excavation shall be performed to the extent required to permit placement of compacted fill materials and to prevent sloughing of the excavation side slopes.

3.03 DISPOSAL OF DRAINAGE WATER

A. The disposal of all water from the dewatering and control of water operation and surface drainage shall be accomplished in a manner to have no detrimental effect on any of the new or existing facilities. The method and location of disposal of all water shall be subject to the approval of the Engineer. In addition, no water shall be drained into work built or under construction without prior consent of the Engineer.

*** END OF SECTION ***

DIVISION 02 - SITEWORK

SECTION 02540

EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work shall consist of the installation of both structural and vegetative erosion and sediment control practices as indicated on the Plans. The practices shall include, but are not limited to, the use of berms, dikes, swales, silt fences, inlet protection, sediment traps and sediment basins, crushed stone, filters or other approved methods indicated on the Plans.

1.02 GENERAL

A. Provide necessary equipment, labor and supplies for erosion and sediment control throughout project. The work consists of grading of the site and providing necessary measures required for effective control as shown on the drawings and in accordance with the Worcester County Soil Conservation requirements for Soil Erosion and Sediment Control or current manual. Excavation work, mechanical compaction of fills, pipe outlets, seeding and mulching, and other work shall be as indicated and required by the laws of the State of Maryland. The receipt of a proposal by a bona-fide bidder shall be interpreted to mean the Contractor has familiarized himself with these regulations and rules of procedure and is fully cognizant of exactly what is required.

1.03 JOB CONDITIONS

A. Erosion and sediment control measures shall be implemented any time that land is disturbed by construction activities including clearing, grading, excavating, stripping, filling or related work unless exempt by State law or local ordinance.

B. Application of erosion and sediment control measures shall be coordinated with the construction of permanent facilities to ensure effective control of erosion from the construction site.

1.04 QUALITY ASSURANCE

A. The Contractor shall obtain and maintain on the site at all times a copy of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control, available from the local Soil Conservation District.

B. The specific construction requirements in this document for the practices being employed are to be strictly adhered to throughout construction.

1.05 EROSION AND SEDIMENT CONTROL PLAN

A. At the Preconstruction Conference or prior to the start of actual construction, submit for acceptance, schedules for accomplishment of temporary and permanent erosion control work. No work shall be started until the erosion control schedules and methods of operation have been accepted by the Engineer.

B. No changes or revision to the approved Sediment and Erosion Control Plan shall be made unless approved by the Worcester County Soil Conservation District.

1.06 PERMITS

A. Owner will obtain the initial approvals from the Worcester County Soil Conservation District, including additional requirements deemed necessary by the Soil Conservation District. Any and all other approvals required after the date bid proposals are received shall be the responsibility of the Contractor at his own expense.

B. The Contractor shall not utilize any off-site areas for obtaining borrow material or for depositing spoil material unless those areas have an approved erosion and sediment control plan and all current permits as may be required by state law or local ordinance.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

*** END OF SECTION ***

DIVISION 02 - SITE WORK

SECTION 02551

WATER MAINS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Water main installation shall include, but not necessarily be limited to, furnishing and installing water pipe, fittings, and appurtenances of the size and type shown on the Plans or as directed by Owner, installed on a firm foundation true to line and grade in accordance with the Contract Documents.

B. Related Work Included Elsewhere

1. Section 02220: Excavation and Backfill

1.02 QUALITY ASSURANCE

A. Materials:

1. The Engineer will inspect all materials before and after installation to ensure compliance with the Contract Documents. When specific tests of materials are called for in the referenced standards and specifications, the Engineer has the option of requiring that any or all of these tests be performed for materials furnished for a specific project.
2. Cast iron fittings and ductile iron pipe (DIP) and fittings shall be sound and without defects that might impair its service. Defective areas shall not exceed the maximum allowable minus wall thickness tolerance specified in AWWA C110 or C151. Repair of defects by welding or other methods will not be allowed. Defective or damaged lining areas may be repaired by cutting out the defective or damaged lining to the metal so that the edges of the lining not removed are perpendicular or slightly undercut. The cutout area and the adjoining lining shall be thoroughly wetted, and a stiff mortar applied and troweled smooth with the adjoining lining. After any surface water has evaporated, but while the patch is still moist, it shall be cured by the application of a seal coat.

B. Chlorination and Field Tests:

1. General:

- a. The Contractor shall furnish all labor, tools, materials, and equipment necessary to perform the tests specified and to chlorinate the water mains.
- b. The Contractor shall schedule all tests with the Engineer at least 48 hours in advance of the test and shall conduct all acceptance testing in the presence of the Engineer.
- c. The section of water main shall be filled from such existing fire hydrant or main as may be designated by the Engineer. The Contractor shall furnish a backflow preventer ahead of the new water main. When charging and testing water mains which are not sufficiently close to existing water mains carrying County water to permit connection direct by pipe or hose lines, tank wagons shall be used to haul water and serve as suction wells.
- d. Any defective work which shows up while conducting tests or before conditional acceptance, and any leaks occurring after conditional acceptance but before final acceptance due to either blown joints or cracked pipe or fittings shall be replaced or repaired by the Contractor at his expense. Should the work be done by the County in the case of an emergency, the Contractor shall reimburse the County for the actual cost of replacing such materials and making such installations.

2. Chlorination, Flushing, and Bacteriological Testing:

- a. When the water mains are completed, each section shall be chlorinated in accordance with AWWA C601. A solution of hypochlorite of lime shall be discharged into the water main near the point where the water main is being charged. This solution shall be of such strength and quantity as may be necessary to provide 10 parts per million residual chlorine after 24 hours, in the section of water main being charged.
- b. After the 24-hour (minimum) disinfection period, the Contractor shall flush the water main until:
 - 1) Turbidity is below 2 NTU, and
 - 2) Chlorine level is at or below 2 ppm.
- c. Contractor shall obtain discharge permit for the discharge of flushing water. Contractor to dechlorinate flushing water to meet State Environmental Standards, prior to surface discharge.
- d. Samples will be taken by the Engineer and tested for bacteriological contamination. Should the chlorine residual and bacteriological analysis not be satisfactory, the Contractor shall flush and re-chlorinate the water main until satisfactory results are obtained.

3. Hydrostatic Testing:
 - a. Water mains and appurtenances shall be hydrostatically tested by the Contractor in accordance with AWWA C600 and as specified herein.
 - b. The pressure in the water main shall be increased to 150 psi at the highest point of the section of main under test. This test pressure shall be maintained within ± 5 pounds per square inch without pumping for at least 1 hour for acceptance. Should the hydrostatic test show the water main is defective, the Contractor shall remedy such defects and retest the water main as specified above. This procedure shall be repeated until the test requirements are met.

C. Submittals:

1. Shop Drawings: Shop drawings shall be submitted as specified in Section 01300 for the following materials, and shall include the following information:
 - a. Submit piping layout drawings showing location and dimensions of pipe and fittings; submit after equipment and valve submittals have been reviewed and accepted. Include laying lengths of valves, meters and other equipment determining piping dimensions. Label or number each fitting or piece of pipe. Piping having identical design thickness class, laying lengths, and bell and spigot dimensions that is to be placed in long straight reaches of alignment may have the same identifying label or number.
 - b. Ductile iron pipe and fittings:
 - 1) Submit details of special elbows and fittings (if any).
 - 2) Submit joint details.
 - c. Cast iron fittings and ductile iron pipe (DIP) and fittings: product information and dimensions; pressure rating or class; storage, handling, and installation recommendations.
 - d. Tie rods, retainer glands, and associated hardware: product information and dimensions; pressure rating; installation recommendations.
2. Certificates of Compliance: Certificate of compliance shall be submitted for the following materials stating that item supplied is in accordance with the requirements specified herein:
 - a. Cast iron fittings and ductile iron pipe and fittings
3. Certified Test Results: Certified test results shall be submitted for the following:
 - a. Cast iron fittings and ductile iron pipe and fittings.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The County will not furnish any materials for water main construction.
- B. The Contractor may obtain potable water from the County's potable water system for one pipeline fill at no cost. Any additional water used will be invoiced at the prevailing rates.

2.02 MATERIALS

- A. Portland cement concrete for pipe fitting buttresses and anchorages shall be 2500 psi mix (Class B) for unreinforced concrete buttresses and 3500 psi mix (Class A) for reinforced concrete buttresses.
- B. Cast Iron Fittings:
 - 1. All fittings shall be manufactured in accordance with AWWA C110. Fittings shall be designed and constructed to withstand a pressure not less than that for the adjacent pipe or as follows, whichever is greater: fittings 12-inch diameter and smaller shall have a minimum pressure rating of 250 psi. Those 16-inch diameter and larger shall have a minimum pressure rating 150 psi.
 - 2. All fittings shall be cement-lined in accordance with AWWA C104, double thickness. This lining shall be sealed with bituminous seal coat. The outside surface shall be bituminous coated.
- C. Ductile Iron Pipe and Fittings:
 - 1. Pipe:
 - a. Pipe shall be manufactured in accordance with the requirements of AWWA C151 except that the metal thickness shall be as described herein. Pipe nominal lengths may be 16 through 20 feet.
 - b. All pipe and fittings shall be designed and constructed to withstand all external pressure caused by overburden as indicated on the profile and traffic loads to which the pipe may be subjected.
 - 2. All ductile iron pipe will be designed for a minimum of 250 psi working pressure and Type 1 laying condition. The standard thickness class for pipe up to and including 24-inches in diameter shall be Class 50; for pipe diameter greater than 24-inches, the standard thickness class shall be Class 51; or as shown on the Plans or specified in the "Special Provisions".
 - 3. Joints:
 - a. Joints in aboveground or submerged piping or piping located in vaults and structures shall be grooved end or flanged.

- b. Joints in buried piping shall be push-on or mechanical-joint type per AWWA C111 except where restrained joint is called for on the drawings or where other joints are required by specifications to connect to valves, meters and other equipment.
 - c. Restrained joints for piping 6-inches and larger shall be American Cast Iron Company "Flex", American Cast Iron Pipe "Lok-Ring", US Pipe "TR-Flex" or accepted equal.
 - d. Other restrained joints such as "mega-lug" are acceptable for tie-ins, connections to valves and existing water mains subject to meeting requirements of this section and approval by the Engineer.
 - e. Joint deflections for buried pipe do not exceed 85% of the manufacturer's recommended maximum deflection; assemble joints in accordance with AWWA C600 and the manufacturer's recommendations.
- 4. Joints may be mechanical or rubber gasketed push-on type. Unless otherwise noted, all joints shall be in accordance with AWWA C111.
 - a. All fittings shall be manufactured in accordance with AWWA C110 or AWWA C 153 for compact fittings sizes 3 inch through 16 inch. Fittings shall be designed and constructed to withstand a pressure not less than that for the adjacent pipe.
 - b. Fittings 12-inch diameter and smaller shall have a minimum pressure rating of 250 psi, those 14-inch diameter and larger shall have a minimum pressure rating of 150 psi.
- 5. Lining and Coating: All pipe and fittings shall be cement-lined in accordance with AWWA C104, double thickness. This lining shall be sealed with a bituminous seal coat. The outside surface shall be bituminous coated.

D. Joint Restraint:

- 1. Ductile iron retainer glands for use with mechanical type joints shall be furnished with hardened setscrews and the completed restrained joint assembly shall have a rated minimum working pressure of 200 psi.
- 2. Rod for tie rod assemblies shall be 304 stainless steel rods and be threaded for at least 8 inches on both ends. Stainless steel rod shall be 3/4-inch diameter unless otherwise noted. Nuts, washers and appurtenances shall also be 304 stainless steel. Manufactured tie rod and accessories shall result in the completed restrained joint assembly having a minimum working pressure rating of 200 psi.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Trench excavation, backfill, and compaction, and pipe bedding and haunching shall be as specified in Section 02220.

B. 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.

C. No pipe shall be laid upon a foundation into which frost has penetrated, nor 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.

D. Each pipe shall be bedded on a solid foundation acceptable to the Engineer. Bell holes shall be dug sufficiently large to ensure that joints are properly made and the pipe is firmly bedded for the full length of the barrel.

3.02 PIPE INSTALLATION

A. All pipe shall be installed in accordance with the recommendations of the pipe manufacturer and as specified herein. These recommendations shall include maximum trench width, if more restrictive than that shown in the Standard Details; bedding requirements; backfill material and compaction, where applicable. In addition, the following shall apply unless otherwise noted:

1. Cast iron fittings and ductile iron pipe (DIP) and fittings shall be installed in accordance with the Standard Details and the recommendations of the Ductile Iron Pipe Research Association.

B. Proper and suitable tools and appliances for safe and convenient handling and joining of pipes and fittings shall be used. Slings shall not damage the exteriors and/or coating of the pipe and shall be wide canvas or rubber-coated belts.

C. Pipe and fittings shall be carefully handled and lowered into the trench. Pipe shall be installed with special care to ensure that each length abuts against the next to produce no shoulder or unevenness of any kind along the inside bottom half of the pipeline. No wedging or blocking will be permitted in installing any pipe unless directed by written order or permission in writing is obtained from the Engineer.

D. No pipe shall be brought into position until the preceding length has been thoroughly bedded and secured in place. Care shall be used to secure watertightness 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.

E. The pipes shall be thoroughly cleaned before being installed and shall be kept clean until acceptance of the completed work. Open ends of all pipelines shall be provided with a stopper carefully fitted to keep dirt and other substances from entering. This stopper shall be kept in the end of the pipeline at all times when installation is not in progress.

F. Whenever a pipe requires cutting, to fit into the line or bring it to the required location, the work shall be done in a manner that leaves a smooth, square end. Cut PVC pipe ends shall have burrs removed and the end beveled to match factory bevel. Field spigots shall be stop-marked with a felt tip marker or wax crayon for the proper length of assembly insertion.

1. Any lining damaged due to field cutting shall be repaired by the Contractor as specified herein.

G. Minimum Pipe Cover and Clearances:

1. Water mains shall have no less than 4 feet of cover measured from the existing and/or established grade to the top of the pipe whichever is lower, except as noted on the Plans. When crossing sub-surface obstructions, 12-inch minimum clearance shall be maintained between the pipe and the obstruction.
2. When crossing sanitary sewers with a water main, a 1-foot vertical clearance shall be maintained above the sewer pipe. The water main shall be centered over the sewer so that joints on both sides are the maximum distance from the sewer.

H. Jointing Pipe:

1. General: Before any joints are made in the trench, the Contractor shall demonstrate to the Engineer by making a sample joint that methods he will employ conform with the Specifications, will secure a watertight joint, and that the workmen whom he intends to use for this work are familiar with the requirements for making proper joints.
2. Push-On Gasketed Joints: Prior to making gasketed joints, both mating pipe ends and the gasket shall be cleaned of all foreign material. The gasket shall then be inserted in or stretched over the cleaned gasket seat and lubricant applied to the gasket and the mating pipe end. The pipe ends shall be carefully aligned and then driven home. The driving method shall be approved by the Engineer.
3. Mechanical Joints:
 - a. A cast iron gland shall be positioned on the spigot end of the pipe, followed by a rubber gasket thoroughly lubricated with its tapered side facing the bell. The spigot shall then be inserted fully into the bell. The rubber gasket shall then be moved into position by hand until it is flush with the face of the bell.
 - b. The gland shall then be placed against the face of the rubber gasket and the bolts inserted and made finger tight. Bolts shall be drawn up evenly on alternate sides beginning at the top, keeping the gland parallel to the face of the bell at all times. All nuts shall be tightened

uniformly with a torque of not less than 60 or more than 90 foot-pounds.

4. Other methods of jointing pipe will be given consideration by the Engineer, provided the Contractor furnishes evidence that the proposed method is equal to or better than the specified methods, and further, provided that the proposed method has been successfully used and that the joint has previously been manufactured by the company from whom the Contractor proposes to purchase pipe.
5. Restrained joints and joint restraint systems shall be American Cast Iron Company "Flex", American Cast Iron Pipe "Lok-Ring", US Pipe "TR-Flex" or accepted equal.

I. Tie rod nuts shall be tightened by hand and then tightened by one additional turn by wrench. Joint restraint systems shall be field protective coated with two coats of a bituminous coating after assembly.

J. Connections to existing work shall be made by the Contractor in the presence of the Engineer at such a time and in such manner as directed and approved by the Engineer. Upon notification by the Engineer, the Contractor shall notify the consumers in the area to be affected by the shut-off. All valves necessary for making connections will be operated by the County. The Contractor shall complete the connections with the greatest possible speed and all work will proceed without interruption until the existing system is returned to operation, so that the public will be inconvenienced as little as possible. Where it is necessary to remove an existing buttress to make a connection, the removal shall be done by the Contractor without additional compensation therefore.

K. Buttresses and anchorages shall be installed at all caps, horizontal bends, tees, branches, and beneath all vertical bends. Buttresses and anchorages shall be of concrete or concrete and steel. Buttresses and anchorages shall extend to solid, undisturbed soil and shall be constructed in accordance with the Standard Details, as shown on the Plans, or as directed by the Engineer.

L. All buried metal pipe and/or appurtenance that do not have factory applied protective coating or whose coatings have been damaged shall be field coated with two coats of a bituminous coating after installation.

*** END OF SECTION ***

DIVISION 03 - CONCRETE

SECTION 03100

CONCRETE FORMWORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work under this section includes job fabricated forms, form liners, coatings, ties, accessories, and removal of forms.

B. Related Work Specified Elsewhere:

1. Section 03200: Concrete Reinforcement
2. Section 03300: Cast-In-Place Concrete

1.02 QUALITY ASSURANCE

A. Design Criteria:

1. It is the Contractor's responsibility for design, engineering, and construction of formwork.
2. Design formwork in accordance with American Concrete Institute's Recommended Practice for Concrete Formwork ACI 347.
3. Design forms to repeat regularly on regularly repeating structural units or bays. Submit shop drawing covering such forming condition.

B. Allowable Tolerances: Set and maintain concrete forms within tolerance limits stated in American Concrete Institute's Recommended Practice for Concrete Formwork ACI 347.

C. Referenced Standards:

1. American Concrete Institute:
 - a. ACI 347, Recommended Practice for Concrete Formwork.
 - b. ACI 350, Code Requirements for Environmental Engineering Concrete Structures and Commentary.
2. American Plywood Association: APA Grade-Trademarks.
3. U.S. Department of Commerce Product Standards: PS-1 for Construction and Industrial Plywood.

1.03 JOB CONDITIONS

A. Protection:

1. Protect formwork materials before, during and after erection to ensure acceptable finished concrete work. Also protect in-place materials and other operations of work in connection with concrete pours.
2. In event of damage to erected forms, make necessary repairs or replacements prior to concrete pours at no expense to the Owner.

PART 2 - PRODUCTS

2.01 FORMS

A. Lumber:

1. Form framing, sheathing, and shoring shall conform to ACI 347.
2. Use lumber free of material defects that would deform the finished concrete product.

B. Plywood:

1. Form Sheathing and Panels: Not less than 5/8 inch thick Exterior Type B-B Plywood Class I and II EXT-APA conforming to U.S. Product Standard PS-1. Plywood forms with metal edges will be acceptable.
2. Use Type II only on surfaces not exposed to view.
3. Provide moldings for chamfers (if any) both milled and planed smooth.

C. Steel: Metal Forms of pre-engineered design may be used in lieu of wood forms.

2.02 FORM TIES AND ACCESSORIES

A. Form Ties:

1. Provide factory fabricated, adjustable-length, removable or snap-off metal form ties conforming to ACI 347 and ACI 350;
2. Use ties in construction of liquid retaining structures that are designed to prevent seepage or flow of water along the embedded item.
3. Use snap-off metal ties with ends that break at least 1 1/2 inch from the face of the wall. Assembly should provide cone shaped depressions in the forms at the surface at least 1 inch in diameter and 1 1/2 inch deep to allow filling and patching.
4. Removable ties that leave holes larger than 1 inch are not permitted.
5. Form ties fabricated on the project site and wire ties or flat bands are not acceptable.

6. Wood spacers are not permitted within the pour.

B. Metal Accessories:

1. Include spacers, chairs, ties, or other devices for properly assembling, placing, spacing, and supporting the reinforcement in place.
2. Provide metal accessories with solid plastic feet for exposed slabs and similarly exposed concrete surfaces, both interior and exterior, where accessories come in contact with forms.
3. Aluminum metal accessories that come in contact with or are embedded in concrete shall be prohibited.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to placement of concrete, inspect forms for cleanliness and accuracy of alignment.

3.02 PREPARATION

- A. Apply form coatings in accordance with manufacturer's specifications.
- B. Do not allow excess form coating material to accumulate in the forms.
- C. Do not allow form coatings to come in contact with construction joints or reinforcing steel.
- D. Caulk and tape butt joints in formwork.

3.03 ERECTION

- A. Construct forms in accordance with ACI 347 to required dimensions, plumb, straight and mortar tight, and paste tight where appearance is important. Securely brace and shore forms to prevent displacement and to safely support imposed concrete load.
- B. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent the loss of concrete mortar. Locate temporary openings on forms in as inconspicuous a location as possible.
- C. Provide openings in concrete formwork of the correct size and in the proper location to accommodate other operations of construction work in the project. Accurately place and securely support items to be built into forms.

D. Wet forms sufficiently to prevent joints in wood forms from opening prior to concrete pour.

3.04 FORM REMOVAL (ACI 347)

A. After concrete has been placed, forms, bracing, and supports shall remain undisturbed long enough to allow the concrete to reach the strength necessary to support with safety its own weight plus any live load and earth pressure that might be placed upon it without causing excessive settlement or deflection or any temporary or permanent damage to the structure.

B. Where in his opinion, the leaving in place of forms contributes to the permanent benefit of the structure, the Engineer may order the forms to remain for a longer period than that considered to be sufficient time in the judgment of the Subcontractor.

C. However, should the Engineer acquiesce in the removal of forms by the Subcontractor, the Engineer assumes no responsibility as a result of their removal.

D. The Subcontractor is fully and personally responsible and is in no manner relieved of this responsibility for such removal.

E. Take special care to prevent the breaking of edges and corners of concrete in the stripping of forms.

F. Hammer-pack holes left by tie rods with stiff mortar of the same materials as, but somewhat leaner than, that in the concrete. Render the patch inconspicuous.

*** END OF SECTION ***

DIVISION 03 - CONCRETE
SECTION 03200
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Fabrication and placement of concrete reinforcing materials.

1.02 REFERENCES

- A. ASTM A82: Specification for Steel Wire, Plain for Concrete Reinforcement.
- B. ASTM A185: Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
- C. ASTM A615: Specification for Deformed and Plain Billet - Steel Bars for Concrete Reinforcement.
- D. CRSI: Manual of Standard Practice.

1.03 SUBMITTALS

- A. Shop Drawings.
1. Submit drawings showing layout and details of reinforcing.
 2. Use figured dimensions only, scaling drawings not permitted.
 3. Review of shop drawings is limited to design intent only. No responsibility for a detailed check of member length, size, spacing, or similar detail information is assumed by virtue of such review.
- B. Affidavit.
1. Furnish an affidavit, in duplicate, from the steel manufacturer that steel manufactured for this project meets the requirements of these specifications.

1.04 DELIVERY, HANDLING AND STORAGE

- A. Deliver materials bundled, tagged, and marked.
- B. Store at the site to prevent damage and accumulation of dirt or excessive rust.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Deformed Reinforcing Bars: New billet steel, ASTM A615, Grade 60. Stirrups and ties shall be Grade 40.
- B. Welded Wire Fabric Reinforcing: ASTM A185.
- C. Metal Accessories: Include spacers, chairs, ties, or other devices for properly assembling, placing, spacing and supporting reinforcement in place. Provide metal accessories for exposed slabs and similarly exposed concrete surfaces, both interior and exterior, with solid plastic feet where accessories come in contact with forms. Provide chairs for reinforcing for slabs and beams on earth with metal pads attached to the feet to prevent penetration of the earth form.
- D. Tie Wire: Steel ASTM A82.

2.02 FABRICATION

- A. Fabricate to conform to required shapes and dimensions. Comply with CRSI "Manual of Standard Practice".

PART 3 - EXECUTION

3.01 PLACING

- A. Place reinforcement accurately in strict accordance with plans and CRSI Manual for Placing Reinforcing Bars.
- B. Support and tie in a way which will prevent displacement while concrete is being placed.
- C. Note requirements for earth forms and exposed concrete.
- D. Remove loose rust and mill scale, earth, and other materials which reduce or destroy bond with concrete.
- E. Install wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with 16 gauge wire.

*** END OF SECTION ***

DIVISION 03 - CONCRETE
SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The work under this section shall include cast-in-place concrete.
- B. Related Work Specified Elsewhere:
 - 1. Section 01300: Submittals
 - 2. Section 01700: Contract Closeout
 - 3. Section 03100: Concrete Formwork
 - 4. Section 03200: Concrete Reinforcement
 - 5. Section 03600: Grout
 - 6. Section 05500: Miscellaneous Metals

1.02 QUALITY ASSURANCE

- A. Standards: Conform to the requirements of the American Concrete Institute (ACI) and the American Society for Testing and Material (ASTM) or as hereinafter specified, whichever is the more stringent. Comply with applicable provisions of the latest editions of referenced specifications.
- B. Testing Agency: Employed and paid by the Contractor.
- C. Concrete Testing: The Contractor shall provide the Testing Agency with access to the concrete used. The Testing Agency shall be responsible for all testing of concrete.
- D. Leak Testing: Any concrete structure that is designed to contain water, and is constructed as a part of the work outlined within this Contract shall undergo leak testing as outlined herein.

1.03 SUBMITTALS

- A. List of materials and manufacturers for review.
- B. Design Mixes: Submit design mixes for classes of concrete to be used on the project for review prior to placing concrete. Each design mix shall indicate the proposed

use within the structure (i.e., floor slabs, footings, tanks, etc.). Approval of the design mix and/or acceptance of the test report does not in any way relieve the Contractor of his responsibility to ensure that the strength, slump, and quality of the in-place concrete meets the requirements of the Contract Documents.

1. Proportioning (ACI 211.1, ACI 304, ACI 318): Determination of strength and quality of the concrete proposed for use is the responsibility of the Contractor, established by tests made in advance of the beginning of operations, using the consistencies most suitable for the work. Unless otherwise specified, provide concrete composed of cement, fine and coarse aggregate admixture(s), and water. The exact division of the total aggregate shall be such as to produce a concrete of the greatest workability and density.
2. Strength: Minimum ultimate compressive strength at the end of 28 days shall be as outlined below, and seven-day tests not less than 70 percent of 28-day tests.

Environmental	4,500 PSI
Structural	4,000 PSI
Sidewalk	3,000 PSI
Fence Post	2,500 PSI
Misc. Concrete	4,000 PSI

1.04 JOB CONDITIONS

A. Environmental:

1. Depositing Concrete in Cold Weather (ACI 306):
 - a. Place concrete only when temperature is at least 35°F and rising. Stop concrete placement in time to allow slab to be completely finished and covered before temperature drops below 35°F.
 - b. Do not add salt, chemicals, or other non-freezing materials to concrete. Do not use frozen materials or materials containing ice.
 - c. When depositing concrete at a temperature of less than 40°F, the concrete shall have a temperature of at least 60°F, but not more than 70°F for not less than 5 days after placing. When necessary, heat concrete materials before mixing. Method of heating materials and protecting concrete is subject to outside temperature at a rate not faster than one degree per hour for first day and two degrees per hour thereafter, until outside temperature is reached.

B. Concrete Encasement of Pipes: Encase pipes under structures or buildings (indicated by the drawings to be encased in concrete) for the full length of the pipe run under the structure.

C. Concrete Encasement of Conduits: Encase conduit runs as indicated and detailed on the Drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cement:

1. Portland Cement: ASTM C 150 Type I/II
 - a. Total Alkalis < .6%
 - b. C₃A < 7% (ASTM C 150)
2. Use of fly ash or GGBFS is recommended for durability when in direct contact with sewage or sewage influent.
3. Only one brand and manufacturer of approved cement shall be used for exposed concrete.

B. Aggregates: ASTM C 33, ACI 304, 211.1.

1. Fine Aggregate: Natural sand. Free of loam, clay, or foreign matter.
2. Coarse Aggregate: Free of loaf, clay, or foreign matter. Crushed stone or gravel, hard, durable pieces, free from adherent coatings. Maximum size ASTM C33, size 57.
3. Coarse Aggregate for Toppings, Slabs, and Fills 3 Inches and Less in Thickness: Pea gravel 1/2-inch maximum size.

C. Water: Potable.

D. Admixtures:

1. Water Reducing Admixture: ASTM C 494, Type A (Chloride free). One of the following or approved substitute.
 - a. "Plastocrete 161" by Sika Chemical Corporation, Rockville, Maryland.
2. Air-Entraining Admixture: ASTM C 260. One of the following or approved substitute.
 - a. "Sika-AER" by Sika Chemical Corporation, Lyndhurst, NJ 07071.
3. Accelerator/Retarder may be used only if design mixes utilizing the accelerator/retarder are submitted and accepted.
4. Do not use calcium chloride.

E. Preformed Expansion Joint Fillers:

1. Bituminous Type: ASTM D 994.
2. Non-extruding and Resilient Bituminous Types: ASTM D 1751.

F. Waterstops:

1. 6" x 3/8" flat dumbbell waterstop as manufactured by Paul Murphy Plastics Company, Roseville, MI, or approved equal. Provide with "T", "L", "Cross", and "Transition" Junction sections, and other fittings as required by conditions.

G. Epoxy Adhesive for Embedding Reinforcing Steel: HILTI HY150.

H. Curing Materials: Use curing materials that will not stain or affect concrete finish or lessen the concrete strength and comply with the following requirements:

1. Burlap: Use materials conforming to AASHTO M 182.
2. Sheet Materials: Use material conforming to ASTM C 171.
3. Liquid Membrane-Forming Compounds: ASTM C 309, Type 1, free of wax or other adhesive bond breaking ingredients, such as Master Builders MASTERSEAL 66, or equal.

I. Anchor Slots: Dovetail type, 22-gauge galvanized steel, foam lined, Heckman Type 100 or equal with 1" wide back by 1" deep with 5/8" throat and spaced 1'-4" on center vertically.

2.02 PROPORTIONING CONCRETE (ACI 211.1; ACI 304; ACI 318; ACI 301)

A. Determination of strength quality of the concrete proposed for use is the responsibility of the Contractor, established by tests made in advance of the beginning of the operations, using the consistencies most suitable for the work.

B. Unless otherwise specified, provide concrete composed of cement, fine and coarse aggregate, and water.

C. The exact division of the total aggregate shall be such as to produce a concrete of the greatest workability and density.

D. Contents:

1. Cement: Concrete with $f'_c = 4,000$ psi shall have a minimum of six and one-half (6-1/2) bags of cement per cubic yard.
2. Aggregates:
 - a. Use amounts of aggregates necessary to produce a dense workable mixture.
 - b. Coarse aggregate size as specified for intended use.
3. Water:
 - a. Quantity of water to be the minimum required to attain required slumps.
 - b. Water/cement ratio not to exceed 0.45.

- c. Concrete exposed to weather shall be made with not more than five (5) gallons of water per bag of cement, including the free moisture in the aggregates.

2.03 MIXING CONCRETE

A. "Ready-Mixed" Concrete:

- 1. (ASTM C 94 and ACI 304) Certified by the supplier as to mix and strength.
- 2. Delivery tickets shall state strength, slump, yards, quantities of cement, aggregate and admix, if the latter is used.
- 3. Maintain a readily available file of tickets covering all concrete used at the site.

B. Mix concrete only as required and do not use concrete that has been mixed so long that the initial set of the concrete, as determined by tests, occurs sooner than 15 minutes after placement.

C. Discharge concrete, transported in a truck mixer, into forms within 1-1/2 hours after the cement has been added to water and aggregate.

D. Admixtures:

- 1. Provide plasticizer admixture for concrete except footings in accordance with manufacturer's recommendations, based on the temperature at the site at the time of placement.
- 2. Vary quantities of plasticizer in order that slump and water and cement content of the mix remain constant for all temperatures.
- 3. Provide 4 ounces of plasticizer per bag of cement for concrete used to fill masonry walls.

E. Air Entrainment: All concrete shall have air entrainment of not less than 5 percent nor more than 7 percent, certified by the supplier.

F. Strength:

- 1. Provide the minimum ultimate compressive strength at the end of 28 days as noted hereinbefore.
- 2. Seven-day tests shall be not less than 70 percent of 28 day tests.

G. Slump: ACI 211.1 3 1/2-inch maximum slump.

PART 3 - EXECUTION

3.01 INSPECTION

A. Work to receive cast-in-place concrete shall be inspected for deficiencies which would prevent proper execution of the finished work. Do not proceed with placing until such deficiencies are corrected.

B. The preparation of forms; placing of reinforcing steel, conduits and sleeves; batching; mixing; placing; and curing of concrete will be subject at all times to the inspection by the Engineer.

3.02 JOINTS AND EMBEDDED ITEMS

A. Construction Joints:

1. Place construction joints where indicated on the Drawings or as required. Where not shown, the Contractor is responsible for determining the location of construction joints.
2. Secure Engineer's written approval prior to making additional or revised locations of construction joints.

B. Bond new concrete with hardened concrete as follows:

1. Roughen and clean hardened concrete of foreign matter and laitance and saturate with water.
2. Cover the hardened concrete with a 3-inch layer of grout. Use grout of same material composition and proportions of concrete being poured except coarse aggregate omitted.
3. Place new concrete on grout before it has attained its initial set.
4. Other bonding methods must be approved by Engineer.

C. When concreting is to be discontinued for more than forty-five (45) minutes and if the construction is to be horizontal, install keyways and embed dowel bars in the concrete before initial hardening. Use keyways and dowels in vertical concrete construction only when indicated or directed by the Engineer.

D. Expansion Joints and Contraction Joints:

1. Install where indicated on the drawings.
2. Do not extend reinforcing or other embedded metal items through expansion and contraction joints; except where indicated otherwise on drawings.

E. Waterstops:

1. Install in all construction joints, expansion joints and where required for watertightness.
2. 6" x 3/16" ribbed centerbulb waterstop as manufactured by Paul Murphy Plastics Company, Roseville, MI or approved equal is required at all expansion joints.
3. Hold end joints to a minimum.
4. Make watertightness of joints the same as continuous waterstop material and to permanently develop not less than 50 percent of the mechanical strength of the parent section and to permanently retain their flexibility.
5. In substructures and other structures required to be watertight, install waterstops if concreting is discontinued for a sufficient length of time, which in the opinion of the Engineer, may result in seepage cracks in concrete.

F. Other Embedded Items: Place sleeves, inserts, anchors, and embedded items required for adjoining work prior to concreting. Place accurately, and support against displacement.

3.03 PRODUCT OF CONCRETE

A. Ready-Mixed Concrete:

1. Batched, mixed, and transported in accordance with ASTM C94.
2. Plant equipment and facilities shall conform to the Check List for Certification of Ready Mixed Concrete Production Facilities of the National Ready Mixed Concrete Association.

3.04 PLACING

A. General: Conduct placement work in accordance with ACI 304.

B. Preparation:

1. Prepare formwork in advance and remove snow, ice, water, and debris from within forms.
2. Pre-position expansion joint material, anchors, and embedded items.
3. Sprinkle subgrades sufficiently to eliminate water loss from concrete.

C. Conveying:

1. Handle concrete from mixer to final deposit rapidly by methods which will prevent segregation or loss of ingredients to maintain required quality of concrete.
2. Do not convey concrete through aluminum or aluminum alloy.

3. Do not place concrete by pumps or other similar devices without prior written approval of Engineer.

D. Depositing:

1. Do not allow concrete to drop vertically more than 4 feet. Use elephant trunks for depths of more than 4 feet.
2. Deposit in horizontal layers of approximately 12 to 18 inches.
3. Do not allow concrete to flow laterally more than 3 feet.
4. Make placement within sections continuously to produce monolithic units.
5. Carry on placing at such a rate that concrete which is being integrated with fresh concrete is still plastic.
6. Do not deposit concrete on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within sections.
7. Do not use concrete which has partially hardened or has been contaminated by foreign materials.
8. Do not begin placing of concrete in beams or slabs until concrete previously placed in walls or columns has attained initial set.
9. Do not subject concrete to procedures which will cause segregation.
10. Do not bend reinforcement out of position when placing concrete.
11. Do not place concrete in forms containing standing water.

E. Consolidation:

1. Consolidate concrete by vibration, spading, rodding, or other manual methods. Work concrete around reinforcement and embedded items, and work concrete into corners: eliminate all air or stone pockets and other causes of honeycombing and/or pitting on planes of weakness.
2. Use vibration equipment of internal type and not the type attached to forms and reinforcement.
3. Use vibrators capable of transmitting vibration to concrete in frequencies sufficient to provide satisfactory consolidation.
4. Do not leave vibrators in one spot long enough to cause segregation. Remove concrete segregated by vibrator operation.
5. Do not use vibrators to spread concrete.
6. Have sufficient reserve vibration equipment to guard against shutdown of work occasioned by failure of equipment in operation.

F. Cold Weather Concreting:

1. Temperature of concrete delivered at the job site shall conform to the following temperature limitations:

Air temperature Deg. F	Minimum Concrete Temperature, Deg. F	
	For sections with least dimension less than 12 in.	For sections with least dimension 12 in. or greater
30 to 45	60	50
0 to 30	65	55

2. If water or aggregate is heated above 100°F., combine water with aggregate in the mixer before cement is added. Do not mix cement with water or with mixtures of water and aggregate having a temperature greater than 100°F.
3. Provide equipment for heating concrete materials and protecting concrete during freezing or near-freezing weather. Do not use foreign materials or materials continuing snow or ice.
4. Surfaces which the concrete is to come in contact with must be free of frost, snow, and ice.
5. Concrete placed in forms shall have a temperature of 50°F or higher after placement. Maintain this temperature for a minimum of 5 days. Provide additional time if necessary for proper curing.
6. Housing, covering, or other protection used in curing shall remain intact at least 24 hours after artificial heating is discontinued. Do not place dependence on salt or other chemicals for the prevention of freezing.
7. Perform cold weather concreting work in accordance with ACI306.

G. Hot Weather Concreting:

1. Temperature of concrete delivered at the job site shall not exceed 90°F.
2. Cool ingredients before mixing to prevent temperature in excess of 90°F.
3. Make provisions for windbreaks, shading, fog spraying, sprinkling, or wet cover when necessary.
4. Perform hot weather concreting work in accordance with ACI 305.

3.05 FINISHING

A. Finishes: Finish exposed concrete surfaces true and even, free from open or rough areas, depressions, or projections. Bring concrete up in vertical pours to the required elevation, strike-off with a straight edge and float-finish.

1. Floated Finish: After concrete has been placed, consolidated, struck off and leveled, do not work further until ready for floating. Begin floating when water sheen has disappeared and when the surface has stiffened sufficiently to permit the operation.
2. Smooth Rubbed Finish: Obtained by rubbing a vertical surface not later than one day after form removal. Wet surface and rub with carborundum brick or other abrasive until uniform color and texture are produced. Do

not use cement grout other than the cement paste drawn from the concrete itself by the rubbing process.

3. Steel Trowel Finish: Obtained troweling after power floating shall produce a smooth surface which is relatively free of defects but which may still show some trowel marks. Perform additional trowelings by hand after the surface has hardened sufficiently. Perform final troweling when a ringing sound is produced as the trowel is moved over the surface. Thoroughly consolidate surface by hand trowel operations. Produce finished surface essentially free of trowel marks, uniform in texture and appearance, with true planes within 1/8 inch in 10 ft., as determined by a 10 ft. straightedge placed anywhere on the slab in any direction.
4. Broom or Belt Finish: Immediately after concrete has received a Floated Finish, give surface a coarse transverse scored texture by drawing a broom or burlap belt across the surface.

B. Finish Schedule:

1. Exterior of concrete structures shall receive a smooth rubbed finish. Includes exterior of all tanks and building walls to at least one foot below finished grade.
2. Interior of concrete structures shall receive a smooth rubbed finish. Includes interior of all tanks and building walls.
3. Floors intended as walking surfaces or for reception of floor coverings and tank floors shall receive a steel trowel finish.
4. Exterior concrete walks, steps and platforms shall receive a broom or belt finish.

C. Chamfer all exposed (horizontal and vertical) concrete edges 3/4 inch. Exposed vertical concrete edges shall also be chamfered to at least one foot below finished grade.

3.06 CLEANING AND PATCHING

A. After forms have been removed and concrete surfaces observed, patch bad joints, voids, stone pockets or other defective areas.

1. Chip away defective areas to a depth of not less than one inch with the edges perpendicular to the surface.
2. Wet area to be patched and a space at least 6 inches wide entirely surrounding it to prevent absorption of water from patching mortar.
3. Brush into surface a grout of equal parts of Portland cement and sand with sufficient water to produce a brushing consistency, follow immediately with patching mortar.
4. Make patch of same material and of same proportions as used for the concrete, except omit coarse aggregate.

5. Amount of mixing water as little as consistent with requirement of handling and placing.
6. Retemper mortar without addition of water by allowing it to stand for a period of one hour during which time, mix with trowel to prevent settling.
7. Thoroughly compact the mortar into place and screen off as to leave the patch slightly higher than the surrounding surface. Leave undisturbed for a period of one to two hours to permit initial shrinkage before final finishing.
8. Finish patch in such a manner as to match adjoining surfaces.

B. In addition to patching defective areas and filling the holes, carefully remove all fins and other projections and level offsets.

3.07 CURING AND PROTECTION

A. General: Immediately after placement, protect concrete from premature drying, excessive hot or cold temperatures and mechanical injury. Curing shall be by either water curing or sealing methods in accordance with ACI 308. Cure concrete continuously for a minimum of 7 days at ambient temperatures above 40°F.

B. Hot Weather Curing: Set Hot Weather Concreting this Section.

C. Cold Weather Curing: See Cold Weather Concreting this Section.

D. Application Rate of Liquid Membrane-Forming Compounds: Compound shall restrict the loss of water to not more than 0.055 g/cm-2 of surface in 72 hours when tested in accordance with ASTM C 156.

E. Do not use liquid curing compounds over floor surfaces that are to receive a liquid hardener applied to dry concrete.

3.08 FIELD QUALITY CONTROL

A. General: The Contractor will engage the services of a testing laboratory to test the basic mixtures of concrete.

B. Cylinder Tests: During concrete placement, tests will be made by a laboratory employed by the Contractor to verify the concrete properties, and to ascertain the proportions of water, cement, and fine and coarse aggregates.

1. Sets of four field control cylinder specimens will be taken at random during progress of the work, in conformity with ASTM C 31.
2. Total number of specimens taken on the project may average one set per 50 cubic yards, and in general not less than one set of specimens taken on any one day.
3. Four cylinders shall be laboratory cured. If any such tests fail to meet the requirements or if there is any unreasonable variation in the quality of the

materials, concreting shall be stopped. Faulty concrete shall be removed and necessary adjustments in the mix shall be made as required, at the Contractor expense, to produce a concrete meeting the following requirements:

- a. When average ultimate 28-day strengths of control cylinders in any set falls below the required ultimate strength or below proportional minimum 7-day strengths where proper relation between 7 and 28-day strengths have been established by tests, the proportions, water content, or temperature conditions shall be changed as required, at the Contractor expense, to secure the required strength.
4. The Contractor shall cooperate in the making of such tests to the extent of allowing free access to the work for the selection of samples, providing the following:
 - a. Heated moist storage facilities for specimens.
 - b. Providing protection for specimens against injury or loss.
 - c. Providing material, equipment and labor required for the purpose of taking concrete cylinder samples.

C. Slump Tests: Made in the field by the testing laboratory.

1. Slump tests made for each strength test and whenever consistency of concrete appears to vary in accordance with ASTM C 143.

D. Core Tests: When tests on control specimens of concrete fall below the required 28-day compressive strength, the Engineer may permit check tests for strengths to be made by means of typical cores drilled from the structure in accordance with ASTM C 42 and C 39.

1. Work involved obtaining core samples and the cost of shipping and delivering them to a laboratory approved by the Engineer shall be at the Contractor's expense.
2. The Engineer may have cores taken from any questionable area in the concrete work such as at construction joints and at other locations as required for determination of concrete quality.
3. Should the strength of the test cores fall below the required minimum 28-day compressive strength, the concrete shall be rejected and shall be removed, disposed of off the plant site, and replaced. No payment will be made for installing, testing and removal of defective concrete.

E. Leak Tests: After concrete used in concrete tank structures is proven to achieve or exceed its 28-day compressive strength, the Contractor shall fill the structure with water (provided by the Owner) to the tank's maximum water surface elevation. After the tank is full, the Contractor shall float a bucket or tub in the water, and tether the bucket or tub to the side of the tank structure for comparative measurements accommodating for rain and evaporation. A baseline measurement shall be taken at the start of the test,

measuring the water level in the structure, and the tub/bucket. After 24-hours, the water level should be measured again. The difference, less the difference in the tub/bucket shall be considered the leakage from the tank structure. Measurements demonstrating greater than 1/4" of leakage from the tank structure constitute a failing test. The Contractor shall then be responsible for remedying any leaks at no additional expense to the Owner and shall retest until a passing test is achieved. The Contractor shall submit any leak repair means and methods to the Engineer for review.

*** END OF SECTION ***

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DIVISION 03 - CONCRETE

SECTION 03600

GROUT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Providing grout where indicated on the Drawings.
- B. Related Work Specified Elsewhere:
 - 1. Section 03300: Cast-in-Place Concrete.
- C. Individual grouting requirements as specified in various other sections of these Specifications.

1.02 QUALITY ASSURANCE

- A. Reference Standards.
 - 1. American Concrete Institute: ACI 308, Recommended Practice for Curing Concrete.
 - 2. American Society for Testing and Materials:
 - a. ASTM C 33, Concrete Aggregates.
 - b. ASTM C 150, Portland Cement.
 - c. ASTM C 1019, Standard Test Method for Sampling and Testing Grout.
 - d. ASTM C 476, Standard Specification for Grout for Masonry.
 - e. ASTM 404, Standard Specification for Aggregates for Masonry Grout.

1.03 SUBMITTALS

- A. Submit design mixes or product data in accordance with Section 01300 - SUBMITTALS.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Prevent moisture damage and contamination of materials.
- B. Store materials in undamaged condition with seals and labels intact as packaged by the manufacturer.

1.05 JOB CONDITIONS

A. Protect against high and low temperatures and bad weather in accordance with American Concrete Institute standards for placement of concrete.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Grout (Sand/Cement).

1. Portland Cement: ASTM C 150 Type II. (I Norm., II Sulfate R., III High Early.)
2. Sand: ASTM C 33, fine aggregate.

B. Water: Potable quality, free from deleterious amounts of acids, alkalis, and organic substances.

C. Non-Shrink, Non-Metallic Grout: Factory premixed material containing no corrosive irons, aluminums, chemicals, or gypsums.

1. Grouts containing water reducers, accelerators, or fluidifiers shall have no drying shrinkage greater than the equivalent sand cement and water mix as tested per ASTM C 596.
2. Grout shall be non-shrink before initial set and show no expansion after set as tested per ASTM C 596.
3. Initial set of grout not less than 60 minutes per ASTM C 191 test.
4. Use Type II cement in grout formulation.
5. Acceptable Manufacturers: U.S. Grout Corporation; FIVE STAR; or equal.

2.02 GROUT QUALITY

A. Grout (Sand/Cement): Mixture of Portland Cement, fine aggregate and water in the same proportions used in cast-in-place concrete with coarse aggregate omitted. Use ready-mix type unless otherwise approved by the Architect.

B. Non-Shrink Grout: Use ready-mix type requiring only the addition of water. Do not add other materials. Water requirement proportions shall conform to manufacturer's specifications for the desired mix consistency.

C. Grout shall meet the requirements of ASTM C476 course grout and shall reach a minimum compressive strength of 3000 pounds per square inch at 28 days.

PART 3 - EXECUTION

3.01 PREPARATION

A. Forming.

1. Use forming procedures that allow proper and complete placement of grout.
2. Anchor support elements so no movement is possible.
3. Remove supports only after grout has hardened.
4. Pre-treat with forming oils wood forms that may absorb moisture.

B. Preparation of Surface.

1. Grout (Sand/Cement): Clean areas to be grouted free of oil, grease, laitance, dirt and other contaminants. Remove loose material. Remove rust, paint, and oil from metal components in contact with grout.
2. Non-Shrink Grout: Prepare in accordance with manufacturer's printed instructions.

3.02 MIXING

A. Time.

1. Grout (Sand/Cement): In accordance with requirements for cast-in-place concrete.
2. Non-Shrink Grout: In accordance with manufacturer's printed instructions.

3.03 PLACING

A. Grout (Sand/Cement): Place and cure grout as follows:

1. Following surface preparation, saturate the concrete with water; then remove excess water and brush on a coat of neat cement. Place grout while neat cement is wet.
2. Place in a single pour. Straight-edge exposed grout surface for trueness; consolidate and finish with a steel trowel.
3. Cure and seal in accordance with ACI 308.
4. After curing, fill scored joints with joint sealer.

B. Non-Shrink, Non-Metallic Grout: Perform grout placement in accordance with the recommendations of ACI and the manufacturer's published specifications for mixing and placing. Place non-shrink, non-metallic grout only where indicated on the Drawings.

*** END OF SECTION ***

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DIVISION 05 - METALS

SECTION 05500

MISCELLANEOUS METALS

PART 1 - GENERAL

1.01 SCOPE

A. The Contractor shall furnish all labor, materials, equipment and means to perform the following:

1. Replace notched rail safety climbs with galvanized flexible cable safety climbs.
2. Provide and install new OSHA compliant handrails to enclose the center roof area.
3. Provide and install welded conduit clips off of the ladders.
4. Modify base of existing 6" diameter overflow pipe and 6" diameter drain pipe by installing a tee and 304 stainless steel non-corrodible basket strainer. Remove existing concrete splash pad and dispose of off-site. Remove vegetation and top soil prior to setting new concrete pad. Position on firm, compacted soil or sand bed. Pad shall direct water from overflow away from tank and foundation. Refer to the Contract Drawings for illustration of minimum design requirements.
5. If required and as directed by on-site inspector, install new gaskets, galvanized nuts/bolts, and secure tank shell and roof manholes with new locks.
6. If required and as directed by on-site Inspector, perform pit welding to interior areas exhibiting greater than 50% metal loss. This work shall be performed after abrasive blasting, but prior to coating. Upon completion of pit welding, grind areas smooth and perform surface preparation and coating in accordance with specification.
7. If required and as directed by on-site Inspector, perform seam welding to interior seams exhibiting undercutting or extensive metal loss from corrosion. Areas shall be repaired by arc-gouging or grinding the deteriorated weld seam, then welding. This work shall be performed after abrasive blasting, but prior to coating. Upon completion of seam welding, grind areas smooth and perform surface preparation and coating in accordance with specification.
8. If required and as directed by on-site Inspector, install patch plates over holes in the steel that are present or become evident during blasting operations. Plates shall be 6" round x 3/8" thick minimum carbon steel plates, rolled to the shell diameter as required to fit, and shall be installed on the tank exterior. Plates shall be fillet welded around the perimeter, plus

the hole on the opposite side gouged out then welded to the patch plate. This work shall be performed after abrasive blasting, but prior to coating. Upon completion of welding, grind welded areas smooth and perform surface preparation and coating in accordance with specification.

1.02 SUBMITTALS

A. In accordance with Section 01300 Submittals, submit the following for approval prior to purchase:

1. Welder's qualification papers as per AWS and AWWA D100, Section 8.3 "Qualification of Welding Procedures, Welders, and Welding Operators."
2. Materials and assembly details, stamped by a Professional Engineer registered in the State of Maryland, for the new 24" diameter flanged vent neck and 18" diameter flanged aluminum pressure vacuum vent.
3. Materials and assembly details, stamped by a Professional Engineer registered in the State of Maryland, for the new 30" shell manhole.
4. Material and assembly details for davit arm on shell manhole.
5. Material and assembly details for new nameplate bracket.
6. Material and assembly details for roof handrails.
7. Material and assembly details for swing gate at top of ladder.
8. Material and assembly details for new flap gate and screen at discharge of 6" diameter overflow pipe.
9. MSDS sheet for Loctite^R Marine Grade Anti-Seize Metal-Free as required by Section 2.01 of this Section.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Replace existing roof pressure vacuum vent with 24" flanged vent neck with 4" rain lip shall be constructed of carbon steel ASTM A36. A frost free 24" diameter pressure vacuum vent shall be constructed of aluminum and contain stainless steel screens with HDPE pallets. A gasket shall be installed between the roof flange and new vent.

B. Replace access tube vent with new overhang rain guard, batten, stainless steel #24 non-corrodible wire mesh.

C. The overflow and drain pipe modifications shall include 304 stainless steel non-corrodible basket strainer and shall be positioned to discharge water away from the tank onto the new concrete splash block.

D. All new handrails shall be carbon steel ASTM A36, and consist of a top rail, intermediate rail and post, and shall have a vertical height of 42 inches nominal from upper surface of top rail to floor. A standard toe board shall be four inches (4") nominal

in vertical height. All structural steel railings, post, top, and intermediate rails shall be of two inch (2") by two inch (2") by 3/8 inch angles or other metal shapes of equivalent bending strength, with posts spaced not more than eight feet (8') on center.

E. New galvanized nuts and bolts shall be coated with Loctite^R "Marine Grade Anti-Seize Metal-Free." All new bolts shall have Anti-Seize applied to threads prior to installation, as per section 2.01 of this section.

F. New galvanized flexible cable safety climbs shall be 3/8" diameter cable 1x7 strand extra st. 15,400 lb. min. tensile. Cable sleeve and components shall be 304 stainless steel.

2.03 MISCELLANEOUS MATERIALS

A. Plates, Shapes, Bars: ASTM A 36, steel.

B. Anchor Bolts: ASTM A307 steel.

C. Pipe: ASTM A 53, Schedule 40, black.

D. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.

E. Aluminum Structural Shapes And Plates: ASTM B209, Alloy 6061-T6.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All welding, fabrication, and installation shall be done by a fabrication company that employs certified welders as per AWS and AWWA D100. The fabrication company shall have five (5) years experience working on water storage tanks. The Contractor shall comply with the current AWS D1.1 code for procedures, appearance, and quality of welds and welders, and methods used in correcting welding work. All welds shall be ground smooth and properly cleaned to remove all weld scale, splatter and sharp edges.

B. The Contractor shall be responsible for meeting all OSHA requirements that include, but are not limited to:

1. 29 CFR 1910 General Industry
2. 29 CFR 1910 Subpart I, "Personal Protective Equipment"
3. 29 CFR 1910 Subpart Q, "Welding, Cutting, and Brazing"
4. 29 CFR 1926 Construction Industry
5. 29 CFR 1926 Subpart J, "Welding and Cutting"
6. 29 CFR 1926 Subpart R, "Steel Erection"

C. Upon completion of all metal repairs as stated in this Section the surface preparation and coating application shall be completed as pertinent to Sections 9950 and 9970. The surface preparation and coating application shall be inspected by the Owner's Representative.

3.02 REMOVALS

A. Protection of persons and property shall be provided throughout the progress of the work. The work shall proceed in such a manner as to minimize the spread of dust and flying particles and to provide safe working conditions for personnel.

B. All materials removed under this Section shall be lower to the ground using controlled decent methods. Cutting and dropping practices will not be permitted.

C. All materials removed under this Section and not designated for reuse or relocation elsewhere shall become the property of the Contractor and shall be disposed of by him clear of the Owner's property.

*** END OF SECTION ***

DIVISION 09 – FINISHES

SECTION 09850

STEEL TANK PAINTING

PART 1 - GENERAL

1.01 RELATED WORK

- A. Section 09860: Abrasive Blasting Controls
- B. Section 09950: Tank Interior - Painting System
- C. Section 09970: Tank Exterior - Painting System
- D. Section 09980: Concrete & Masonry Coatings

1.02 QUALITY ASSURANCE

- A. Workmanship:
 - 1. All cleaning and painting work covered by these Specifications shall be performed by a firm having at least five (5) years' successful experience in the tank painting field and shall have performed specified type cleaning and painting on at least fifteen (15) tanks of similar design.
 - 2. All work shall be in accordance with the requirements hereinafter specified and the applicable requirements of the latest edition of standards provided by The Society for Protective Coatings (SSPC), 40 24th Street, Suite 301, Pittsburgh, Pennsylvania 15213; and American Water Works Association (AWWA), 6666 West Quincy Avenue, Denver, Colorado 80235.
- B. Reference Standards:
 - 1. SSPC – SP10 Near White Blast Cleaning
 - 2. SSPC – SP6 Commercial Blast Cleaning
 - 3. SSPC – S11 Power Tool Cleaning to Bare Metal
 - 4. SSPC – Vis 1 Pictorial Surface Preparation Standards
 - 5. SSPC – PA1 Shop, Field and Maintenance Painting
 - 6. SSPC – PA2 Measurement of Dry Paint Thickness
 - 7. SSPC – PA Guide 3 A Guide to Safety in Paint Application
 - 8. AWWA D102-11, AWWA Standard for Coating Steel Water Storage Tanks

C. Product Labeling: All labels shall include the following:

1. Manufacturer's name;
2. Type of paint;
3. Manufacturer's stock number and batch number;
4. Color; and
5. Instructions for thinning, where applicable.

D. Sampling of Materials

1. When requested by the Owner, obtain test samples from material stored at project site or source of supply.
2. Select samples at random from sealed containers.

1.03 PRODUCTS DELIVERY AND STORAGE

A. Delivery of Materials:

1. Store only acceptable project materials on project sites.
2. Store in a suitable location.
3. Restrict storage to paint materials and related equipment.
4. Comply with requirements listed on the manufacturer's Material Safety Data Sheets and all health, fire, EPA and OSHA regulations as regards storage materials.
5. All paints and solvents shall be delivered to the site in factory sealed containers, labeled as stated in 1.02B. Only newly purchased paint bought specifically for this job shall be used. Leftover paints from Contractor's previous jobs will not be allowed.
6. The Contractor shall provide a lockable storage trailer on site for storage of materials and construction tools.

1.04 JOB CONDITIONS

A. Environment Requirements:

1. Volatile Organic Compounds (VOC) - VOC ratings are believed to be in compliance with limits set forth by the air pollution control agency having jurisdiction in the area the work is to be performed. The Contractor shall verify that each coating used is in compliance with the aforementioned air pollution limits. Thinning of coatings in excess of the coating manufacturer's recommendations is not permitted.
2. Contact with Potable Water - Interior tank coatings shall be in compliance with the ANSI/NSF Standards for Potable Water Contact.
3. Safety Requirements – The Contractor shall comply with all health and safety regulations and requirements of OSHA (or State Health and Safety Regulatory Agency), SSPC – PA Guide 3, and the paint and abrasive

manufacturers. Should vents, holes, rigging attachments, or any other modification, cutting or welding be required to meet safety standards, they may be accomplished at the expense of the Contractor upon submitting of details in writing to, and with subsequent approval by the Owner.

4. Emissions – Compliance with local, state, federal regulations concerning emissions of solid, particulate, or gaseous matter as a result of the cleaning, painting, or other operations under this Agreement shall be the responsibility of the Contractor.
5. Waste Classification – Contractor shall immediately after Notice to Proceed satisfy all Laws and Regulations pertaining to the classification of waste generated on the project. Waste shall be understood to include abrasive blasting residuals, paint containers, unused paint and thinners, solvent or any other material whose disposal is subject to requirements contained in Laws and Regulations.
6. Responsibility – Compliance with all regulations shall be accomplished without supervision from the Owner, Inspector, or other direct or indirect agents of the Owner.

B. All rigging attachments present on the tank shall be carefully inspected by the Contractor prior to use. The Contractor assumes all responsibility for use of any existing or added attachments.

C. The Contractor shall work in accordance to regulations and practices set forth in SSPC-PA Guide 3 “A Guide to Safety in Paint Application.”

D. The job site shall be kept in a clean and safe condition at all times. The daily debris shall be collected in covered containers and disposed of in a manner which will place no liability for hazardous waste on the Owner. Absolutely no paint, solvent material, gasoline, oil or other toxic or hazardous material is to be disposed of at or in the vicinity of the tank site.

E. Unless otherwise authorized by the Owner, the tank shall be drained during cleaning, painting, and curing of the paint.

F. All manholes and other tank openings shall remain open during interior cleaning, painting, and curing. Forced ventilation shall be used and maintained until the ultimate cure has been reached on the interior coatings.

G. Protection of Property:

1. Owner's Property: All inlet, outlet, and drain pipe openings in the tank shall be covered by the Contractor with a strong enough cover to keep blasting abrasive and paint material from entering the openings. Any Owner's equipment in or around the vicinity of the tank shall be covered to protect it from abrasive and paint damage.
2. Adjacent Property: Special precautions shall be taken by the Contractor to restrict and control wind borne fallout of residue and particulate matter

from cleaning operations, and/or paint when the close proximity of adjacent property or vehicles warrants that special precautions are necessary. If needed, the Contractor shall schedule and coordinate his work to avoid wind borne fallout.

3. All damage to existing facilities and/or adjacent property resulting from the Contractor's operations shall be cleaned, repaired, or replaced by the Contractor at no additional expense to the Owner.

H. All temperature and humidity requirements of paint manufacturer shall be met. In addition, no painting shall be done when the relative humidity is greater than 85%, or the temperature of the steel is or is expected to be less than 5°F above the dew point temperature during the application and initial curing of the coatings.

1.05 SUBMITTALS

A. Product Data: Provide written description and catalog cuts describing each coating in the system. Information shall include product delivery, storage, handling, application and curing instructions and limitations. Include technical data sheets to substantiate compliance with specifications.

B. Certification: Provide certification signed by supplier of the coating attesting that coating system proposed is suitable and supplied as specified herein the Contract for lining of potable water storage tanks.

C. Alternate Materials: Alternate coating submittals must be accompanied by comprehensive, quantitative performance testing results that demonstrate equal or better performance in the specified service.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Paint Materials: All paint materials and thinners shall be supplied by the Contractor. The materials shall be as specified in Section 09950 for the tank interior system, and Section 09970 for the tank exterior system. All materials shall be furnished by one paint supplier, and all thinners and solvents shall be of the same supplier as the paint materials. There will be no exceptions to this requirement.

B. Tinting:

1. Deliver paints ready-mixed to job site to color specified.
2. Accomplish job tinting only when acceptable to the Engineer and/or Owner.

PART 3 - EXECUTION

3.01 EQUIPMENT

- A. All equipment (compressor, blast pots, paint pumps, etc.) shall be in good operating condition and of sufficient capacity to provide satisfactory results for cleaning and painting.
- B. Spray equipment and tip size shall be as recommended in the paint manufacturer's instructions.
- C. Compressed air for blasting and painting shall be free from detrimental amounts of water or oil. Adequate traps and/or dryers shall be provided.
- D. Adequate lighting shall be provided inside the tank to properly allow for safety, workmanship, and inspection.
- E. Air hoods, respirators, and proper and sufficient ventilation shall be provided during blasting, painting, and curing.
- F. Contractor must have sufficient explosion proof ventilation equipment to properly and efficiently expel dust and paint fumes out of unit to prevent injury to workmen and to prevent accumulation of volatile gases.
- G. The Contractor shall continuously monitor the LEL and Oxygen using a calibrated meter capable of measuring oxygen levels as well as lower explosion limits. Acceptable levels shall be:
 - 1. Oxygen - 19% to 21.5%
 - 2. Lower Explosion Levels (LEL) - not to exceed 10%
- H. Contractor shall have available at the site: all inspection and measuring equipment such as wet and dry film thickness gauges, wet bulb-dry bulb measuring equipment, steel temperature measuring equipment, holiday detector equipment, etc., as required by these Specifications.

3.02 SURFACE PREPARATION

- A. Prior to abrasive blasting sharp edges, weld protrusions, and other protrusions shall be removed by grinding. Sharp edges and protrusions shall be ground to at least a 1/8" radius. Weld spatter shall be completely removed.
- B. The surfaces to be painted shall be free from mud, oil, grease, dust, moisture, old paint, or other foreign material which would cause adhesion problems.
- C. During the surface preparation, the work area shall be illuminated as per SSPC-Guide 12, "Guide for Illumination of Industrial Painting Projects," which states that

during surface preparation and application the work area illumination shall be a minimum of 20-foot candles.

D. All surfaces shall be cleaned in accordance with the Surface Preparation Specifications, latest edition of the Society for Protective Coatings (SSPC) to the degree specified in the Tank Painting System sections in these Specifications.

E. Surfaces cleaned to bare metal shall be prime painted before any rusting takes place on the cleaned areas. Surfaces shall not be allowed to stand overnight without a prime coat applied. Primer shall be applied during the same daylight period that the cleaning was accomplished.

F. Where spot cleaning is specified, the old paint at the edges of the cleaning pattern shall be feathered and smoothed to permit proper blending of the new paint to the old paint and to avoid peeling of the old paint.

G. Following blast cleaning operations, surfaces shall be cleaned of all dust by blowing down with dry compressed air and sweeping with bristle broom or by vacuuming.

3.03 APPLICATION

A. All paint shall be mixed and applied in strict accordance with the applicable portions of these specifications, SSPC-PA1, and the paint manufacturer's recommendations. Particular care shall be taken in following manufacturer's instructions in the mixing of two component materials.

B. During the coating application, the work area shall be illuminated as per SSPC-Guide 12, "Guide for Illumination of Industrial Painting Projects," which states that during surface preparation and application the work area illumination shall be a minimum of 20-foot candles.

C. Each coat of paint shall be in a proper state of cure or dryness before the application of the succeeding coat. Contractor shall adhere strictly to the minimum times between coats specified herein and/or recommended by the manufacturer.

D. All interior and exterior weld seams, edges of steel members shall receive a brush coat of the specified primer after the specified cleaning has been completed.

E. With the exception of the primer brush application mentioned above, all coatings shall be applied as follows:

1. Interior – Zinc and Epoxy - brush (seams, burrs, and edges only)/airless spray/roller
2. Exterior – Zinc, Urethane and Fluoropolymer - roller/airless spray (upon written consent only)

F. Spray pole guns over 3' long will not be allowed. Rigging must afford proper close accessibility to the steel surfaces.

G. Where roller application is used for exterior paint systems, roller covers shall be of synthetic nap, with nap thickness per paint manufacturer's requirements.

H. All coats shall be smooth, free of brush marks, streaks, laps or pile-up of paints, and skipped or missed areas.

3.04 INSPECTION

A. All cleaning and painting shall be subject to inspection by a designated representative of the Owner and/or the painting manufacturer.

B. The Owner reserves the right to inspect all cleaned surfaces prior to primer application and also each coat of paint prior to subsequent paint application.

C. In order to facilitate surface preparation inspection, at the beginning of the blast cleaning operation, sections of the structure to be painted shall be blast cleaned to the various degrees of cleaning specified. The Contractor shall have a current copy of the SSPC - Pictorial Standards VIS 1 to verify the degrees specified. After agreement is reached regarding the degrees of cleaning, the prepared areas shall be sealed in plastic or coated with a clear urethane coating and will serve as a visual reference for cleaning for the remainder of the project.

D. The dry film thickness and uniformity of the paint coatings shall be measured using an Elcometer or Mikrotest gauge. The Owner reserves the right to use a low voltage holiday detector to check the finished paint film integrity.

E. All work shall be made accessible to the Owner's representative using the Contractor's rigging and equipment. Any rigging removed, and thus preventing proper inspection as described herein, shall be replaced at the Contractor's expense.

F. The Contractor shall correct such work as is found defective under the specification and shall supply such material required to make the repairs at his own expense. The inspector, serving as the Owner's representative, shall have full authority as to the determination of work declared defective.

3.05 FIRST ANNIVERSARY INSPECTION

A. General:

1. The inside and outside surfaces of the tank shall be inspected by representatives of the Owner and the Contractor at approximately one

year's time after painting work has been completed, to determine whether any repair work is necessary.

2. The Owner will require a wet inspection for the warranty inspection event. The inspector will provide all inspecting tools that he normally uses for the inspection process.
 - a. Wet inspection means the tank will not be taken off line and can only be inspected internally and carefully by a remotely operated vehicle (ROV) bearing a camera. The ROV shall be fully disinfected according to AWWA specifications before deploying into the top of the tank.
 - b. All costs for implementing the wet inspection, including the cost of the inspector, shall be fully the responsibility of the Owner. Should defects of the tank interior lining be detected during the wet inspection or from still captures, the inspector and the Owner shall determine the extent of the damage and the need for a thorough dry inspection, and/or corrections. The Contractor shall be notified by the Owner that a further dry inspection, and/or corrections shall be necessary. At that time, the Contractor shall come to an agreement with the Owner of the time frame needed to make corrections, and a date for taking the tank off line shall be determined.

B. Arrangements:

1. The Contractor shall establish the date for the inspection and shall notify the owner at least 30 days in advance. The first anniversary inspection shall not be considered waived unless such waiver is submitted in writing by the Owner.
2. The Owner shall coordinate inspection of the tank. The Contractor along with the owner's representative, shall conduct the inspection. The Contractor shall furnish an experienced foreman, rigging and assistance for the inspection and shall be prepared to perform minor touch-up operations. The Contractor shall have at least one gallon of each of the primers, intermediate coatings, and finish coatings at the time of the inspection along with power cleaning tools and abrasive disks for spot cleaning.
3. If there should be repairs requiring extensive work and rigging that would require the draining of the tank, this work may be delayed until a time mutually agreeable to the Owner and Contractor.

C. Inspection Report: The owner's representative shall prepare and deliver to the owner an inspection report covering the first anniversary inspection, setting forth the number and type of failures observed, the percentage of the surface area where failure has occurred, and the names of the persons making the inspection. Color photographs illustrating each type of failure shall be included in the report.

D. Remedial Work:

1. Any location where coats of paint have peeled off, bubbled, or cracked and any location where rusting is evident shall be considered a failure of the paint system. The Contractor shall make repairs at all points where failures are observed by removing the deteriorated coating, cleaning the surface, and recoating with the same paint system (or by utilizing Aquatapoxy, with express written consent of the Owner only). If the area of failures exceeds 25 percent of the area of a portion of the tank surface, then for that portion, the entire paint system shall be removed and repainted. For purposes of determining the need for complete repainting the inside roof, shell, and floor and the outside roof, shell, and floor shall each be considered separately.
2. Warranty inspection corrections shall be performed by the Contractor. The Owner's representative (the Inspector) shall be present during all phases of the corrections period. All costs for implementing the work as prescribed herein shall be fully the responsibility of the Contractor. The Contractor shall forward payment to the Owner. The Owner will make payment to the inspector in that amount. All defective work shall be repaired and the tank closed and ready for filling as soon as possible, in accordance with these specifications and to the satisfaction of the Owner. The Contractor shall submit a work plan and not proceed until it is approved by the Owner
3. The tank shall be drained as low as possible through the distribution system by the tank Owner. The Contractor shall be responsible for opening the tank hatch and removing any and all remaining water using pumps of sufficient capacity to remove the water quickly and efficiently. All water being removed must be directed into the overflow basin and shall not be dumped onto site property or adjacent properties.
4. The Contractor shall have on site MSDS, Product Data Sheets, a copy of this specification, as well as all necessary tools and materials to remove all silt or other debris accumulated onto the floor by pressure washing and squeegee.
5. The Contractor shall be required to perform disinfection procedures in accordance with Section 13900 of this specification and to close up the hatch. The Contractor shall have brought on site new gaskets or gasket making materials to replace the hatch gasket, enough galvanized bolts, washers, and nuts to replace any that might have been damaged during removal while opening the tank.

*** END OF SECTION ***

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DIVISION 09 - FINISHES

SECTION 09860

ABRASIVE BLASTING CONTROLS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section specifies requirements for lead and non lead paint removal via abrasive blast cleaning and includes requirements for worker protection, protection of the environment, abrasive requirements, collection, storage, testing and disposal of the blast cleaning residuals, and other regulatory requirements pertaining to the abrasive blast cleaning operation.

B. The Tower was originally constructed around 2002-2003. ***Owner will provide lead testing results via addendum.*** Any additional investigation of hazardous materials to meet OSHA or federal regulations, including lead based paint or asbestos testing, shall be responsibility of Contractor.

C. OSHA recognizes any concentration of lead in paint as a lead-based paint. Therefore, all abrasive blasting and paint disturbing activities shall be performed in accordance with 29 CFR 1926.62 if applicable.

D. Contractors performing lead paint disturbing activities shall be licensed by the State of Maryland.

1.02 RELATED WORK

- A. Section 01030: Alternatives
- B. Section 01300: Submittals
- C. Section 09850: Steel Tank Painting
- D. Section 09950: Tank Interior - Painting System
- F. Section 09970: Tank Exterior - Painting System
- G. Section 09980: Concrete & Masonry Coatings

1.03 DEFINITIONS

A. Hazardous Waste: Paint debris is classified as hazardous due to the characteristic toxicity if, after testing by Toxicity Characteristic Leaching Procedures (TCLP), the leachate contains any of the elements in the concentrations listed below (or greater):

1.	Barium	100 ppm
2.	Cadmium	1 ppm
3.	Chromium	5 ppm
4.	Lead	5 ppm
5.	Mercury	0.2 ppm

NOTE: *Other elements can cause a material to be hazardous as defined in 40 CFR 261 and must be taken into consideration. The list above includes only those elements typically associated with paints.*

B. Lead Containing Paint Action Level: The Action Level means employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter of air (30 $\mu\text{g}/\text{m}^3$) calculated as an 8-hour time-weighted average (TWA).

C. PM-10: Particulate matter (dust) less than 10 microns in aerodynamic equivalent diameter. (Aerodynamic equivalent diameter is defined as the diameter of a unit density sphere having the same settling velocity as the particle in question of whatever shape and density.)

D. PEL: Permissible Exposure Limit - Maximum allowable employee average airborne exposure to hazardous elements. In case of lead, limits are 0.05 mg/m^3 (50 $\mu\text{g}/\text{m}^3$) per OSHA Industry Standard 29 CFR 1910.1025.

E. Time Weighted Average (TWA) is the employee's average airborne exposure in any 8-hour work shift of a 40-hour work week.

F. Ventilation System: Ventilation systems include both natural ventilation and artificial ventilation (mechanical fans, hoods, and duct work) to provide air movement across the work area, and dust collectors to clean the discharged air.

1.04 REQUIREMENTS OF REGULATORY AGENCIES

A. The following Federal regulations are applicable to the specified abrasive blast cleaning:

1. Occupational Safety and Health Standards:
 - a. Code of Federal Regulations:
29CFR1910 General Industry Standards

29CFR1910.134	Respiratory Protection
29CFR1910.146	Permit Required Confined Spaces
29CFR1910.20	Access to Employee Exposure and Medical Records
29CFR1910.141	Sanitation
29CFR1910.1025	Lead
29CFR1926.62	Lead in Construction Standard

2. Protection of the Environment:
 - a. Code of Federal Regulations:

40CFR50	National Primary and Secondary Ambient Air Quality Standards
40CFR50.6	National Primary and Secondary Ambient Air Quality Standards for Particulate Matter
40CFR50.12	National Primary and Secondary Ambient Air Quality Standards for Lead

3. Solid Waste:
 - a. Code of Federal Regulations:

40CFR261	Toxicity Characteristic Leaching Procedure Appendix II
40CFR262	Packaging and Labeling Requirement
40CFR178	Shipping Container Specifications
40CFR268.7	Waste Analysis
40CFR300	National Oil and Hazardous Substances Pollution Contingency Plan
40CFR302	Designation, Reportable Quantities and Notification
49CFR172	Materials Communications, Emergency Response Information, and Training Requirements
49CFR173	Shippers General Requirements for Shipments and Packaging
49CFR178	Specifications for Packaging
49CFR179	Specifications for Tank Cars

1.05 PROTECTION

A. During the exterior abrasive blast cleaning operation, the Contractor shall furnish all materials, tools, labor, equipment, engineering or other professional services, necessary to design, construct and operate an abrasive blast cleaning residuals rigid containment system. The minimum design requirements for the containment system are described as follows:

1. Class 4A Containment as per SSPC-Guide 6
2. Fully enclose the tank or individual work areas which utilizes air-penetrable walls, ceiling, and floors, as applicable, with flexible framing, open seams and entryways, and natural airflow.

3. The containment shall protect Owner's property in and around the vicinity of the tank and any adjacent properties restrict and control wind borne fallout of residue, particulate matter from cleaning operations, and/or paint.

B. The Ventilation of the Containment shall be as follows, as stated in the SSPC-Guide 6:

- F2 - Open Air Supply
- G2 - Natural Input Air Flow
- H2 - Visual Verification of Negative Pressure
- I2 - Minimum Air Movement is not specified
- J1 - Air Filtration required, in this instance utilizing dust collectors equipped with HEP filters.

C. The following additional requirements are applicable to Contractor's containment system:

1. Contractor shall determine need to cover base of containment or any other site areas to facilitate cleanup of abrasive blasting residuals. Areas paved with asphalt or concrete do not require covers. Thorough cleanup of tarpaulins shall be performed prior to moving to new location.
2. Tank appurtenances such as overflow piping, vents, painter's rails, etc. shall not be used to support the containment system.

1.06 SUBMITTALS

A. Submitted with Bid:

1. A narrative description and sketch of the proposed containment system presenting the basic containment concept, materials of construction, and method of structural support.
2. Owner's acceptance of Contractor's Bid, and subsequent execution of an Agreement in no way guarantees Contractor's proposed abrasives and worker safety plan will comply with Laws and Regulations and the requirements of this specification and does not relieve the Contractor from his responsibility to meet all requirements.

B. After Contract Award:

1. The site-specific safety plan proposed for the WORK as required in Section 01300 – SUBMITTALS. The plan is to address compliance with regulations pertaining to worker safety including the specific requirements contained herein.
2. The Contractor shall provide drawings, stamped by a Professional Engineer registered in the State of Maryland, for the containment system

that will be installed. The drawings will be approved by the Owner, as stated in Section 01300 – SUBMITTALS.

3. Waste collection and storage plan demonstrating compliance with the requirements of these specifications.
4. Technical data for proposed abrasives.

PART 2 - PRODUCTS

2.01 ABRASIVES

A. It is the intent of this specification to require the Contractor to use an abrasive, or combination of abrasives and approved additives, such that the residual material from the abrasive blasting operation will not be classified as a hazardous waste. If the Contractor has knowledge of abrasives and/or admixtures other than those listed below which are suitable, they may be submitted for consideration at the time of bidding in accordance with Section 01030 - ALTERNATIVES. The following abrasives and/or abrasive admixtures are approved for use subject to the "Abrasive Waste Certifications" required by Part 3 of this specification.

1. Steel grit meeting the chemical properties of SAE-J827 or SFRA20-66. The size, shape and hardness of the steel grit are not governed by this specification section and are to be selected by the Contractor with consideration given to the level of cleaning and profile required for the specified coatings.
2. Commercially available, non-metallic abrasives, either expendable or reusable, blended with steel grit meeting the chemical properties specified in SAE-J827 or SFSA20-66. The selection of abrasive type, size, hardness and work mix is the responsibility of the Contractor based on the level of cleaning and profile required for the specified coatings. The steel grit shall constitute a minimum of 10%, by weight, of the total abrasive.
3. Commercially available, non-metallic, abrasives, expendable or reusable, blended with Blastox™ as manufactured by the TDJ Group, Inc., Dubuque, IA, 52001, telephone (319) 583-1434. The ratio of Blastox™ to abrasive shall be determined by the Contractor in consultation with the manufacturer. The Contractor is also required to determine the compatibility of Blastox™ with his proposed abrasive and the specified coating system and submit evidence of compatibility to the Owner.
4. If no lead is present in the spent abrasive, determined by a Total Lead Content Test or TCLP test, the Contractor may use an abrasive recommended in SSPC Vol. 1, that will provide a 2.5 mils profile.

2.02 COMPRESSED AIR

A. All compressed air supplied to the system shall be free of all moisture and oil. A white blotter test shall be performed prior to the start of each day's work and if the compressor has been shut down for any period of time. Any moisture, oil, or other deleterious matter observed on the blotter paper shall disqualify the compressor for use until the test provides satisfactory results. The Aqua North Carolina, Inc. inspector must verify and accept the test results.

B. The moisture removal system for the compressed air system shall have automatic drains for the moisture collected. These drains will be in proper working order at all times.

C. The compressor shall, as a minimum, provide a sufficient volume of air to allow for no less than 100 psi at each nozzle in use as measured with a hypodermic needle pressure gauge.

D. The Contractor shall have the compressed air used by the blasters and or applicators certified as breathable air or have a working CO2 monitor, professionally calibrated immediately prior to use on any Aqua America, Inc. work site. A new charcoal filter shall also be attached downstream of the moisture and oil separators. All blast hoods shall be equipped with air conditioners. Any hood exhibiting worn or damaged components shall be discarded and not used on this job site. The CO2 monitor shall be equipped with audible and visual alarms.

E. All hose couplings shall be made secure.

2.03 DUST COLLECTION SYSTEM AND PERFORMANCE REQUIREMENTS

A. Air Flow:

1. The dust collector(s) shall be sized to achieve proper ventilation as described in Part 1.05 "Protection," as listed in this section.
2. The size(s) of the hose(s) used on the dust collection system shall be such that the minimum required transport velocity is maintained throughout the length of the hose.
3. The minimum transport velocity shall be in the range of 3,500 to 4,000 feet per minute.
4. The capacity of the dust collection unit shall be sized to maintain the minimum air volume when the filters are dirty to the extent that they require cleaning or replacement.
5. The ducting used to convey the dust laden air shall be designed for severe duty applications.
6. All duct fittings shall provide an airtight seal and shall have positive mechanical means of connection. Pressure or slip fittings are not acceptable.

7. The layout of the ducting, from the containment system to the dust collection system, shall be in as direct, and straight, a line as is possible. Dips and sudden changes in direction shall be avoided to prevent the accumulation of debris within the duct. The minimum bend radius allowable shall be 3 times the duct diameter.
8. The blower, or fan, on the dust collection system shall be located on the clean air side of the system.
9. The blower, or fan, speed shall be changeable by changing gear transmission.

B. Filter Elements

1. The dust collector shall have a minimum efficiency such that the unit's discharge is in compliance with the National Ambient Air quality Standard for lead (if applicable) and particulate matter.
2. The Contractor shall keep enough extra filter cartridges and bags on site to replace all the filter elements at once, if necessary.
3. The Contractor shall replace filter elements that have been damaged or torn, as necessary.
4. The discharge of the dust collector shall be directed away from buildings, away from personnel working in the area, and away from any air intake that supplies clean air to the blasters or the containment system.
5. The discharge of the dust collector shall be equipped with a static pressure sensor. The static pressure sensor shall be wired into a control system such that if it senses a loss of static pressure (dust collector blower fails), it will shut down the abrasive blasting equipment via an electrical interlock. The abrasive blasting equipment shall not be operable unless the static pressure sensor on the dust collector senses static pressure on the unit's discharge.
6. The used filter elements shall be considered hazardous waste and shall be stored, handled, and disposed of accordingly.

C. Product Removal:

1. The dust removed from the equipment's filter elements shall be collected in a hopper or drum below the filter bank.
2. Proper labeling and handling procedures for drums containing dust/debris from the dust collection systems shall be strictly adhered as per 49 CFR 172, 173, 178, and 179.

D. Equipment Performance Verification/Submittals:

1. At the pre-construction meeting, the Contractor shall submit a complete list of equipment to be used during the execution of the project.
2. The Contractor shall be responsible for strict adherence to project specifications and all applicable local, state, and federal regulations.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

A. Compliance with State and Local Laws and Regulations will be verified through the tests and inspections listed in Part I.

B. Abrasive Waste Certification:

1. After Contractor's submittal of proposed abrasive(s) for paint removal and prior to approval by the Owner, the Contractor shall perform a field test to assist the Owner's Representative in certifying that the residuals from the blasting operation will not be classified as a hazardous waste. The Contractor shall use the proposed abrasive(s) to clean individual test areas, each a minimum of three (3) square feet in surface area, to achieve the specified level of cleaning (i.e. SP6, SP10, etc.). The Contractor shall include in his bid the cost of performing test blasts at one (1) location.
2. The paint removal tool and/or the test area shall be contained such that all test blast residuals are captured. The test blast residuals for each area shall be kept separately and stored in sealed containers from which the Contractor will collect samples for TCLP testing. TCLP tests will be performed on each sample with the results used as a preliminary indication of disposal requirements. Excessive abrasive use in any area will be selected. The Owner shall be notified in advance by Contractor such that Owner and/or his representative may be present during the test.

B. Soil Sampling:

1. Prior to commencement of abrasive blasting, soil sampling and analysis shall be performed by the Contractor, as per SSPC-TU 7 Conducting Ambient Air, Soil and Water Sampling During Surface Preparation and Paint Disturbance Activities, with strict adherence given to section 10 "Ground (Soil) Sampling Analysis."

C. Visible Emissions:

1. Visible emissions are permitted at the frequency or duration given below provided they do not extend beyond the property line:
2. Level 1 Emissions - Random emissions of a cumulative duration of no more than 1% of the workday (e.g., 5 minutes in an 8-hour workday).
3. Results of air monitoring will prevail even if the visible emissions assessments are in compliance.

D. Air Monitoring:

1. The Contractor will be required to perform background air monitoring prior to the commencement of exterior abrasive blasting operations in order to establish background levels. The number of monitors to be used will be based on wind direction and proximity of homes, playgrounds, businesses, bodies of water, etc. A minimum of three (3) monitors is anticipated to be required. The duration of the monitoring shall be performed for a minimum of 8 hours in order to establish the background levels.
2. During the exterior abrasive blasting operation, the Contractor shall perform perimeter air monitoring in accordance with NIOSH Method 7082 or equivalent. The number of monitors to be used will be based on the wind direction and proximity of homes, playgrounds, businesses, bodies of water, etc. Anticipating a minimum of three (3) monitors will be required. The monitoring shall be performed for a minimum of 8 hours per day, beginning 30 minutes before the surface preparation operation and ceasing 30 minutes after the surface preparation has ended, including clean up and dismantling or moving the containment, during the first three days of exterior abrasive blasting. If the results are below the EPA criteria, then monitoring shall be performed once a week thereafter for the duration of the abrasive blasting operation. The sample filters shall be analyzed for lead in accordance with 40 CFR Part 50.

3.02 WORKER PROTECTION

A. All abrasive cleaning operations shall be performed in strict compliance with applicable OSHA regulations. The Contractor shall implement all required worker protection measures including, but not limited to, respiratory protection, fall protection, protective clothing, eye and face protection, hearing protection, confined space procedures (if applicable), and hazard communication. Proper ventilation, containment, and exposure monitoring shall be provided as necessary to maintain worker exposure levels below permissible exposure limits.

B. Dependent on final testing completed by Owner, lead is not anticipated to be present. The Contractor shall immediately notify the Owner if hazardous materials are encountered and shall comply with all applicable regulatory requirements.

3.03 WASTE HANDLING

A. The Contractor shall collect, contain, and properly dispose of all spent abrasive media, removed coating debris, dust, and associated waste generated by abrasive blasting operations. Waste materials shall not be allowed to accumulate on site or migrate beyond the work area.

B. Prior to disposal, waste shall be characterized as required by applicable federal, state, and local regulations to determine proper disposal classification. The Contractor shall immediately notify the Owner if hazardous constituents are suspected or identified.

C. All waste shall be transported and disposed of at a licensed disposal facility. Disposal documentation and waste manifests shall be provided to the Owner.

D. The Contractor shall implement measures to prevent release of debris to soil, storm drains, or adjacent properties, including use of containment systems where required.

E. Should the results of average TCLP tests yield leachable lead values in excess of 5 ppm, and the abrasive blasting residuals are determined to be hazardous waste, the Contractor shall be responsible for the on-site handling and storage of the materials in accordance with Federal Regulation No. 40 CFR 262.30

*** END OF SECTION ***

DIVISION 09 - FINISHES

SECTION 09950

TANK INTERIOR - PAINTING SYSTEM

PART 1 - GENERAL

1.01 SCOPE

A. This section covers full abrasive blasting of the Interior wet surfaces, followed by an application of the recommended coating system.

1.02 RELATED WORK

- A. Section 09850: Steel Tank Painting
- B. Section 09860: Abrasive Blasting Controls
- C. Section 09970: Tank Exterior - Painting System
- D. Section 09980: Concrete & Masonry Coatings

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Contractor shall furnish coatings manufactured by Themec or approved equal.
- B. Alternate coating submittals must be accompanied by comprehensive, quantitative performance testing results that demonstrate equal or better performance in the specified service.

PART 3 - EXECUTION

3.01 FIELD SURFACE PREPARATION

- A. All interior surfaces shall be prepared in accordance with The Society for Protective Coatings, SSPC-SP10 "Near White Blast Cleaning."
- B. After cleaning, all surfaces shall be thoroughly and completely cleaned of any residue or dust before applying coating.

C. A stripe coat shall be applied to all vertical and horizontal seams, burrs, pits, angles, welds, etc. A wet-on-wet application is acceptable. The Contractor is responsible for providing a holiday free coating system and is responsible for completely coating any pitted surfaces present.

3.02 PIT FILLING

A. As directed by On-Site Inspector, perform pit filling with 100% solids epoxy surfacing component to interior pitted areas exhibiting up to 50% metal loss. This work shall be performed after abrasive blasting and prior to coating, and this item shall be applied neatly and smoothly. Upon completion of pit filling, sand areas smooth prior to coating

B. Recommended Products - PIT FILLER:

1. Tnemec: Series 215 Resurfacer

3.03 COATING SYSTEM

A. The materials of a specified coating system, including primer, stripe, intermediate and finish coats shall be produced by the same manufacturer. Thinners, cleaners, driers and additives shall be as recommended by the manufacturer for the particular coating system. Coatings for interior wet surfaces, surfaces that are exposed to stored water or its vapor, shall be listed by NSF International as certified for potable water contact in accordance with ANSI/NSF Std. 61, Section 5, "Protective (Barrier) Materials." Coating systems for Tank Interior shall be as follows:

1. Tnemec:
 - a. Primer Coat: 94-H2O @ 2.5 - 3.5 mils DFT
 - b. Stripe Coat: 21 @ 4.0 - 6.0 mils DFT
 - c. Finish Coat: 22 @ 25.0 - 35.0 mils DFT

Total System Thickness: 31.5 - 44.5 mils DFT

3.04 TESTING

A. The OWNER's representative shall perform holiday testing on all surfaces below the high-water line. Any holidays shall be repaired as per the manufacturer's requirements and must meet the minimum requirements as outlined in this specification.

3.05 ANNIVERSARY INSPECTION

A. One (1) year from completion of the coating system, the interior shall be inspected as outlined in AWWA D102 Section 5.2., and Section 09850, Part 3.05 of this specification. The OWNER requires that the inspection is performed by utilizing a Remotely Operated Vehicle. A representative from the Contractor shall be on site to

witness the inspection. If the OWNER drains the tank, the Contractor shall be responsible for installing all necessary rigging as stated in AWWA D102.

*** END OF SECTION ***

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DIVISION 09 - FINISHES

SECTION 09970

TANK EXTERIOR - PAINTING SYSTEM

PART 1 - GENERAL

1.01 SCOPE

A. This Section covers full abrasive blasting of the exterior surfaces, followed by the application of a four (4) coat zinc/urethane/fluoropolymer coating system.

1.02 RELATED WORK

- A. Section 09850: Steel Tank Painting
- B. Section 09860: Abrasive Blasting Controls
- C. Section 09950: Tank Interior - Painting System
- D. Section 09980: Concrete & Masonry Coatings

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Contractor shall furnish coatings manufactured by Tnemec or approved equal. All coats shall be from the same manufacturer.
- B. Alternate coating submittals must be accompanied by comprehensive, quantitative performance testing results that demonstrate equal or better performance in the specified service.

PART 3 - EXECUTION

3.01 FIELD SURFACE PREPARATION

- A. All exterior surfaces shall be prepared in accordance with SSPC-SP6 "Commercial Blast Cleaning", with a 1.5-2.5 mil surface profile. Refer to Section 09860 for Abrasive Blasting Controls.

B. During the abrasive blasting of the tank, a Class 4A containment system as per SSPC-Guide 6 shall be utilized.

3.02 COATING SYSTEM

A. The materials of a specified coating system, including primer, intermediate, and finish coats shall be produced by the same manufacturer. Thinners, cleaners, driers, and additives shall be as recommended by the manufacturer for the particular coating system. Coating systems for Tank Exterior shall be as follows:

1. Tnemec:
 - a. Prime Coat 94-H20 @ 2.5 - 3.5 mils DFT
 - b. Stripe Coat 21 @ 4.0-6.0 mils DFT
 - c. Intermediate Coat 1095 @ 2.0 - 3.0 mils DFT
 - d. Finish Coat* V700 @ 2.0 - 3.0 mils DFT

Total System Thickness: 6.5 - 9.5 mils DFT

* Color to be selected by the Owner.

*** END OF SECTION ***

DIVISION 09 - FINISHES

SECTION 09980

CONCRETE AND MASONRY COATINGS

PART 1 - GENERAL

1.01 SCOPE

A. The tank foundation shall be abrasive blasted and coated. The joint where the steel tank floor plate meets the concrete ringwall shall be cleaned and sealed.

1.01 RELATED WORK

- A. Section 09850: Steel Tank Painting
- B. Section 09860: Abrasive Blasting Controls
- C. Section 09950: Tank Interior - Painting System
- D. Section 09970: Tank Exterior - Painting System

PART 2 - PRODUCTS

2.01 CONCRETE COATINGS

- A. Contractor shall furnish coatings manufactured by Tnemec or approved equal.
- B. Alternate coating submittals must be accompanied by comprehensive, quantitative performance testing results that demonstrate equal or better performance in the specified service.

2.02 GROUT

- A. Use only non-shrink, non-metallic grout.

2.03 SEALANT

- A. Elastomeric Sealant shall be Sikaflex -1a, Pecora Dynatrol 1 or 2, or equivalent.

PART 3 - EXECUTION

3.01 FIELD SURFACE PREPARATION

A. All broken and loose concrete and grout shall be removed, and areas around the foundation perimeter cleared of stones and dirt to a depth 6" below top of the foundation. After the loose concrete and grout is removed, the foundation shall be abrasive blasted and cleaned as per SSPC SP13 "Surface Preparation of Concrete." Following surface preparation, all concrete surfaces shall be coated with two coats of epoxy as per 3.02 of this section.

B. After the coating application is completed and properly cured, any missing grout under the bottom of the tank shall be replaced with a non-shrink, nonmetallic grout. Contractor shall pack the underside of the floor plate at least 6" with the grout.

C. After grout is cured, the full perimeter of the tank shall have an elastomeric sealant applied from the top of the base plate to the foundation on a 45 degree incline. The sealant shall be free of voids and pinholes. See attached Drawing 09980-3.

3.02 COATING SYSTEM FOR CONCRETE

A. All coats must be from the same manufacturer. The following coating systems are recommended:

1. Tnemec:
 - a. Prime Coat: V69 applied @ 4.0 - 6.0 mils DFT
 - b. Finish Coat: V69 applied @ 4.0 - 6.0 mils DFT

*** END OF SECTION ***

DIVISION 09 - FINISHES

SECTION 09990

SECURITY AND VENTILATION

PART 1 - GENERAL

1.01 SCOPE

A. This section covers the security and ventilation for the tank interior during the blasting and coating operation.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

A. At the end of each workday, the manhole openings shall be secured by flat bars or angles bolted into place, however, still allowing for ventilation. This means of security shall prevent unauthorized personnel from entering the tank while the site is unattended.

B. Upon the completion of the final interior coat, the contractor shall maintain the use of fans throughout the curing phase of the coating. Once the interior coating successfully passes the solvent rub testing, and upon acceptance by the Owner, the Contractor will be permitted to remove the equipment.

C. If the interior requires additional days for curing, then the contractor shall keep the equipment in place at the Contractor's expense.

*** END OF SECTION ***

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DIVISION 13 - SPECIAL CONSTRUCTION

SECTION 13900

CLEANING AND DISINFECTING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall clean the tank interior after the coating is cured to remove all foreign debris, dirt and dust. If the tank contains dust on the side wall and floor, the Contractor shall pressure wash prior to disinfection and remove all waste water. All shell and roof manholes shall have new gaskets installed along with new galvanized nuts and bolts, where applicable. All manholes shall be closed and secured by the Contractor. Prior to the Owner filling the tank, the Contractor shall disinfect the tank.

1.02 WORK BY OWNER

A. The Owner will provide the potable water for flushing and disinfecting the tank, and perform the testing as noted below.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Furnish sodium hypochlorite or calcium hypochlorite (HTH) as needed to complete the disinfection of the tank.

B. Furnish pumps, hose, nozzle, and other equipment for spraying and washing the interior of the tank.

PART 3 - EXECUTION

3.01 PREPARATION

A. All interior painting shall be completed prior to cleaning and disinfection of the surfaces.

B. After the coating has cured, provisions shall be made to perform the rinsing operation. The following will be needed:

1. A pump of sufficient capacity to supply enough water for spray rinsing.

2. A length of fire hose and a nozzle for spraying. The hose should extend into the tank.
3. Sufficient water supply to thoroughly rinse all interior surfaces. In some cases, tank trucks may be necessary to provide the water.

D. The interior surfaces shall be thoroughly rinsed, and particular attention shall be given to laps, crevices, corners, or any areas in which the solid material might collect. The rinse water shall be drained to waste.

3.02 APPLICATION OF DISINFECTANT

A. Application of disinfectant shall be performed in accordance with the current AWWA C652, Disinfection of Water Storage Facilities, Chlorination Method 2.

3.03 TESTING

A. Following disinfection, a bacteriological sample and volatile organic compound (VOC) sample shall be collected from the tank. Samples must be collected by a State-certified sampler and analyzed at a State-certified laboratory. A free chlorine residual field test result must be submitted with the bacteriological and VOC sample results. All sample results must be completed per the State required forms and reviewed by the Maryland Department of the Environment Water Supply Program, which will give authorization to place the water storage tank into service.

B. The Contractor shall be required to provide a State-certified sampler and a State-certified laboratory to complete the required sampling and testing. The tank will not be accepted and placed into service until the results of the bacteriological tests are acceptable to the Maryland Department of the Environment and the Owner.

C. Should the initial treatment prove to be ineffective, in the opinion of the Maryland Department of the Environment or the Owner, the Contractor shall repeat the chlorination procedure until satisfactory results are obtained.

*** END OF SECTION ***

DIVISION 15 – MECHANICAL

SECTION 15062

HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Thermal-hanger shield inserts.
3. Fastener systems.
4. Pipe stands.
5. Equipment supports.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following; include Product Data for components.

1. Pipe stands.
2. Equipment supports.

1.04 INFORMATION SUBMITTALS

A. Welding Certificates.

1.05 QUALITY ASSURANCE

A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel.

B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.01 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

B. Stainless Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
3. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

2.02 FASTENER SYSTEMS

A. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.03 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.04 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and packaged, dry, hydraulic-cement, non-shrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.01 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

C. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

D. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

E. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

F. Install lateral bracing with pipe hangers and supports to prevent swaying.

G. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

H. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

I. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

3.02 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make bearing surface smooth.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.03 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds of exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.04 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.05 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same

materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780

3.06 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports and attachments for general service applications.

F. Use padded hangers for piping that is subject to scratching. 210300 15062-6 G.

G. Use thermal-hanger shield inserts for insulated piping and tubing.

H. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of non-insulated or insulated, stationary pipes NPS 1/2 to NPS 30.
2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F, pipes NPS 4 to NPS 24, requiring up to 4 inches of insulation.
3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36, requiring clamp flexibility and up to 4 inches of insulation
4. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes NPS 1/2 to NPS 24 if little or no insulation is required.
5. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
6. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of non-insulated, stationary pipes NPS 3/4 to NPS 8.

I. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.

J. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.

K. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

L. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction/

*** END OF SECTION ***

Appendix A:

Riddle Farm Tank Inspection Report December 15, 2021

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ROV EVALUATIONS:

~~BAYSIDE LANDING WATERSPHEROID~~

RIDDLE FARM WATERSPHEROID

DECEMBER 15, 2021

PREPARED FOR:

WORCESTER COUNTY, MD

Mumford-Bjorkman Associates, Inc.
P.O. Box 733
New Castle, DE 19720
1-800-486-4841
www.mbatanks.com

Subject

The subject of this report is the internal and external evaluation on the following:

Owner:	Worcester County, Maryland
Location:	11401 Grays Corner Rd., Berlin, MD
Tank Name:	Riddle Farm Tank
Capacity:	400,000 gal. Waterspheroid
Size:	180' High
Erected By:	Unknown
Year Built:	Unknown

The exterior, interior dry, and interior wet areas were evaluated visually and digital photographs were taken. The digital photographs accompany this report.

This evaluation was performed on December 15, 2021, under MBA Contract No. 213901R.

Objectives

The purpose of this inspection was to determine the condition of the tank's interior, exterior, foundation, and accessories. We will make recommendations for the painting, repair, corrosion protection, and maintenance. However, our inspection for this structure is made visually, using only a PosiTest gauge for film thickness. Dimensions of the structure and appurtenances were retrieved during this evaluation; prior to receiving quotes for maintenance and repairs, all dimensions should be verified. Our recommendation for a paint system on the interior and exterior are for convenience, using a system we feel is satisfactory, having limited knowledge of the environment and water content. Structural repairs listed in this report are given for consideration by the Owner's Engineers.

Summary

A. Lead Testing

MBA was not authorized to remove coating samples for lead testing.

B. Security

The tank is located on the side of the highway, in fenced county yard in a rural area of Berlin, MD. The 6' high chainlink fence was topped with barbed wire and locked. The fence was overgrown at the back of the site with vegetation but appeared to be in good condition. The mandoor at the base of the bell was locked and secured to prevent unauthorized access. The wet access manhole on the roof was not locked. See photographs #1-#3, #9, #12, and #78.

C. Exterior

1. Site - The tank site is open. The grounds around the tank consist of flat grass, the paved drive, perimeter fence, and adjacent building. Modifications to the perimeter fence may be necessary to accommodate a containment system in the future. There is ample lay down area around the tank for the Contractor's equipment during rehabilitation. See photographs #1-#3, #9, and #12.

2. Foundation - The exposed concrete ringwall foundation was found to be in good condition. Minor and isolated hairline cracking and stain were present. The grout was painted and found to be in good condition. No sealant was present. See photographs #12, #14, #15, and #17.

3. Protective Coating - The exterior coating is an epoxy / urethane system that was found to be in fair condition. Dry film thickness (DFT) readings taken on the exterior ranged from 7-18 mils. Coating adhesion testing was performed in accordance with ASTM D3359, Method A (X-cut). The ASTM adhesion rating for Method A range from 0A-5A, with a 0A rating being the worst, and a 5A rating being the best. The exterior coating met the criteria of a 5A rating, indicating no removal of the coating. See photograph #11.

The coating on the bell, stem, cone, bowl, equator, knuckle, and roof was lightly weathered and lightly stained. Isolated areas of corrosion were occurring on under 1% of the surfaces. Areas of pinhole corrosion, coating breakdown with corrosion, and rust stain were located primarily on irregular surfaces such as the base plate edge, anchor

bolts, bell mandoor, painters rails, birdhole, access tube extension, vent, roof, and manhole. Isolated top coat delamination was affecting under 1% of the exterior, and was concentrated on the roof. No evidence of measurable metal loss was noted on the exterior surfaces. See photographs #1-#18 and #62-#88.

The exterior surfaces have good adhesion and appear to be a suitable candidate for an overcoat system. We recommend that the exterior surfaces are fully pressure washed at 5,000 PSI with Chlor-Rid or other soluble salts remover, spot prepared, spot primed, and overcoated within one (1) year. Overcoating eliminates the need for a containment system and allows the owner to realize considerable cost savings when compared with a full blast and recoat. We have attached our Cleaning and Painting Recommendation Sheet and Cost Estimate Sheet for your review and consideration.

4. Structural - This tank appeared to be in good condition with no defects or deficiencies noted.

5. Components -

a. Anchor Bolts - The bell is secured with eighteen (18) 2-1/4" diameter anchor bolts. All anchor bolts are equipped with chair assemblies, are located on the exterior base plate, and were found to be intact and in good condition. Only minor corrosion and rust emanation were occurring on the nuts and bolts, with no evidence of metal loss detected. See photographs #12 and #15.

b. Overflow Discharge - The 6" diameter overflow pipe discharges 32" above rip rap. The discharge is equipped with a neoprene check valve, which was found to be intact and in good condition. See photograph #16.

c. Cross-Over Discharge - A tank drain discharge from the inlet/distribution line penetrates the base of the bell just clockwise from the overflow. This discharge is also equipped with a neoprene check valve, which was found to be intact and in good condition, and discharges 24" above rip rap.

d. Bell Mandoor - The 80" x 37" bell mandoor provides access to the interior dry area, is equipped with a lock, and was found to be in good working order. Minor corrosion was visible on the hinges, threshold base plate, and frame. See photographs #9 and #12.

e. Birdhole - The hinged 23-3/4" diameter birdhole located at the top of the stem is secured internally with a pin. The birdhole hinges are in good

working order. Minor rust stain streaking was emanating from the cover. See photographs #5 and #6.

f. Painters Rails - At the top of the stem are two (2) 1-1/2" diameter painters rails, located above and below the birdhole. Minor corrosion was present on the rails and supports, but the welds and stem connections were found to be intact. If the Contractor elects to use the rails for rigging during the next tank rehabilitation they should be visually evaluated and load tested prior to use. See photographs #5-#8.

g. Access Tube Manhole - At the top of the access tube is a 30" diameter roof access manhole with a 6" rain lip. Coating breakdown with corrosion was present on the access tube manhole cover and rain lip. An unused 1-1/2" diameter conduit penetration and uncapped conduit were noted adjacent to the manhole. The hinges were in good working order. See photographs #61-#63.

h. Roof Manhole - One (1) hinged 29" diameter wet area access manhole with a 6" rain lip is present on the roof. The cover is not locked. Minor corrosion was present on the rain lip, hinges, inside the cover. No evidence of metal loss was observed. See photographs #78-#80.

i. Roof Vent - This tank is equipped with a 10" diameter pressure vacuum vent that is bolted on a flanged 24" diameter vent neck. The upper screen and lower screen/pallet were found to be intact and in good condition. Corrosion was present on the cover, neck, frame, and fasteners. No gasket was observed at the flanged and bolted connection. See photographs #65-#67.

j. Access Tube Vent Gap - A 6" diameter vertical gap is present at the access tube extension. This gap is located between the 5-1/4" rain lip from the roof, and is being occupied by the galvanized SCADA antenna mount system. A 4-1/2" wide horizontal air gap is present between the rain lip and vertical access tube surface. This gap allows rainwater, insects, and birds to access the potable water. It should be sealed with a neoprene rubber boot, or, if the owner desires to keep it as a functional vent, equipped with a new overhanging rain guard, batten, and stainless steel wire mesh #24 screen. See photographs #63 and #64.

k. Roof Couplers - Six (6) 1-3/4" diameter roof couplers are present at the center roof. One is not capped. The remaining five (5) are. The open coupler is allowing rainwater and insects to access the potable water. See photographs #68, #69, #71, #72, #75, #78, and #79.

l. FAA Lights - One (1) FAA light fixture with two (2) bulbs is present on the tank. The sensor is located under the lights. The bulbs were functional at the time of our evaluation. See photographs #62 and #63.

m. Antennas - One (1) whip antenna for the SCADA system is present the tank. It is mounted on the galvanized mount that is bolted around the access tube vent gap. See photographs #62-#64.

6. Immediate Repairs and Modifications (Sanitary) -

- a. Lock roof manhole.
- b. Seal open coupler on roof.
- c. Install screen on access tube vent gap.

7. Future Repairs and Modifications -

- a. Remove loose or damaged grout and replace with non-shrink, non-metallic grout. Apply elastomeric sealant over grout. See attached drawing.
- b. Install concrete splash pad under overflow and crossover pipe discharges, oriented to carry water away from the foundation.
- c. Replace the existing roof vent with a flanged 24" diameter vent neck with 4" rain lip and install a frost-free aluminum 24" diameter pressure vacuum vent. See attached drawing.
- d. Install OSHA compliant roof handrails to enclose the center roof area. See attached drawing.
- e. Install neoprene boot or new overhang, batten, and screen at access tube vent gap.
- f. Seal unused penetration and remove and seal unused conduit adjacent to access tube manhole.
- g. Relocate antennas and FAA lights to new roof handrails. The FAA lights should be raised as necessary to provide 180 degree visibility.

D. Interior Dry

1. Protective Coating - The interior dry area coating is an epoxy system that was found to be in poor condition. The coating ranged from 9-20 mils dry film thickness.

The coating in the bell and stem was exhibiting pinhole corrosion with rust emanation on just under 20% of the bell and stem plates, piping, and ladder. Areas of isolated coating breakdown with corrosion were observed on the base plate, mandoor frame, condensate ceiling, stem plates, and underside of the birdroom platform. Generalized corrosion was present on the condensate deck. The degree of any metal loss on the deck could not be determined. See photographs #19-#44.

The coating in the birdroom and access tube was exhibiting generalized pinhole corrosion and coating breakdown with corrosion, affecting 100% of the birdroom platform, birdroom walls, and cone, as well as 25% of the access tube. 2" of standing water was present on the platform. The ladders, piping, couplers, hatches, and other appurtenances were also exhibiting generalized pinhole corrosion and coating breakdown with corrosion. The degree of any metal loss on the deck could not be determined. See photographs #45-#61.

We recommend that the interior dry surfaces are fully abrasive blasted to and SSPC-SP6, "Commercial Blast," and within one (1) year. We have attached our Cleaning and Painting Recommendation Sheet and Cost Estimate Sheet for your review and consideration.

2. Components -

a. Ladders - Three (3) spans ladder are present in the dry area. One ladder run travels from the base of the bell to the condensate deck. A second run travels from the condensate deck to the birdroom. The third ladder span travels from the birdroom deck and through the 42" diameter access tube to the roof. All ladder spans possess 16" clear rung widths with standoffs from 7"-12". Galvanized notched rail safety climb devices are present on the bell, stem, and access tube ladders. Coating damage, pinhole corrosion with staining, and coating breakdown with corrosion were occurring on the ladder rungs and siderails. No measurable metal loss was observed. See photographs #19-#23, #31, #34-#36, #45, #51, #56, #57, #59, and #61.

b. Inlet/Distribution Pipe - The insulated 6" diameter inlet/distribution pipe is covered in paper jacketing that was found to be intact and in fair

condition. The pipe appeared to be well supported, and no evidence of leakage was detected at the penetration to the wet area. See photographs #23, #26, #29, #30, #35, #41, #43, and #54.

c. Access Tube Manhole - There is one (1) 18" x 24" access tube manhole secured with a double clamps at the bottom of the access tube. The manhole was exhibiting generalized corrosion on the cover, clamps, nuts, and bolts. The gasket was intact and in place, with no evidence of leaking. See photographs #57 and #58.

d. Overflow Pipe - The 6" diameter overflow pipe appeared to be well supported. Moderate pinhole corrosion, coating breakdown with corrosion, and rust stain streaking were observed on the overflow pipe. Generalized areas of corrosion were observed in the birdroom and access tube. The extent of any metal loss could not be determined. See photographs #22, #24, #25, #27, #33, #35, #40, #42, #43, #44, #52, and #55-#60.

e. Condensate Drain Line - A condensate drain is present on the condensate platform and ties in with the overflow pipe below the platform. No evidence of leakage was detected at the drain line tie in, and the intake appeared to be unobstructed and clear. See photograph #25.

f. Platform Manholes - Access to the condensate and birdroom platforms are provided by hinged 30" diameter manholes with 4" rain lips. The covers have been cut to accommodate the ladders and safety climbs, and appeared to be in good condition. Corrosion was present on the rain lips and covers. The extent of any metal loss could not be determined. See photographs #22, #27, #31, #44, and #45.

g. Birdhole - The 23-3/4" diameter birdhole located at the top of the stem is secured with a pin and chain. The birdhole was found to be in good working order. Coating breakdown with corrosion and stain streaking were occurring. See photograph #49.

h. Lighting System - The lighting system was partially functional, and only worked in the stem (2) and birdroom (1). No lights were functional in the bell or access tube. See photographs #19, #35, #45, #51, and #57.

i. Cables and Conduits - The coaxial cables for the SCADA antennas and conduit for the FAA light travel up bell clips, the overflow pipe, and ladder standoffs in the bell, stem, birdroom, and access tube. See photographs #19, #21, #22, #25, #28, #33, #34, #40, #44, #51, and #57.

3. Immediate Repairs and Modifications -

a. Drill drainage holes in birdroom deck to clear standing water and allow it to drop to condensate deck, where it can drain through the overflow tie in.

3. Future Repairs and Modifications -

a. Remove the notched rail safety climbs and replace with galvanized flexible cable safety climbs. See attached drawing.

b. Remove insulation jacketing from inlet/ distribution pipe. After repainting, install new insulation and metal jacketing.

c. Restore full lighting system functionality.

d. Install new birdroom drain line with overflow tie and, and or repair or replace condensate drain line. See attached drawing.

e. Install welded conduit clips off of ladders, and relocate all conduits, light fixtures, and coaxial cables onto new clips in bell, stem, birdroom, and access tube.

E. Interior Wet

1. Protective Coating - The interior wet area coating is an epoxy system that was found to be in poor condition. The coating ranged from 9-12 mils dry film thickness.

The coating on the roof and knuckle was exhibiting sporadic pinhole corrosion and isolated coating breakdown with corrosion along seams, angles, couplers, and on other irregular surfaces. Areas of coating breakdown with corrosion were affecting large patches on the equator and access tube, as well as small patches on the cone. Heavy staining was present on the surfaces below the water level fluctuation zone. The trough and appurtenances could not be evaluated due to standing water. See photographs #81-#93.

We recommend that the interior wet surfaces are fully abrasive blasted to and SSPC-SP10, "Near White Metal Blast," and recoated within one (1) year. We have attached our Cleaning and Painting Recommendation Sheet and Cost Estimate Sheet for your review and consideration.

2. Sediment - Approximated 12" of sediment was present in the trough, and 1" was covering the cone. Paint chips were present in areas of the trough.

3. Components -

a. Overflow Weir Box - The overflow intake could not be accessed. Its condition is unknown.

b. Ladder - The interior wet ladder measures 16" (CRW) with an 13" standoff, and is equipped with a stainless steel notched rail safety climb. Minor isolated corrosion was present on the ladder rungs, and siderails. See photograph #93.

c. Inlet/Distribution Line - The inlet/ distribution line was obscured by standing water in the trough and could not be evaluated. Its condition is unknown.

d. Wet Access Manhole - The access tube manhole could not be evaluated from the hatch. Its condition is unknown.

4. Future Repairs and Modifications -

a. Replace notched rail safety climb with a stainless steel flexible cable safety climb. See attached drawing.

b. The owner may wish to consider installation of an active or passive mixing system.

Conclusion

Prior to returning the tank to service the interior should be cleaned out, and serious consideration should be given to repainting the interior. We recommend that the tank exterior is overcoated, and the interior dry and wet surfaces are abrasive blasted and recoated within one (1) year. Repairs listed as "Immediate," should be performed as soon as possible. All other repairs listed in this report may be performed during the next rehabilitation. If more than one (1) year passes from the time of adhesion testing until the tank can be overcoated, then additional testing must be performed to ensure that the existing coating still has adequate adhesion to accommodate an overcoat. We have attached our Cleaning and Painting Recommendation Sheet and Cost Estimate Sheet for your review and consideration.

MBA'S TANK DATA SHEET

Customer <u>Worcester County, Maryland</u>	Inspection Date <u>12/15/2021</u>
Location <u>11401 Grays Corner Rd.</u>	Contract No. <u>213901R</u>
City <u>Berlin</u> State <u>MD</u>	Builder <u>Unknown</u>
Tank Name <u>Riddle Farm Tank</u>	Year <u>Unknown</u>

Type of Tank <u>Waterspheroid</u>	Capacity <u>400 MG</u>	Size <u>180' High</u>
Type of Roof <u>Ellipsoidal</u>	No. of Shell Rings <u>0</u>	Weld / Rivet <u>Weld</u>

Shell Manhole	Roof Manhole	Vent	Overflow
Quantity <u>0</u>	Quantity <u>1</u>	Locked <u>No</u>	Size <u>6"</u>
Size <u>N/A</u>	Size <u>29"</u>	Rain Lip <u>6"</u>	Screen <u>Duckbill</u>
<u>N/A</u>	<u>N/A</u>	Screen <u>Good/None</u>	Splash Pad <u>Rip Rap</u>

Riser	Piping	Accessories
Size <u>N/A</u>	Inlet Size <u>6"</u>	Painter's Attachment <u>Rails and Couplers</u>
Manhole Size <u>N/A</u>	Dist. Size <u>6"</u>	CP System <u>None</u> Type <u>N/A</u>

Ladders	Exterior	Interior	Roof	Dry	Access Tube	Wet	Riser
Ladder	<u>No</u>	Ladder	<u>No</u>	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>	<u>N/A</u>
Safety Climb	<u>N/A</u>	Safety Climb	<u>N/A</u>	<u>Notched</u>	<u>Notched</u>	<u>Notched</u>	<u>N/A</u>
Cage	<u>N/A</u>	Cage	<u>N/A</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>N/A</u>
Width	<u>N/A</u>	Width	<u>N/A</u>	<u>16"</u>	<u>16"</u>	<u>16"</u>	<u>N/A</u>
Standoff	<u>N/A</u>	Standoff	<u>N/A</u>	<u>12"</u>	<u>11"</u>	<u>13"</u>	<u>N/A</u>

Legs	Number of Legs <u>N/A</u>	Type of Legs <u>N/A</u>	Number of Tiers <u>N/A</u>	Leg Anchor Bolts <u>N/A</u>	Riser Anchor Bolts <u>1-3/4" (16)</u>

Coating	Mils
Int. Coating <u>Epoxy</u>	<u>9-12</u>
Dry Coating <u>Epoxy</u>	<u>9-20</u>
Ext. Coating <u>Epoxy/Urethane</u>	<u>7-18</u>
Last Painted <u>Unknown</u>	
Contractor <u>Unknown</u>	

Total Lead Content	mg/kg	Year
Int. Wet Total Pb <u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Int. Dry Total Pb <u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Exterior Total Pb <u>N/A</u>	<u>N/A</u>	<u>N/A</u>

Estimated Area (sq.ft.)

Interior Wet	<u>7.750</u>
Interior Dry	<u>6.850</u>
Exterior	<u>11.510</u>

Repairs

Immediate:

Lock roof manhole.

Seal open coupler on roof.

Install screen on access tube vent gap.

Drill drainage holes in birdroom deck.

Future:

Remove loose or damaged grout and replace with non-shrink grout.

Install concrete slash pad.

Replace flanged vent neck and install 24" diameter PV vent.

Install OSHA compliant handrails to enclose the roof area.

Install neoprene boot or overhang, batten, and screen.

Seal unused penetrations at top of access tube.

Relocate antennas and FAA lights to new roof handrails.

Replace notched rail safety climbs with galvanized flexible cable safety climbs (3).

Remove insulation jacketing from inlet/dist. pipe. After repainting, install new insulation and metal jacketing.

Restore full light system functionality.

Install new birdroom drain and replace condensate drain.

Install welded conduit clips off of ladders and relocate all conduits, fixtures, and cables onto new clips in dry area.

Replace notched rail with stainless steel flex cable safety climb.

Install active or passive mixing system.

Cleaning and Painting Recommendations

For recommendation purposes only, consult with Coating Manufacturer, and/or MBA prior to specifying.

Owner Worcester County, MD

Tank Riddle Farm Tank

Interior Wet

Cleaning Full SSPC-SP10, "Near White Metal Blast."

Prime Full Sherwin Williams Corothane I Galvapac @ 2.5-3.5 mils DFT

Intermediate Stripe Sherwin Williams Macropoxy 646PW @ 4.0 - 6.0 mils DFT

Finish Full Sherwin Williams SherPlate PW Epoxy @ 25.0-30.0 mils DFT

Interior Dry

Cleaning Full SSPC-SP6 "Commercial Blast."

Primer Full Sherwin Williams Corothane I Galvapac @ 2.5-3.5 mils DFT

Intermediate Full Sherwin Williams Macropoxy 646 @ 4.0-6.0 mils DFT

Finish Full Sherwin Williams Macropoxy 646 @ 4.0-6.0 mils DFT

Exterior

Cleaning PW w/ Chlor Rid + Spot SSPC-SP11

Prime Spot Sherwin Williams Macropoxy 646 PW @ 5.0 - 7.0 mils DFT

Intermediate Full Macropoxy 5000 @ 1.0 - 2.0 mils DFT

Finish Full Sherwin Williams HS Polyurethane 250 @ 2.0 - 4.0 mils DFT

Second Finish

Valve Vault

Cleaning

Prime

Intermediate

Finish

Special Testing

High Voltage Holiday Test of all interior surfaces below high waterline.

Remarks



Rehab Estimate Sheet

By Qualified Tank Painter*

P.O. Box 733
New Castle, DE 19720
Phone: (800) 486-4841
Fax: (302) 655-8260
www.mbatanks.com

Customer **Worcester County, Maryland** Location **Berlin** State **MD**
Tank Name **Riddle Farm Tank**
Type of Tank **Waterspheroid** Total Lead Test
Capacity **400 MG**

Int. Wet	Int. Dry	Exterior
N/A	N/A	N/A

Estimated Coating Repair Cost

	Square Foot	\$ / sq.ft.	Coating Repairs	
Int. Wet	7,750	20.00	Full SSPC-SP10	Int. Wet Cost \$155,000.00
Int. Dry	6,850	15.00	Full SSPC-SP6	Int. Dry Cost \$102,750.00
Exterior	11,510	10.00	PW, SP11, and Overcoat	Exterior Cost \$115,100.00
Total Coating Cost				\$372,850.00

Estimated Metal Repair Cost

Immediate:

Lock roof manhole.

Seal open coupler on roof.

Install screen on access tube vent gap.

Drill drainage holes in birdroom deck.

Future:

Remove loose or damaged grout and replace with non-shrink grout. \$8,500.00

Install concrete slash pad. \$3,000.00

Replace flanged vent neck and install 24" diameter PV vent. \$10,000.00

Install OSHA compliant handrails to enclose the roof area. \$20,000.00

Install neoprene boot or overhang, batten, and screen. \$5,000.00

Seal unused penetrations at top of access tube. \$750.00

Relocate antennas and FAA lights to new roof handrails. \$500.00

Replace notched rail safety climbs with galvanized flexible cable safety climbs (3). \$6,000.00

Remove insulation jacketing from inlet/dist. pipe. After repainting, install new insulation and metal jacketing. \$12,000.00

Restore full light system functionality. \$1,500.00

Install new birdroom drain and replace condensate drain. \$3,000.00

Install welded conduit clips off of ladders and relocate all conduits, fixtures, and cables onto new clips in dry area. \$3,000.00

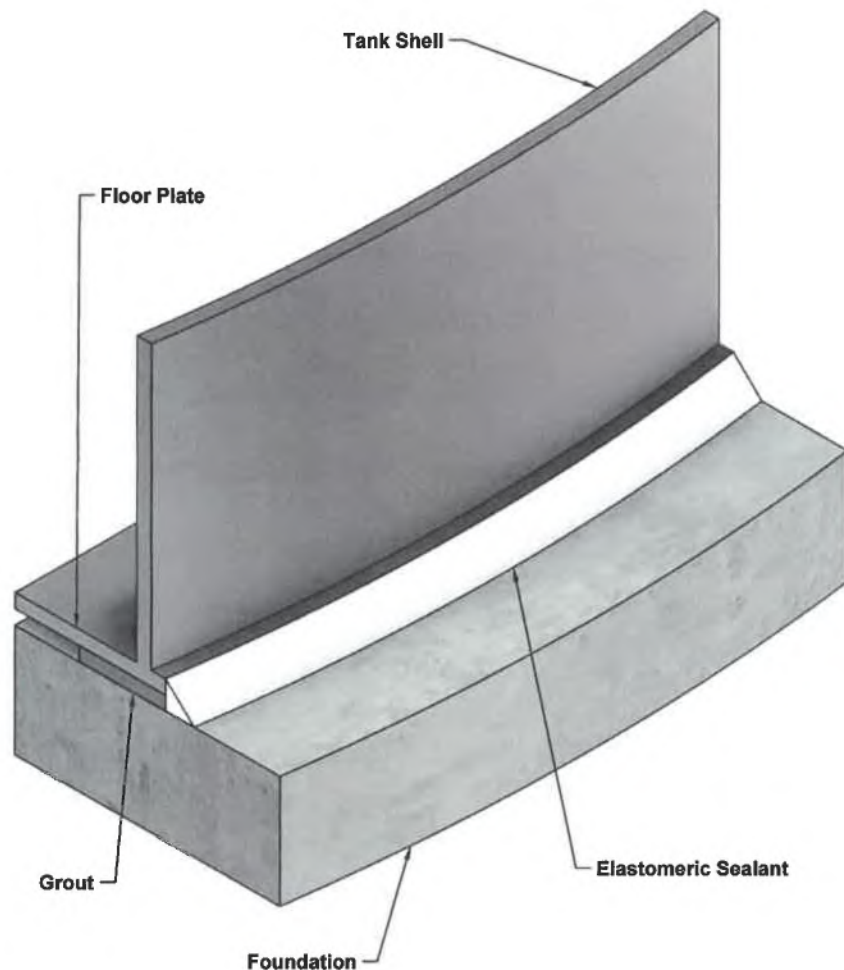
Replace notched rail with stainless steel flex cable safety climb. \$3,000.00

Install active or passive mixing system. \$25,000.00

Total Metal Repairs Cost \$101,250.00

TOTAL BUDGET \$474,100.00

Costs are based on past bid results. Contractor's actual bid could be higher or lower.
*MBA can assist with Project Specifications and list of qualified Tank Painters.



I. Procedure

All broken and loose grout shall be removed. The floor and base plate shall be cleaned and coated using the system specified in the specification. After the coating is completed and properly cured, the missing grout shall be replaced with a non-shrink, nonmetallic grout. The contractor shall pack the underside of the floor plate at least 6" with the grout.

After the grout has cured, the area shall have an elastomeric sealant applied from the floor plate to the foundation on a 45 degree incline. The sealant shall be free of voids and pinholes.

II. Material

A) Grout

1. Use only non-shrink and nonmetallic grout.

B) Elastomeric Sealant

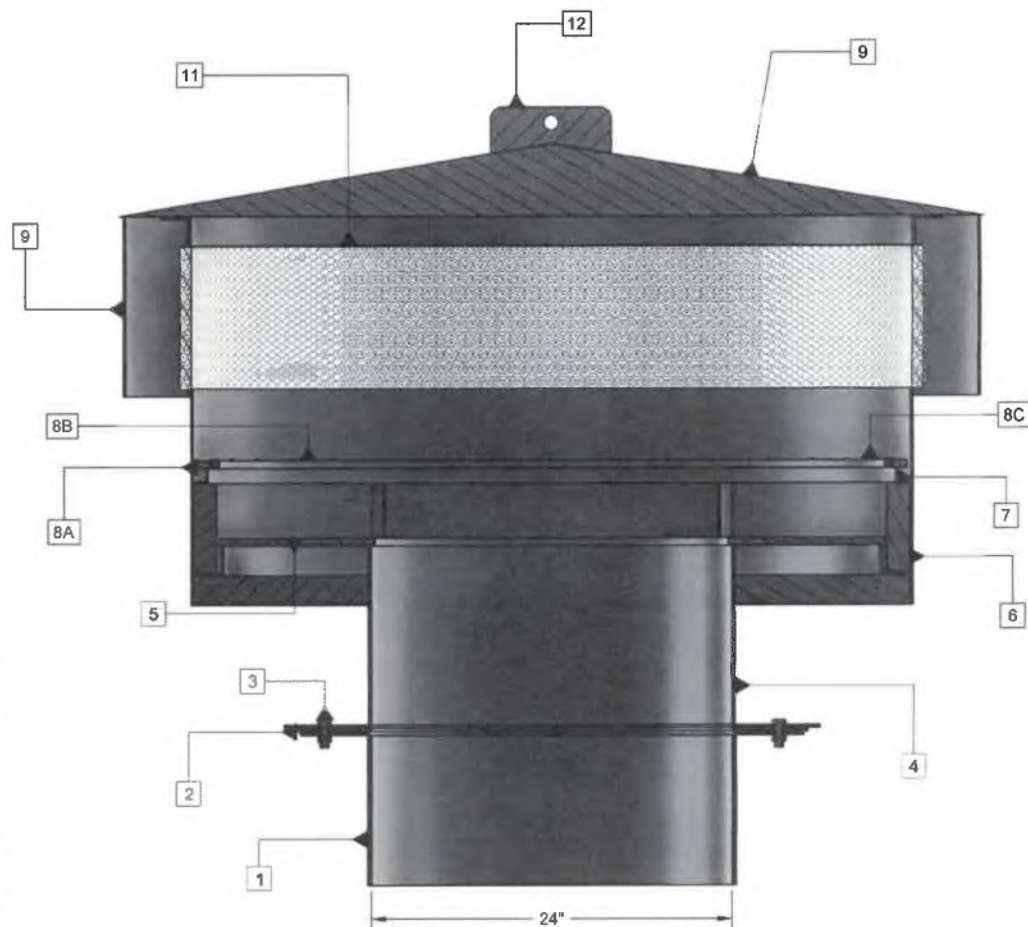
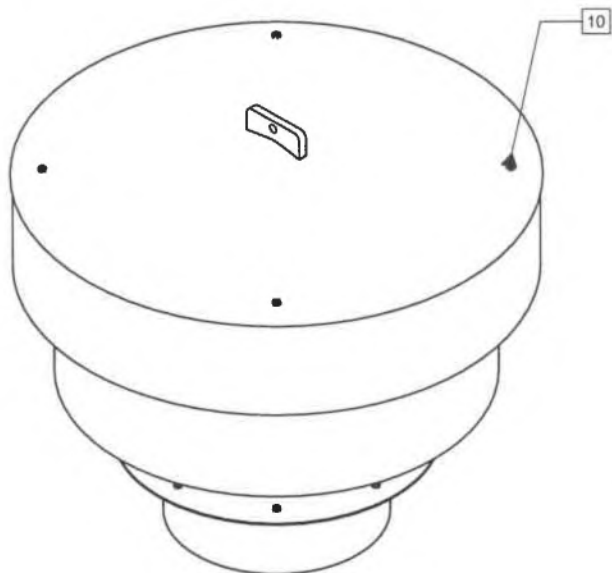
1. Sikaflex-1a, or equivalent.

This drawing is only to be used as an illustration for recommended repairs.

DRAWING TITLE:
FOUNDATION REPAIRS

955 South Chapel Street
Newark, DE 19713





BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	MATERIAL
1	1	PL $\frac{3}{4}$ " x 10" x 24" DIA. FLANGED VENT NECK	A36
2	1	GASKET $\frac{3}{4}$ " x 34" OD x 24" ID - (8) $\frac{5}{8}$ " HOLES ON 30 $\frac{3}{4}$ " BC	NEOP
3	8	BOLT - $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " w/ NUT & (2) FLAT WASHERS & (1) LOCK WASHER	316SS
4	1	VENT NECK EQUIPPED WITH BOLTED FLANGE	ALUM
5	1	VACUUM PALLET - $\frac{1}{2}$ " x 44 $\frac{1}{4}$ " OD x 23 $\frac{1}{2}$ " ID	HDPE
6	2	SHT $\frac{3}{8}$ " x 14 $\frac{1}{2}$ " x 75 $\frac{3}{16}$ " - ROLL TO 23 $\frac{5}{8}$ " IR	ALUM
7	1	L $\frac{1}{2}$ "x1 x 145 $\frac{3}{8}$ " - ROLL LEG OUT 22 $\frac{7}{8}$ " IR - DRILL DRAIN HOLES	ALUM
8A	1	PALLET $\frac{1}{2}$ " x 47 $\frac{1}{4}$ " OD x 44 $\frac{1}{4}$ " ID	HDPE
8B	1	24 MESH x 0.014 SS WIRE x 46 $\frac{1}{4}$ " OD - (36) $\frac{1}{16}$ " HOLES ON 45 $\frac{1}{4}$ " BC	ALUM
8C	36	8-12 x $\frac{1}{2}$ " SELF-TAPPING SCREWS	316SS
9	1	SHROUD - FORM TO CONE w/ 1" LAP	ALUM
10	4	BOLT - $\frac{3}{4}$ " x 1 $\frac{1}{2}$ " w NUT & (1) FLAT WASHER & (1) LOCK WASHER	316SS
11	2	FAT EXPANDED METAL - $\frac{3}{4}$ " 9F x 9 $\frac{1}{2}$ " x 75 $\frac{3}{8}$ " - ROLL 24" IR	ALUM
12	1	LIFTING LUG	ALUM

Notes:

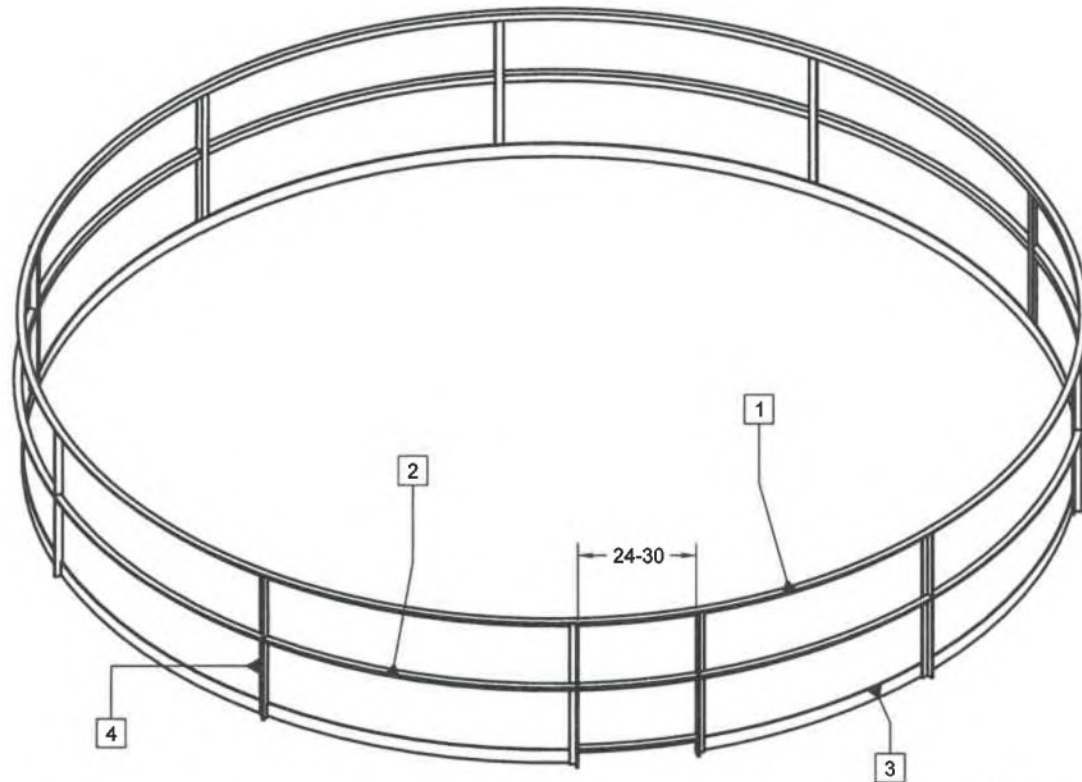
- Vent must be fabricated and installed in accordance with AWWA D100 (latest revision).
- Vent neck flange shall extend a minimum of 4" above roof surface, or greater, to satisfy local requirement.
- Aluminum pressure vacuum vent pallets and screens shall be checked annually.

DRAWING TITLE: 24"
ALUMINUM PRESSURE
VACUUM VENT

955 South Chapel Street
Newark, DE 19713



This drawing is NOT to be used for fabrication. Its only intent is to provide information for OSHA requirements.



Notes:

1. Toe kick field installed no more than $\frac{1}{4}$ " clearance from surface.
2. Handrails shall comply with OSHA standards 29 CFR 1910.29 (Protection of open sided floors, platforms, and runways).
3. A standard handrail shall consist of a top rail, intermediate rail, and post, and shall have a vertical height of 42" (+/- 3") nominal from upper surface of top rail to floor. A standard toe board shall be 4" nominal in vertical height. All structural steel railings, post and top, and intermediate rails shall be of 2" by 2" by $\frac{3}{8}$ " angles or other metal shapes of equivalent bending strength with posts spaced not more than 8' (96") on centers.

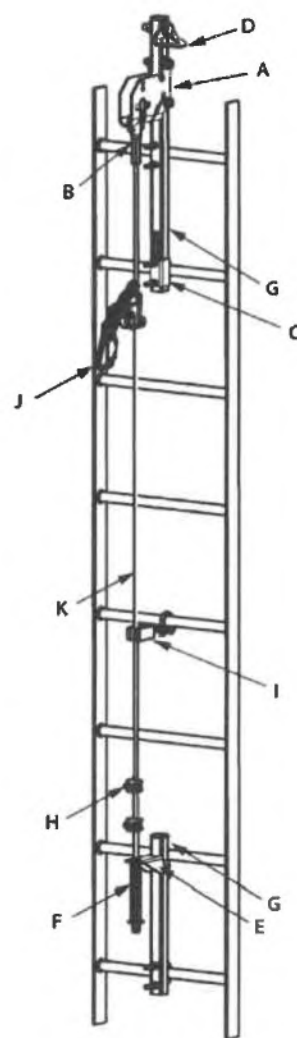
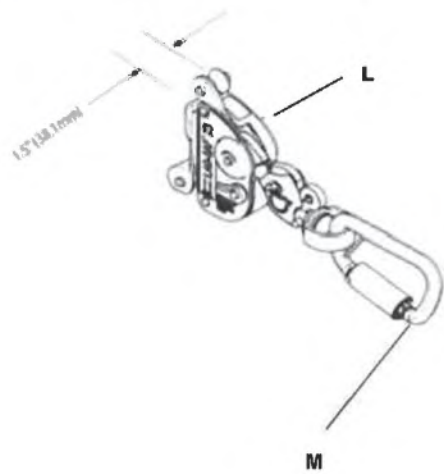
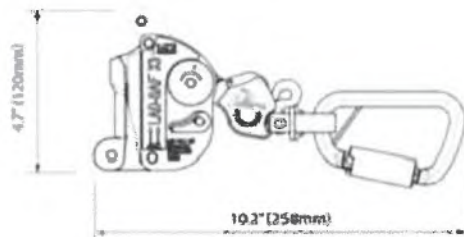
BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	MATERIAL
1	4	2 X 2 X $\frac{3}{8}$ " ANGLE ROLLED TO FIT WITH 24"-30" OPENING AND ANGLE WELD BRACE	A36
2	4	2 X 2 X $\frac{3}{8}$ " ANGLE ROLLED TO FIT WITH 24"-30" OPENING AND ANGLE WELD BRACE	A36
3	4	$\frac{1}{4}$ X 4 PLATE ROLLED TO FIT WITH 24"-30" OPENING AND ANGLE WELD BRACE	A36
4	11	2 X 2 X $\frac{3}{8}$ " ANGLE - 42"	A36

DRAWING TITLE:
HANDRAIL CORRAL

955 South Chapel Street
Newark, DE 19713





NOTES:

1. Galvanized cable for atmospheric exposure.
 - 1.1. $\frac{3}{8}$ " diameter cable 1X7 strand extra st. 15,400 lb. min. tensile
2. OSHA 29 CFR 1910.23 requires a safety climb system on all ladders over 20' in height.
3. The manufacturer is 3M Capital Safety. The distributor is First State Distributors, Wilmington, DE 302-655-8266.

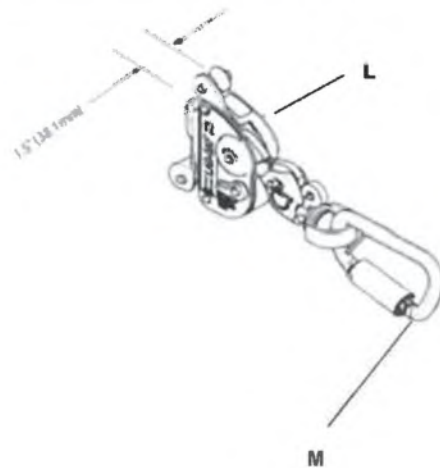
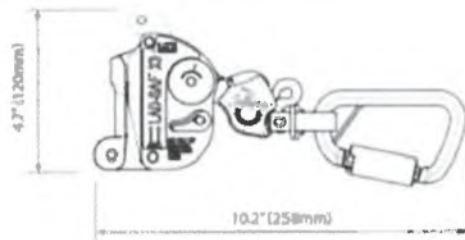
BILL OF MATERIALS

ITEM	DESCRIPTION	FINISH
A	TOP PLATE	304 STAINLESS STEEL
B	SWAGE CONNECTOR	304 STAINLESS STEEL
C	HARDWARE	STEEL
D	SINGLE POINT ANCHOR	316 STAINLESS STEEL
E	BOTTOM PLATE	STEEL
F	TENSION ASSEMBLY	304 STAINLESS STEEL
G	TUBES	STEEL
H	TENSION ROD	STEEL
I	CABLE GUIDE	STEEL/RUBBER
J	DETACHABLE CABLE SLEEVE	304 STAINLESS STEEL
K	CABLE	GALVANIZED
L	LAD-SAF X3 SLEEVE	304 STAINLESS STEEL
M	CARIBINER, $\frac{11}{16}$ " THROAT	STEEL

Drawing Title: Flexible Cable
Safety Climb System
(Galvanized)

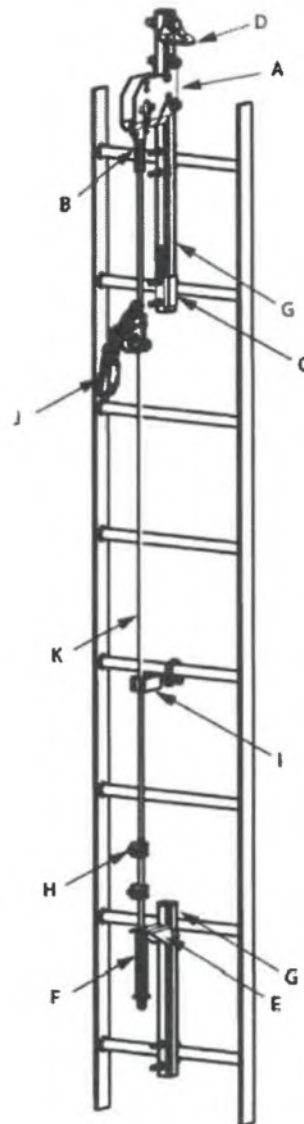
955 South Chapel Street
Newark, DE 19713





NOTES:

1. Stainless steel cable for interior wet use or immersion.
 - 1.1. $\frac{3}{8}$ " diameter cable 1X7 strand 302 SS, 18,000 lb.min. tensile.
2. OSHA 29 CFR 1910.23 requires a safety climb system on all ladders over 20' in height.
3. The manufacturer is 3M Capital Safety. The distributor is First State Distributors, Wilmington, DE 302-655-8266.



BILL OF MATERIALS		
ITEM	DESCRIPTION	FINISH
A	TOP PLATE	304 STAINLESS STEEL
B	SWAGE CONNECTOR	304 STAINLESS STEEL
C	HARDWARE	304 STAINLESS STEEL
D	SINGLE POINT ANCHOR	316 STAINLESS STEEL
E	BOTTOM PLATE	304 STAINLESS STEEL
F	TENSION ASSEMBLY	304 STAINLESS STEEL
G	TUBES	304 STAINLESS STEEL
H	TENSION ROD	304 STAINLESS STEEL
I	CABLE GUIDE	304 STAINLESS STEEL/RUBBER
J	DETACHABLE CABLE SLEEVE	STAINLESS STEEL
K	CABLE	STAINLESS STEEL
L	LAD-SAF X3 SLEEVE	304 STAINLESS STEEL
M	CARIBINER, $\frac{11}{16}$ " THROAT	STEEL

Drawing Title: Flexible Cable
Safety Climb System (Stainless
Steel Cable)

955 South Chapel Street
Newark, DE 19713





Photo # 1

Date

12/15/2021

Location

Exterior

Notes

Overall of tank.



Photo # 2

Date

12/15/2021

Location

Exterior

Notes

Coating on equator, logo, cone, and stem.



Photo # 3

Date

12/15/2021

Location

Exterior

Notes

Coating on equator, cone, and stem.



Photo #4

Date

12/15/2021

Location

Exterior

Notes

Coating on equator, logo, cone, and stem.



Photo #5

Date

12/15/2021

Location

Exterior

Notes

Coating on stem, 23-3/4" diameter birdhole, and 1-1/2" diameter painters rails.



Photo #6

Date

12/15/2021

Location

Exterior

Notes

Coating on stem, 23-3/4" diameter birdhole, and 1-1/2" diameter painters rails.

MBA Photo Log

MBA Contract No. 213901R

Jobsite: Riddle Farm

Tank: 400MG Waterspheroid



Photo #7

Date

12/15/2021

Location

Exterior

Notes

Coating on stem and 1-1/2" diameter painters rails.



Photo #8

Date

12/15/2021

Location

Exterior

Notes

Coating on stem and 1-1/2" diameter painters rails.



Photo #9

Date

12/15/2021

Location

Exterior

Notes

Coating on bell.



Photo # 10

Date

12/15/2021

Location

Exterior

Notes

Coating on bell.



Photo # 11

Date

12/15/2021

Location

Exterior

Notes

X-cut performed on bell showing excellent adhesion.



Photo # 12

Date

12/15/2021

Location

Exterior

Notes

Coating on bell and 80" x 37" bell mandoor.



Photo #13

Date

12/15/2021

Location

Exterior

Notes

Coating at base of bell.



Photo #14

Date

12/15/2021

Location

Exterior

Notes

Foundation, grout, and base plate.



Photo #15

Date

12/15/2021

Location

Exterior

Notes

Foundation, grout, typical 2-1/4" diameter anchor bolt with chair assembly, and base plate.



Photo # 16

Date

12/15/2021

Location

Exterior

Notes

6" diameter overflow pipe.



Photo # 17

Date

12/15/2021

Location

Exterior

Notes

Coating on bell mandoor threshold.



Photo # 18

Date

12/15/2021

Location

Exterior

Notes

Coating on bell mandoor hinge.



Photo # 19

Date

12/15/2021

Location

Interior Dry

Notes

Piping, ladder, and coating in bell.



Photo # 20

Date

12/15/2021

Location

Interior Dry

Notes

16" CRW bell ladder with notched rail safety climb.



Photo # 21

Date

12/15/2021

Location

Interior Dry

Notes

16" CRW bell ladder with notched rail safety climb.



Photo # 22

Date

12/15/2021

Location

Interior Dry

Notes

16" CRW bell ladder with notched rail safety climb, 6" diameter overflow, and coating on condensate ceiling.



Photo # 23

Date

12/15/2021

Location

Interior Dry

Notes

16" CRW bell ladder siderail and bell support.



Photo # 24

Date

12/15/2021

Location

Interior Dry

Notes

Coating on bell and 6" diameter overflow pipe.



Photo #25

Date

12/15/2021

Location

Interior Dry

Notes

Condensate drain line tied in with 6" diameter overflow pipe.



Photo #26

Date

12/15/2021

Location

Interior Dry

Notes

Coating on condensate ceiling and insulation on 6" diameter inlet/distribution line.



Photo #27

Date

12/15/2021

Location

Interior Dry

Notes

Extension of 16" CRW bell ladder with notched rail safety climb above condensate platform, and hinged hatch cover.



Photo # 28

Date

12/15/2021

Location

Interior Dry

Notes

Coating on condensate platform and stem.



Photo # 29

Date

12/15/2021

Location

Interior Dry

Notes

Coating on condensate platform.



Photo # 30

Date

12/15/2021

Location

Interior Dry

Notes

Coating on condensate platform and stem.

MBA Photo Log

MBA Contract No. 213901R

Jobsite: Riddle Farm

Tank: 400MG Waterspheroid



Photo # 31

Date

12/15/2021

Location

Interior Dry

Notes

Coating on condensate platform and stem in vicinity of hinged manhole.

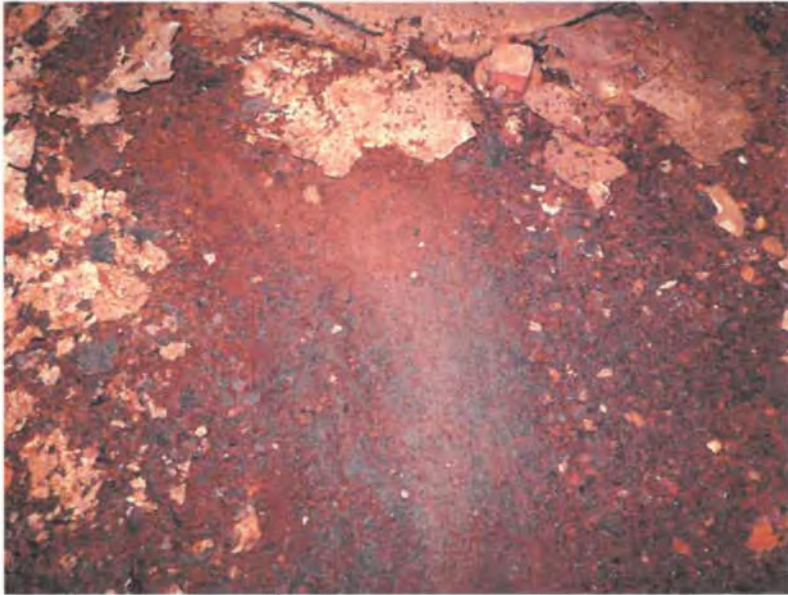


Photo # 32

Date

12/15/2021

Location

Interior Dry

Notes

Typical of general corrosion.



Photo # 33

Date

12/15/2021

Location

Interior Dry

Notes

Conduits on overflow pipe.



Photo # 34

Date

12/15/2021

Location

Interior Dry

Notes

16" CRW stem ladder with notched rail safety climb.



Photo # 35

Date

12/15/2021

Location

Interior Dry

Notes

Coating on stem, piping, and 16" CRW stem ladder with notched rail safety climb.



Photo # 36

Date

12/15/2021

Location

Interior Dry

Notes

16" CRW stem ladder with notched rail safety climb.

MBA Photo Log

MBA Contract No. 213901R

Jobsite: Riddle Farm

Tank: 400MG Waterspheroid



Photo # 37

Date

12/15/2021

Location

Interior Dry

Notes

Coating on stem stiffener ring.



Photo # 38

Date

12/15/2021

Location

Interior Dry

Notes

Coating on stem.



Photo # 39

Date

12/15/2021

Location

Interior Dry

Notes

Coating on stem.



Photo #40

Date

12/15/2021

Location

Interior Dry

Notes

Coating on stem, pipe support angle, and 6" diameter overflow pipe.



Photo #41

Date

12/15/2021

Location

Interior Dry

Notes

Coating on stem, pipe support angle, and 6" diameter inlet/distribution line.



Photo #42

Date

12/15/2021

Location

Interior Dry

Notes

Coating on 6" diameter overflow pipe.



Photo #43

Date

12/15/2021

Location

Interior Dry

Notes

Coating on 6" diameter overflow pipe and stem.



Photo #44

Date

12/15/2021

Location

Interior Dry

Notes

Coating on underside of birdroom platform.



Photo #45

Date

12/15/2021

Location

Interior Dry

Notes

16" CRW stem ladder extension into birdroom.



Photo #46

Date

12/15/2021

Location

Interior Dry

Notes

Standing water on birdroom platform.



Photo #47

Date

12/15/2021

Location

Interior Dry

Notes

Standing water on birdroom platform.



Photo #48

Date

12/15/2021

Location

Interior Dry

Notes

Coating in birdroom.



Photo #49

Date

12/15/2021

Location

Interior Dry

Notes

Coating on 23-3/4" diameter birdhole.



Photo #50

Date

12/15/2021

Location

Interior Dry

Notes

Coating in birdroom.

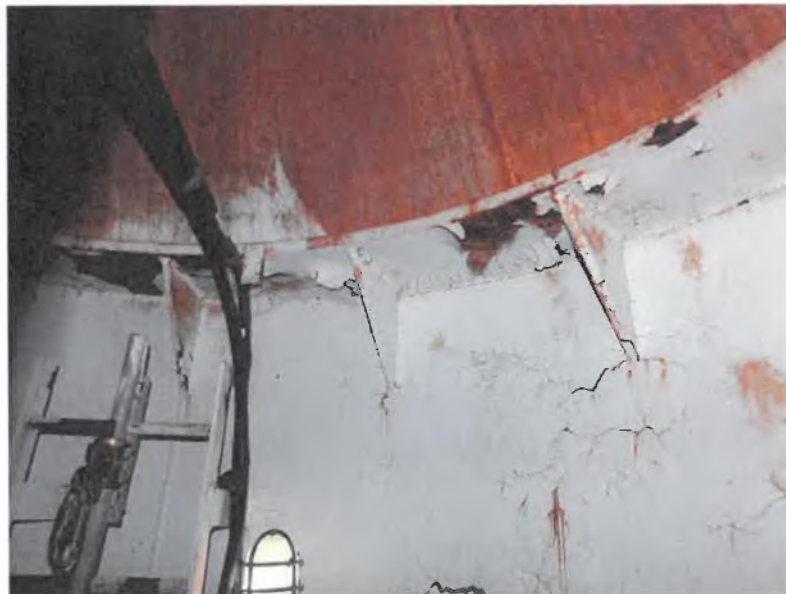


Photo #51

Date

12/15/2021

Location

Interior Dry

Notes

Coating in birdroom.



Photo #52

Date

12/15/2021

Location

Interior Dry

Notes

Coating on cone.

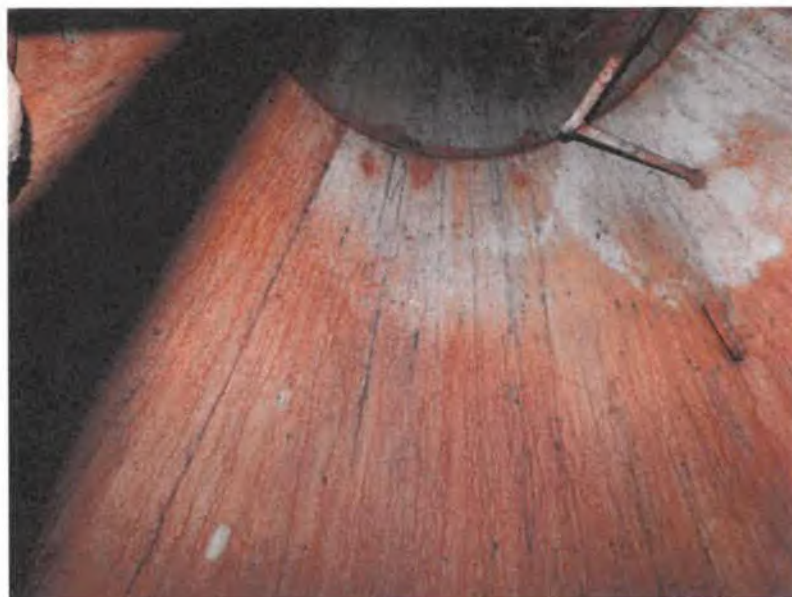


Photo #53

Date

12/15/2021

Location

Interior Dry

Notes

Coating on cone.



Photo #54

Date

12/15/2021

Location

Interior Dry

Notes

Coating on cone in vicinity of 6" diameter inlet/distribution line penetration.



Photo # 55

Date

12/15/2021

Location

Interior Dry

Notes

Plugged 2" diameter coupler in cone.



Photo # 56

Date

12/15/2021

Location

Interior Dry

Notes

16" CRW access tube ladder.



Photo # 57

Date

12/15/2021

Location

Interior Dry

Notes

16" CRW access tube ladder, 6" diameter overflow pipe, cone, and 42" diameter access tube.



Photo # 58

Date

12/15/2021

Location

Interior Dry

Notes

18" x 24" manhole at bottom of access tube.



Photo # 59

Date

12/15/2021

Location

Interior Dry

Notes

16" CRW access tube ladder, 6" diameter overflow pipe, and 42" diameter access tube.



Photo # 60

Date

12/15/2021

Location

Interior Dry

Notes

6" diameter overflow pipe and coating in 42" diameter access tube.



Photo #61

Date

12/15/2021

Location

Interior Dry

Notes

30" diameter access tube manhole at top of access tube.



Photo #62

Date

12/15/2021

Location

Exterior

Notes

30" diameter access tube manhole, FAA lights, conduit, and antenna mount.



Photo #63

Date

12/15/2021

Location

Exterior

Notes

Antenna mount installed over access tube vent gap.



Photo # 64

Date

12/15/2021

Location

Exterior

Notes

Antenna mount installed over access tube vent gap. No screen present.

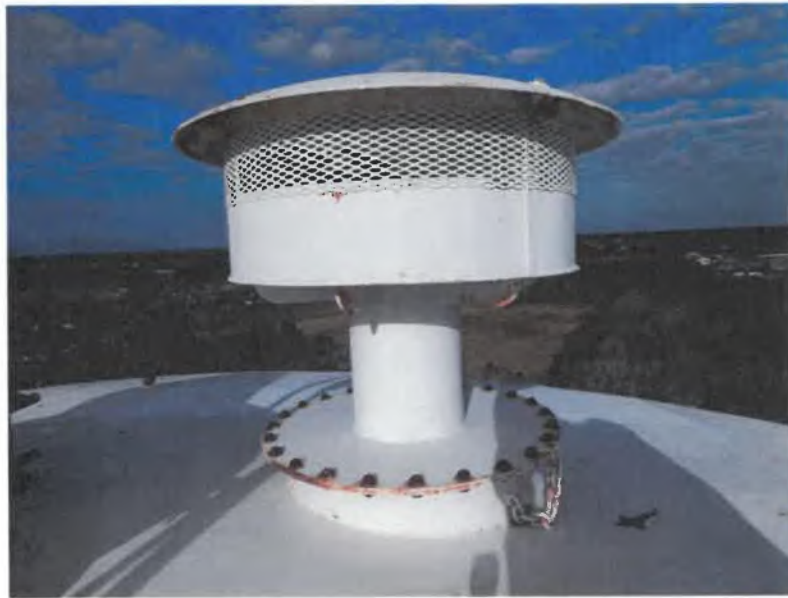


Photo # 65

Date

12/15/2021

Location

Exterior

Notes

10" diameter PV vent bolted onto 24" diameter flanged vent neck.



Photo # 66

Date

12/15/2021

Location

Exterior

Notes

10" diameter PV vent lower screen, neck, and frame.

**Photo #67**

Date

12/15/2021

Location

Exterior

Notes

10" diameter PV vent bolted onto 24" diameter flanged vent neck.

**Photo #68**

Date

12/15/2021

Location

Exterior

Notes

Coating on roof and open 1-3/4" diameter coupler.

**Photo #69**

Date

12/15/2021

Location

Exterior

Notes

Coating on roof and sealed 1-3/4" diameter coupler.



Photo #70

Date

12/15/2021

Location

Exterior

Notes

Coating on roof.



Photo #71

Date

12/15/2021

Location

Exterior

Notes

Coating on roof.



Photo #72

Date

12/15/2021

Location

Exterior

Notes

Coating on roof.



Photo #73

Date

12/15/2021

Location

Exterior

Notes

Coating on roof.



Photo #74

Date

12/15/2021

Location

Exterior

Notes

Coating on roof.



Photo #75

Date

12/15/2021

Location

Exterior

Notes

Coating on roof.

**Photo # 76**

Date

12/15/2021

Location

Exterior

Notes

Coating on roof.

**Photo # 77**

Date

12/15/2021

Location

Exterior

Notes

Coating on roof.

**Photo # 78**

Date

12/15/2021

Location

Exterior

Notes

Hinged 29" diameter roof manhole.



Photo #79

Date

12/15/2021

Location

Exterior

Notes

Hinged 29" diameter roof manhole.

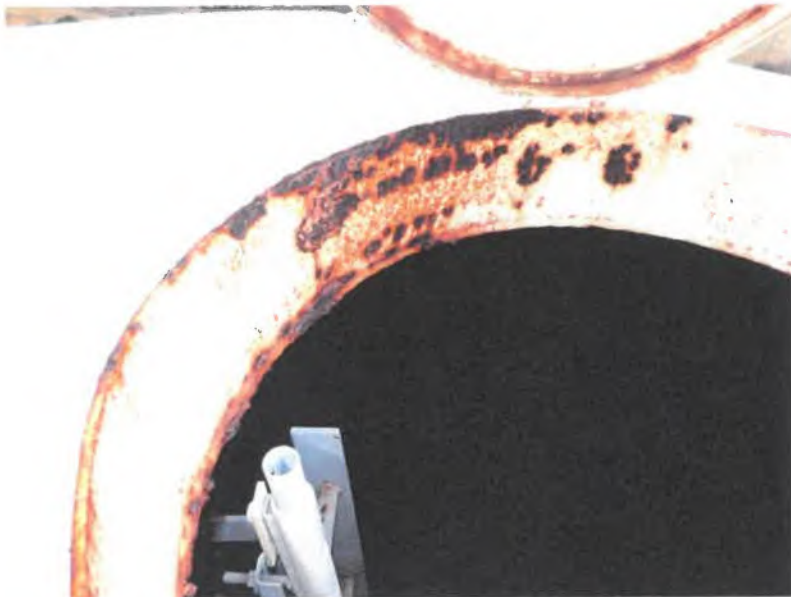


Photo #80

Date

12/15/2021

Location

Exterior

Notes

Hinged 30" diameter roof manhole rain lip.



Photo #81

Date

12/15/2021

Location

Interior Wet

Notes

Coating on roof and access tube.



Photo #82

Date

12/15/2021

Location

Interior Wet

Notes

Coating on access tube.



Photo #83

Date

12/15/2021

Location

Interior Wet

Notes

Coating on roof and access tube.



Photo #84

Date

12/15/2021

Location

Interior Wet

Notes

Coating on access tube.



Photo #85

Date

12/15/2021

Location

Interior Wet

Notes

Coating roof, knuckle, and equator.



Photo #86

Date

12/15/2021

Location

Interior Wet

Notes

Coating roof, knuckle, and equator.

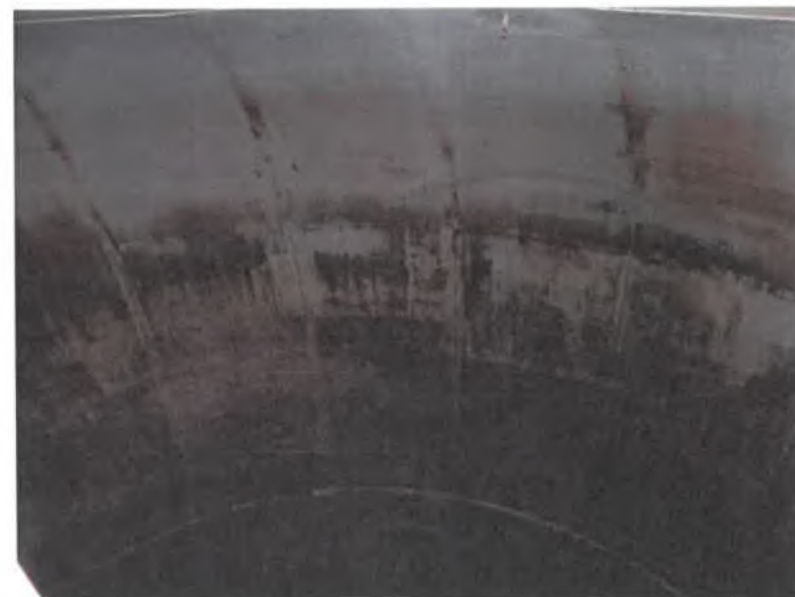


Photo #87

Date

12/15/2021

Location

Interior Wet

Notes

Coating knuckle and equator.

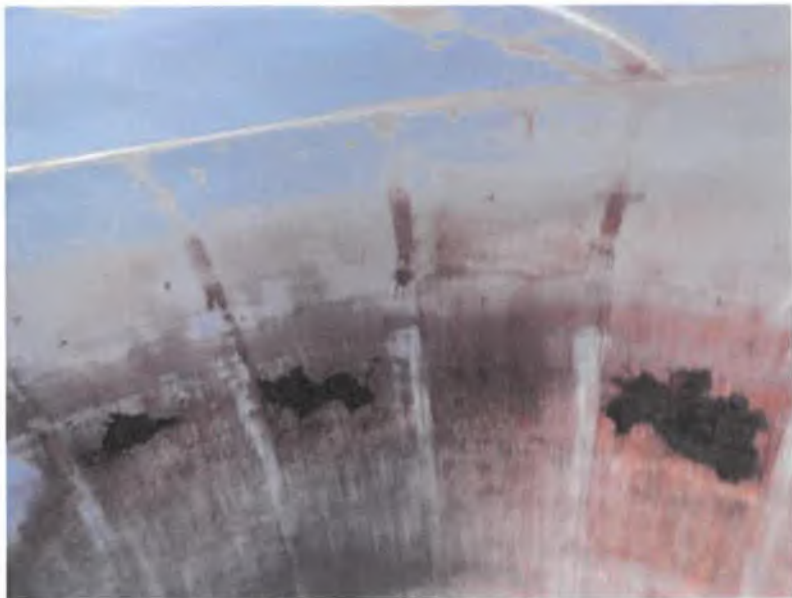


Photo #88

Date

12/15/2021

Location

Interior Wet

Notes

Coating knuckle and equator.

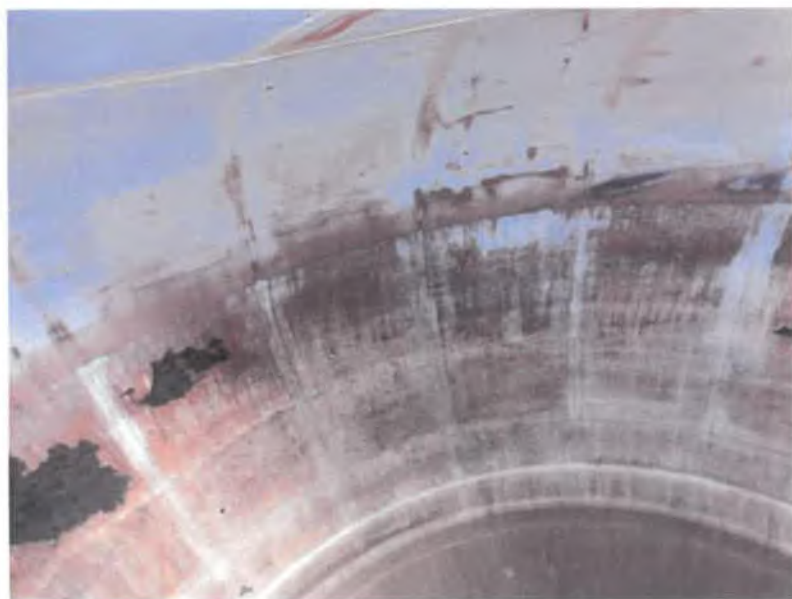


Photo #89

Date

12/15/2021

Location

Interior Wet

Notes

Coating knuckle, equator, and cone.



Photo #90

Date

12/15/2021

Location

Interior Wet

Notes

Coating knuckle, equator, and cone.



Photo #91

Date

12/15/2021

Location

Interior Wet

Notes

Coating equator and cone.



Photo #92

Date

12/15/2021

Location

Interior Wet

Notes

Coating equator and cone.

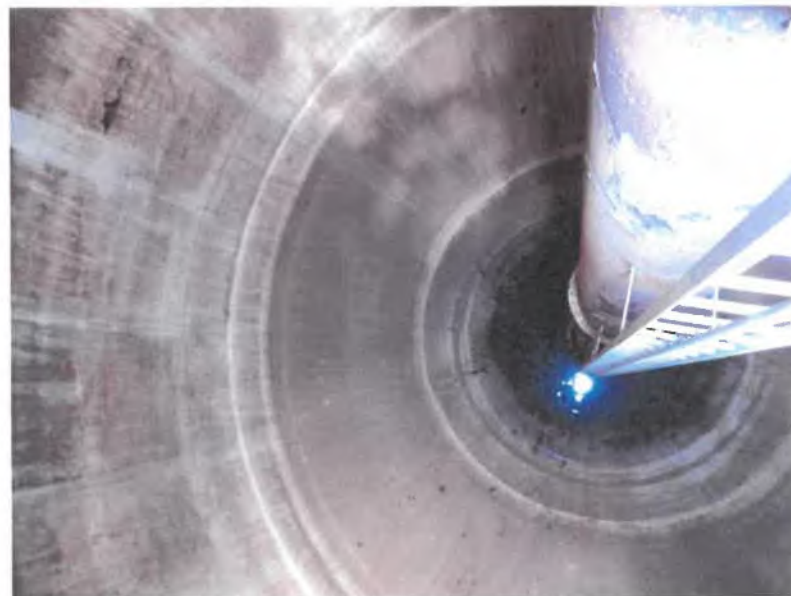


Photo #93

Date

12/15/2021

Location

Interior Wet

Notes

Coating access tube and cone, and water in trough.

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